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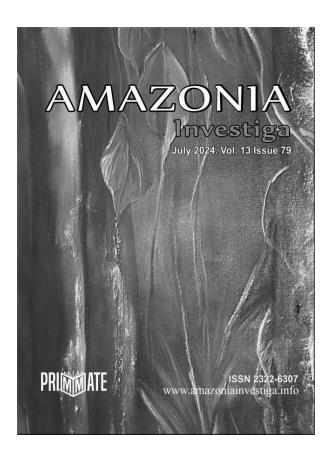


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"Science advances not only by expanding our knowledge but also by revealing the beauty and complexity of the universe we inhabit. Today we celebrate the tireless commitment of researchers who seek answers and solutions to improve our world."

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Does blended learning enhance the academic motivation levels of physical education and sports pre-service teachers? A quasi-experimental study

Harmanlanmış Öğrenme Beden Eğitimi ve Spor Öğretmen Adaylarının Akademik Motivasyon Düzeylerini Değiştirebilir mi? Yarı Deneysel Bir Çalışma

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Abstract

This study investigated the impact of a blended learning intervention on the academic motivation of pre-service physical education teachers. A quasi-experimental design with pre-test and posttest measures was employed. The Academic Motivation Scale (AMS) was used to assess intrinsic motivation, extrinsic motivation, and amotivation. Results showed that the blended learning group experienced a significant increase in intrinsic motivation compared to the control group. No significant differences were found in extrinsic motivation or amotivation between the groups. The findings suggest that blended learning can enhance intrinsic motivation in pre-service physical education teachers, highlighting its potential for improving teacher education programs.

Keywords: Academic motivation, blended learning, physical education, teacher training, pre-service teachers.

Özet

Bu arastırmada karma öğrenme müdahale sürecinin beden eğitimi öğretmeni adaylarının motivasvonu üzerindeki akademik incelenmistir. Ön test ve son test modeli ile birlikte yarı deneysel desen uygulanmıştır. İcsel motivasyon motivasyon, dışsal motivasyonsuzluk düzeylerini değerlendirmek için Akademik Motivasyon Ölçeği (AMS) kullanılmıştır. Sonuçlar, karma öğrenme grubunun kontrol grubuna kıyasla motivasyonda önemli bir artış yaşadığını göstermiştir. Gruplar arasında dışsal motivasyon veya motivasyonsuzluk açısından anlamlı bir fark bulunmamıştır. Bulgular, karma öğrenmenin beden eğitimi öğretmeni adaylarının içsel motivasyonunu artırabileceğini, dolayısıyla öğretmen eğitim programlarının geliştirilmesinde potansiyel taşıdığını göstermektedir.

Anahtar Kelimeler: Akademik motivasyon, karma öğrenme, beden eğitimi, öğretmen eğitimi, öğretmen adayları.

Introduction

In this study, it was aimed to examine the effect of the instructional intervention process determined according to the blended learning approach on the academic motivations of physical education and sports

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teachers. The level of influence of blended learning, which is a current issue, on the motivations of individuals in teacher education constitutes the problem statement.

The article structure starts with a literature search for the subject area. The literature review is followed by the concept of academic motivation, which is associated with blended learning within the article. The main purpose of the study is located right at the end of these subheadings. The method part of the research was discussed in detail with the titles of research design, participant knowledge, information and strategies for experiment design, data collection, data analysis and explanation of the application process. The article ends as the presentation, discussion and conclusion part of the findings.

The article is a research created with the focus on academic motivation and blended learning and carried out with a quasi-experimental method. Before starting the experimental intervention process, pre-tests were applied to the control and experimental groups determined, and then the intervention procedure was performed. There are two main sections in lesson planning for the experimental group participants: theoretical content, in which various teaching materials are transferred with the teaching management system, and practical content, which is transferred under the control of the instructor. After the end of the procedure, tests were applied. The data of the study conducted with 79 people were analyzed with SPSS 26 package program. The data obtained from the groups in which the semi-experimental design was applied show that blended learning affects intrinsic motivation. At the end of the research, suggestions were presented.

Literature Review

Learning is a process, and the biggest problem in this process is the lack of motivation of the students. Motivation associated with learning can be defined as the desire for movement during goal orientation. Motivation, which is the first and most important element for learning, determines the level of willingness of the learner. For this reason, the level of learning efforts of learners should be determined according to their motivation (Phann, Em & Tep, 2023). On the other hand, it is also seen as an additional concept that defines what is needed for learning to take place in learners (Gredler, 2017). Motivation is also defined as one's effort to fulfill his/her duties, devoting and maintaining the necessary effort (Çeliköz, 2010). Although motivation is given different names, their common point is that they encourage the person to take a certain action.

Motivation is functional when an individual is excited to satisfy a need or desire. The individual becomes a part of the actions that are perceived to have the possibility of meeting this need or desire, or he/she shows interest in such actions (Tan et al., 2003). Motivation indicates encouragement for the maintenance of a goal-oriented behavior; thus, pedagogues have also stated that it should be an educational goal followed by all education systems (Schunk, 2014; Krishan & Al-rsa'i, 2023). Education psychologists think that motivation of students is an indispensable necessity for effective learning to take place (Biehler & Snowman, 1986). The psychological impact of motivation on students is evaluated as steps that take one to concrete success as motivation is seen as an additional concept that complements the needs required for learning to be experienced by students (Gredler, 2017). The concept of motivation (Schukajlow et al., 2023), which we encounter in several different fields such as educational psychology, general psychology, language learning, and mathematics perception, has a place in pedagogy as well. From the perspective of pedagogy, students develop individual attitudes suitable for their learning behavior in the learning environment, which serves as a mechanism to decide whether he/she will participate in the learning process (Purnomo, Ratnawati & Aristin, 2017). A student with high motivation for learning organizes the learning process in a way to gain the behavior in question. Such a student tends to learn more and show higher exam success (Slavin, 2006).

There are studies such as academic motivation competencies of university students and physical education teachers (Alemdağ et al., 2014; Korkmazer, 2020), opinions about academic motivation among prospective teachers (Gömleksiz, & Serhatlıoğlu, 2014), academic motivation scale development (Karataş, & Erden, 2012), the relationship between academic achievement and academic motivation (Amrai et al., 2011); Sivrikaya, A. H. (2019) in the literature.



Academic Motivation

The driving force behind the learning motivation of students is academic motivation, which can be seen as the most fundamental characteristic needed for their development. Academic motivation is the impulse of a student that he/she uses to reach the academic environment that he/she set as a goal. It is a structure with multiple variables and sub-dimensions which allows for the student to learn a new thing and experience stimulation (Dierendonck et al., 2023). Academic motivation of students generally represents their primary driving force to begin learning. However, it also serves as the reason for continuing the lengthy and boring learning process (Ushioda, 2008). In this context, it is different from the concept of motivation in that it affects the learning process and the desire to reach academic tasks. Academic motivation is important because it positively affects students' approach to academic tasks, spending the necessary time and energy, and making enough effort to complete academic tasks, and is related to academic success (Lindner & Harris, 1998; Vanzile-Tamsen & Livingston, 1999).

Academic motivation includes the student feeling the urge to increase his/her school achievement and determining purposes for going to school; on the other hand, it is stated that it emerges on the basis of the need and desire to excel (Wilkesmann et al., 2012; Gupta & Mili, 2016). Academic motivation, which is accepted as the production and maintenance of the energy necessary for academic work, is associated with the achievement-oriented intrinsic desire. As it can be understood from here, the level of academic motivation and the level of success in the education process are interrelated.

Autonomy theory, which is used to better understand academic motivation, defines autonomy as the individual to be motivated and take responsibility by determining his/her goals and his/her priorities in order to reach these goals. Autonomy theory includes three types of motivations, namely intrinsic motivation, extrinsic motivation, and amotivation (Ryan & Deci, 2000). Intrinsic motivation is a natural motivational disposition, which involves doing something because it is enjoyed or found interesting. Here the reward for performing the activity is internal (Ryan & Moller, 2017). Extrinsic motivation, on the other hand, consists of consolidations or reinforcements that can be affected positively or negatively by other individuals, tools or factors, and that can reduce or increase the probability of the behavior being maintained or repeated (Hosseinalipour, 2015). To sum up, extrinsic motivation includes doing something for its results that can be reached, whereas intrinsic motivation is a kind of impulse, which is very important for pedagogues, as it leads to high quality learning and creativity. However, the effects of extrinsic motivation should not be overlooked, as many tasks required by educators from students are far from being interesting or enjoyable. Therefore, using teaching strategies that will activate extrinsic motivation types is necessary for effective learning (Ryan & Deci, 2000). The place of motivation in the academic realm and its effect on student success are undeniable, and the lack of motivation negatively affects academic success in particular. Amotivation refers to a situation where there is no intrinsic or extrinsic motivation, where the individual cannot grasp the relationship between current conditions and his/her behavior and does not want to take part in any activity. The state of being unmotivated refers to the state of not giving the necessary importance while performing any behavior and lack of self-confidence.

As regards the value of student academic motivation in education and learning environments, it has been argued that both intrinsic and extrinsic motivation of students can affect their academic performance positively (Froiland & Oros, 2014). In order to show the importance of motivation, reference is made to its positive effect on students' perseverance level. It has also been suggested that academic motivations can empower students to resist difficulties they may encounter in the learning process (Howard et al., 2021).

Studies conducted on motivation show that academic motivation is the basic predictor of academic performance and success (Green et al., 2006; Linnenbrink & Pintrich, 2002). In addition, it has been observed that it affects the maintenance of student participation in the learning process, their attitude towards the learning process, their performance, and academic success (Linnenbrink & Pintrich, 2002; Ratelle et al., 2007; Khalila, 2015; Cayubit, 2022). It has been argued that academically motivated students tend to perceive school and learning as valuable, enjoy learning, and take pleasure in learning-related activities (Eccles & Wigfield, 2002; Zimmerman, 2000; Zimmerman, 2008) whereas lack of motivation has been shown as the primary reason for student failure (Scheel et al., 2009; Wigfield et al., 2005).

Considering the impact of academic motivation on school achievement, it is essential that institutions find different ways of increasing student motivation (McCoach, 2002; Wang & Pomerantz, 2009). Findings of academic studies have shown that educators can affect student motivation (Ames, 1992; Perry et al., 2006;

Stipek, 2002; Wentzel, 2002; Wigfield, Eccles & Rodriguez, 1998). The people who directly affect students' sense of autonomy and academic performance are educators, namely teachers (Affuso et al., 2022). Therefore, increasing the academic motivation of the students can be associated with the teaching approaches used by educators.

Objective of the Study

It has been aimed to examine the impact of instructional intervention process determined according to blended learning approach on the academic motivation of physical education and sports pre-service teachers. The research question developed for this purpose is as follows:

To what extent does the instructional intervention process, which includes or excludes blended learning, affect the intrinsic motivation, extrinsic motivation and amotivation levels of physical education and sports pre-service teachers when their baseline scores, which is the common variable, are controlled?

Methods

Research Design

In the quantitative part of the research, the "quasi-experimental design" method was preferred among the experimental research designs. While applying the quasi-experimental method, pre-test / post-test models were used. In the quasi-experimental design used to represent what is possible (Patton, 2018), the pre-test provides a criterion for evaluating the qualifications of the participants before they are subjected to a process, whereas the post-test provides the measure of the qualification assessment of the participants after the process ends (Creswell, 2019). The symbolic representation of the quantitative phase of the research is given below.

Table 1.Symbolic representation of the experimental intervention process.

Groups	Assignment	Pre-tests	Intervention	Post-tests
Experiment	Е	AMS ₁	X_1	AMS ₂
Control	Е	AMS ₁	-	AMS ₂

E: Matching AMS: Academic Motivation Scale X₁: Blended Learning

Participants

Participants of the study were physical education and sports pre-service teachers studying at a public university in Istanbul, Turkey, who volunteered to participate. The participants were informed about all the details of the study and the study was followed on a voluntary basis. Groups were determined using the matched participants method. This method was preferred as random assignments are not possible when determining groups in quasi-experimental studies (Creswell, 2014; Robson, 2015; Teddlie & Tashakkori, 2020). Gender distributions were taken into account while matching. It was concluded that the groups were at the same level before the experimental intervention and their distribution was homogeneous (p=.80). Control and experimental groups were determined by lot for the instructional intervention to be carried out after matching. A total of 79 people participated, 39 people in the control group and 40 people in the experimental group. 37 (46.8%) of the participants were female and 42 (53.2%) were male, all of whom were aged between 19 and 24.

Limitations of the Experimental Design and the Strategies

Selection of participants

Due to the fact that random assignment is not possible in semi-experimental studies, the matching method has been used in order to increase the validity of the research. With this method, the effect of external factors has been tried to be prevented.



Maturation of participants

It can be assumed that the change between measurements will be the result of the individual development of the participants. It is believed that the change in the dependent variable of 12 weeks, which is the experimental period, occurs without depending on the outcome of individual developments.

The effect of participant loss

In experimental studies, the separation of participants after the process has started poses a threat to internal validity. Measures have been taken to prevent the loss of participants within the scope of the research.

The expectation effect

Detailed explanations about the scales were not made in order to avoid creating any expectations for the participants. In addition, it is aimed to increase the validity of the data collected from the participants by keeping the course evaluation out of the scope of the research.

Reactivity to the experimental situation

The fact that participants are aware of the experimental intervention process may lead to differentiation taking place outside the intervention. For this reason, it is important for participants to know that no experimental procedure has taken place. Information that could pose a threat was not shared with the research participants.

Experimental variable interaction

In order not to manipulate the effect of the experimental variable, the tests were applied to the groups in a similar way. Repeated timed tests were applied to each group in order to minimize the variable interaction.

Data Collection

Personal Information Form: It was developed by the researchers and was used to find out the characteristics of the participants in the determined titles.

Academic Motivation Scale (AMS), The scale, which was developed by Vallerand et al. (1992) to determine the motivation level of students, was adapted to Turkish by Ünal-Karagüven (2012). The self-evaluation scale, which is 7-Likert type applicable to university students, consists of 28 items. There are 7 sub-dimensions in the scale, including three intrinsic motivation (IM) dimensions, three extrinsic motivation (EM) dimensions and one amotivational (AMOT) dimension. There is no reverse scored item in the scale. The scores that the participants can obtain vary between 28 and 196. The Cronbach's Alpha values used to calculate the reliability of the data obtained from the measurement tool within the scope of this study are IM .86, EM .70 and AMOT .76. Since these values are above the accepted reference value of .70 (Pallant, 2016), it can be claimed that the data obtained from the scale are reliable.

Analysis of Data

Numerical values were assigned to the obtained raw data which were freed from entry errors; later, they were defined to SPSS 26 package program which is used in data analysis. Missing data and extreme values were excluded from the dataset. The normality of the data were also checked: as regards the dependent variable, skewness values vary between -.41 and 1.5, and Kurtosis values change from -.71 to 1.6. These values are between -2 and +2, which is the acceptable interval for normal distribution (Gravetter & Wallnau, 2014).

Data analysis aimed at keeping under control the baseline academic motivation scores of the participants. For this purpose, before starting the test, it was checked to see whether it met the parametric assumptions. According to the homogeneity of variances test conducted, the results were found to be significant as follows: IM, F(1,77)=.11, p<.05; EM, F(1,77)=2.32, p<.05, AMOT, F(1,77)=1.94, p<.05 and AMS, F(1,77)=.01, p<.05. Baseline scores do not differ significantly between groups; F(1,77)=.98, P=.324. As



a result of the tests, it was decided to perform the univariate covariance (ANCOVA) analysis, which is one of the parametric tests, in order to keep the baseline academic motivation scores of the participants under control. It has been observed that the condition of "homogeneous distribution of regression curves", which is the additional assumption of the analysis, is also met (IM, p=.12; EM, p=.81; AMOT, p=.38).

Application process

Experimental intervention process was performed in spring semester of 2021-2022 academic year. The preferred course was a field education course with both theoretical and practical content. Prior to beginning the intervention process, pre-test was applied to the determined control and experimental groups, which was followed by the intervention procedure. During the process, the control group participants were taught under the control of the instructor in a classroom environment where the traditional approach was adopted. There was no planned external intervention in this process. The course planning for the experimental group participants was as follows: the course was divided into two main parts, the theoretical content conveyed through various teaching materials using the instructional management system, and the practical content conveyed under the control of the instructor. After the end of the process, post-tests were applied.

Results

The ANCOVA test was run by keeping the AMS pre-test scores under control. Three factors of AMS were analyzed separately in order to examine whether there was a difference in academic motivation levels between the experimental and control groups after the instructional intervention.

The intrinsic motivation level of the participants before the instructional intervention was significantly relevant (F(1,75)= 11.74, p<.05, η 2= .13). When the initial intrinsic motivation level was controlled, the basic impact of the instructional intervention was found to be significant (F(1,75)= 4.50, p<.05, η 2=.05). This interaction is minor. Blended learning group participants had a statistically significantly higher academic motivation score than control group participants (.69, %95 [.29, 1.08], p<.05).

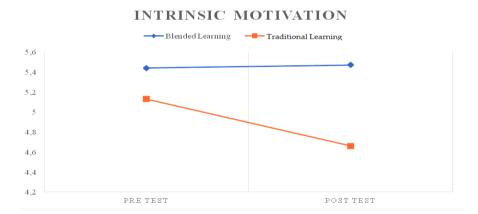


Figure 1. Measures of intrinsic motivation and interaction of groups. Source: by Can, H. C., Türksoy Işım, A. & Kalaycı Alas, D. (Authors)

The extrinsic motivation level of the participants before the instructional intervention was significantly relevant ($F_{(1,75)}$ = 18.78, p<.05, η 2= .20). When the initial extrinsic motivation level was checked, it was found that the instructional intervention had no effect on the participants' extrinsic motivation levels ($F_{(1,75)}$ = .03, p>.05, η 2=.00).

According to the amotivation levels of the participants, the main impact of the instructional intervention was not significantly relevant ($F_{(1,75)}$ = .18, p>.05, η 2= .00). However, it is seen that the mean scores of the experimental and control groups have increased. Particularly, difference can be observed between the pretest (M=1.89, SE=1.24) and posttest (M=3.07, SE=.18) scores of experimental group participants who received education aiming at blended learning.

Levene Test is significant considering the entire scale ($F_{(1,77)}$ = .01, p<.05). Academic motivation level of participants prior to the instructional intervention was significantly relevant ($F_{(1,75)}$ = 16.80, p<.05,



 $\eta 2=.18$). When controlling for the initial academic motivation level, it was found that the basic effect of the instructional intervention was not significant ($F_{(1,75)}=3.58$, p>.05, $\eta 2=.04$). Although significant difference was not found, the group which received education with blended learning (M=5.15, SE=.08) had higher mean score compared to the control group (M=4.65, SE=.09) after intervention.

Table 2.Descriptive Statistics of Pretest and Posttest Scores of Pre-Service Teachers and ANCOVA Summary of Academic Motivation.

	Pre	Pre Test Post Test			Univariate ANCOVA			
	M	SD	M	SD	M (adjusted)	SE	F	η2
Intrinsic Motivation							4.50*	.05
Experimental Group	5.44	1.03	5.47	.87	5.44	.14		
Control Group	5.13	.78	4.66	.97	4.75	.14		
Extrinsic Motivation							.03	.00
Experimental Group	5.38	.86	5.48	.68	5.44	.11		
Control Group	5.18	.87	4.99	.84	5.02	.11		
Amotivation							.18	.00
Experimental Group	1.89	1.24	3.07	.10	3.07	.18		
Control Group	2.24	.97	3.30	.12	3.26	.18		
Total							3.58	.04
Experimental Group	4.90	.72	5.17	.58	5.15	.08		
Control Group	4.74	.60	4.61	.64	4.65	.09		

Experimental Group n = 40, Control Group n = 39 *p < .05

Source: by Can, H. C., Türksoy Işım, A. and Kalaycı Alas, D. (Authors)

When the start and end test scores between the groups are examined, it is seen that the intrinsic and extrinsic motivation scores of the physical education pre-service teachers studying with the traditional approach decreased as a result of the instructional intervention, whereas their amotivation scores showed increase.

Discussion

It has been shown that the blended learning environment contributes to the development of positive attitudes among pre-service teachers towards courses (Atmacasoy & Aksu, 2018; Owston et al., 2019; Bursa, 2023; Syafruddin & Suparman, 2023). As the positive attitude of individuals towards teaching profession increase, so do their academic motivation and academic success, which are claimed to be interrelated (Zembat et al., 2018; Sunardi et al., 2021). Motivation, which can be indicated as the main source of the connection, has an undeniable effect on many factors, especially academic success (Smith et al., 2012).

It has been revealed that the intrinsic and extrinsic motivation levels of physical education and sports preservice teachers tend to change throughout their academic processes (Poteliūnienė et al., 2021). It is reported that as the learning period of the students lengthens, their intrinsic motivation levels decrease but their extrinsic motivations increase (Santrock, 2018). In addition, the monotype learning approach also negatively affects intrinsic motivation (Permata et al., 2023). However, on the contrary, it was observed that the intrinsic motivation of physical education pre-service teachers increased (Poteliūnienė et al., 2021). Similarly, research findings show that the intrinsic motivation levels of Turkish physical education preservice teachers differed significantly with the effect of blended learning as a result of the instructional intervention. It is stated that cultural differences can create motivation differences among physical education pre-service teachers (Kuśnierz et al., 2020). In a study conducted on Turkish language pre-service teachers, it was reported that their academic achievement was only affected by intrinsic motivation (Eymur & Geban 2011). Essentially, it was observed that students with weak intrinsic motivation had low academic achievement (Uyulgan & Akkuzu, 2014). Supporting this argument, it was determined that Turkish physical education pre-service teachers had higher level of intrinsic motivation compared to their Polish peers (Ardeńska et al., 2016). Based on the results of different studies in the same culture, it is plausible that the intrinsic motivations of the participants are affected by cultural differences.

Graduate theses produced in Turkey report that employment of blended learning makes positive contributions to teacher training (Can et al., 2022). It is argued that blended learning, which creates positive effects in the field of physical education and sports teaching, is the most appropriate teaching approach,

especially for the continuity of academic success (Priambodo et al., 2020; Bozkurt & Erdogan, 2022). In addition, it is claimed that blended learning has a nature that motivates its users (Kumtepe, 2019). On the other hand, blended learning has limitations as well as its strengths (Rose & Ray, 2011). In the study, it was seen that blended learning did not cause a significant difference on the amotivation scores of the participants; however, the level of amotivation increased in the process. Similarly, it has been reported that the level of amotivation of physical education pre-service teachers increased during their education (Poteliūnienė et al., 2021). In the usage of blended learning, the main limitations are that students have to study in isolation and therefore they suffer from time management problems (Keogh et al., 2017). Due to the prolongation of the instructional intervention process, it can be argued that pre-service teachers are exposed to more limitations, and therefore their level of amotivation has increased.

The source of motivation of a university student has the possibility of affecting his/her entire life (Blašková et al., 2019). There are many variables that come into play in the formation of this potential (Schunk, 2014). Teaching approach, which is reported to affect the motivation levels of physical education and sports preservice teachers, can be shown as the main factor (Spittle & Spittle, 2014). When the current education understanding is examined, it is seen that traditional approach is far from providing a suitable and powerful motivation environment for every student (Alshammari, 2020). On the other hand, it is reported that using distance education applications alone will be inefficient, for which reason it is necessary to go beyond online approach for the sake of the future of physical education teaching (Daum & Buscher, 2014; Bozkurt & Sharma, 2020; Williams et al., 2020; Lambert et al., 2022; Rakha, 2023). In the process of the digital revolution, blended learning is increasingly adopted by higher education institutions (Calderón et al., 2020). Therefore, in order to establish a healthy connection between our traditional habits and new understandings that emerged from the search for solutions during the pandemic process, blended learning which combines the strengths of both understandings can be preferred.

It has been received a significant level of positive feedback in a study in which teachers at a university in the Riyadh region investigated their views on blended learning for deaf or hard-of-hearing students (Alsraisry et al., 2020). In the study, which revealed that blended learning is more effective than traditional classroom learning in improving student achievement, it was stated that blended learning is more flexible and accessible (Maksymchuk et al., 2023).

In the study where the effect of blended learning environment on learning process was determined by mixed meta method, it was found that blended learning is more effective on academic achievement compared to traditional education method. (Topkaya et al., 2023). The study, in which the need to stimulate student motivation in blended learning is emphasized, was carried out in the EFL classroom (Wahyuningsih & Afandi, 2023). Another study (Shurygin et al., 2024) conducted with third-year university students found that the blended learning model significantly affects self-regulation and achievement compared to the traditional approach.

Limitations

In the study, the academic motivation level of participants studying at physical education and sports teaching department were examined. This situation affected the generalizability of the results to the entire population because of the restricted nature of the sample group. Due to the quasi-experimental design, random assignment could not be made in the determination of the groups.

Despite its limitations, it is believed that the research findings will contribute to understanding the impact of blended learning on academic motivation in the training of physical education and sports teachers.

Conclusions

The purpose of this study was to examine the impact of blended learning on the academic motivation of physical education pre-service teachers. The study was conducted in 2021-2022 spring semester at a field education course which has both theoretical and practical content. In this context, the data obtained from the groups where the quasi-experimental design was applied show that blended learning affects intrinsic motivation. There was no difference in the extrinsic motivation levels due to the instructional intervention. It was observed that the mean scores of amotivation increased remarkably in the process, but there was no significant difference between the groups. According to the data obtained from the pre-test and post-test scores between the groups, it was concluded that as a result of the instructional intervention, the intrinsic



and extrinsic motivation scores of the physical education pre-service teachers studying with the traditional approach decreased, while their amotivation scores increased. Although the academic motivation levels of the participants did not differ significantly, it was also determined that the overall mean scores of the blended learning participants were higher.

Further studies can focus on the following: (1) addressing limitations; (2) conducting similar studies on a larger sample group, by increasing the number of participants or with different participants, (3) using mixed methods research in order to address the contribution of blended learning to academic motivation in physical education teacher training more comprehensively; (4) designing longitudinal research and reporting changes over time, and (5) comparative research of research results that may have been culturally obtained.

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Preserving ecological balance in the English translation of classical Chinese poetry: an eco-translatology approach

中国古诗英译中的生态平衡: 生态翻译学视角

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Abstract

Based on eco-translatology, this paper explores how to effectively preserve the ecological balance of classical Chinese poetry during the English translation process. Classical Chinese poetry, as a vital component of Chinese culture, reflects Chinese ecological concepts and the spirit of unity between man and nature. Rooted in Chinese philosophy, ecotranslatology resonates with ecological wisdom embedded in poems, sharing core similarities. However, past studies have often focused on literary and cultural transmission while neglect the ecological wisdom and poets' perceptions of natural environments and ecological balance embedded in classical poetry. Therefore, from the ecological perspective, this study employs the core translation method of eco-translatology—three-dimensional transformation (linguistic. cultural communicative dimensions), to analyze whether translators effectively convey elements such as unity between man and nature, natural philosophy, and ecological ethics. It aims to help readers understand the ecological thoughts of ancient poets and to focus on preserving the ecological balance of poetry during translation, thereby conveying its unique ecological values in another context. This paper calls for researchers to pay more attention to the inheritance and preservation of ecological wisdom when translating classical poetry and thus promotes the dissemination and sharing of ecological values in cross-cultural exchanges.

Keywords: classical chinese poetry, english translation, eco-translatology, ecological balance.

摘要

本文基于生态翻译学理论, 探讨在英译过程 中如何有效保留中国古典诗歌的生态平衡。 中国古典诗歌作为中国文化的重要组成部 分,反映了古代中国的生态观念和"天人合 一"的精神。生态翻译学根植于中国传统哲 学,与古典诗歌中的生态智慧自然契合,二 者在本质上存在共性。然而, 既往研究多偏 重于文学和文化传承,忽视了古诗所蕴含的 生态智慧及诗人对自然环境的感悟和对生态 平衡的关注。因此,本研究从古诗的生态性 角度出发,运用生态翻译学核心翻译方法三 维翻译法(语言维、文化维、交际维),深 入分析译者是否有效传译了其中蕴含的天人 合一、自然哲学和生态伦理等元素,旨在帮 助读者更全面地理解古代诗人的生态思想, 并在翻译过程中关注如何保留诗歌的生态平 衡, 使其在另一语境中依然传达独特的生态 价值观。最后,本文呼吁研究者在古诗词的 英译过程中更加关注生态智慧的传承与保 留,以促进跨文化交流中生态价值观的传播 与共享。

关键字:中国古典诗歌;英译;生态翻译学;生态平衡.

Introduction

Embedded within China's ancient cultural legacy is a rich repository of ecological insights. The profound understanding of life and nature has consistently been a central value in Chinese philosophical thought

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(Meng, 2004). Influenced by these ecological notions, poets in ancient China emphasized the symbiotic relationship between man and nature (Harte, 2023; Zhang, 2023), skillfully incorporating various elements of the ecological environment into their poetry composition. These works reveal a Chinese cultural emphasis on wholeness, balance, harmony, and coexistence, embodying profound and expansive ecological philosophical wisdom with far-reaching and rich implications.

Hence, classical Chinese poetry, a three-millennia-old poetic tradition, regarded as an essential component of Chinese cultural heritage, exhibits unique beauty in its structure, linguistic ecological connections, and artistic style (Jiang, 2018; Wei & Geng, 2022). It intricately captures the essence of "unity between men and nature" ingrained within Chinese classical culture. These literary masterpieces serve as potent vehicles for conveying ecological balance and cognitive paradigms, reinforcing the enduring notion of mutual symbiosis and prosperity between humanity and the natural world. This kind of ecological balance is deeply rooted in the creation of Chinese poetry (Lu, 2017), guiding individuals towards deeper reflections on life and nature, and awakening a sense of reverence and respect for the environment.

Eco-translatology, an original Chinese translation theory, offers "a totally novel", or "formerly nonexistent" perspective (Hu, 2020a) into translation studies, since it has its roots in ecology (Hu & Tao, 2016), a field that offers not just a longstanding philosophical perspective but also significant value through its emphasis on holism. Hu has drawn an analogy between the translation ecosystem and the natural world. According to this translation theory, humans (i.e., translators) are seen not only as integral members of society but also as components of the broader ecosystems that sustain life. This holistic approach, central to ecological wisdom, shapes our understanding of the relationship between men and nature, making it a fundamental principle (Yang et al., 2019). Drawing on ancient Chinese concepts like "unity between man and nature" and "moderation and balance", translation activities are viewed through an ecological lens, emphasizing a holistic understanding akin to natural ecosystems. It involves a thorough examination of the translation process, considering elements such as "nature," "life," "wholeness," and "harmony" (Hu, 2013). This approach examines the interconnectedness, dynamics, and equilibrium of the translation system. Furthermore, Eco-translatology emphasizes preserving ecological balance during the translation process, ensuring that the translated text aligns with broader cultural and aesthetic values. This principle underscores the importance of achieving a harmonious integration of ecology and culture through translation which impart deeper significance to cross-cultural communication endeavors.

Therefore, Eco-translatology, as an interdisciplinary approach, examines translation activities from the perspectives of ecological rationality, ecological perspective, and ecological significance (Hu, 2020a). Its philosophical roots coincide with the ecological balance found in classical Chinese poetry. In classical Chinese poetry, there are elements such as "the Doctrine of the Mean" (中庸) and "the unity between man and nature" (天人合一) (Hu, 2020b; Liu, 2022). These elements highly embody the essence of ecological balance and manifest the essence of Chinese spirit and thinking paradigm. Therefore, from the perspective of traditional Chinese culture, there is an essential commonality between classical Chinese poetry and Ecotranslatology (Chen, 2020). Both should adhere to the philosophical wisdom embodied in eco-translatology during the process of English translation. Guided by this notion, translator's task is to perceive the poetic sentiments and reproduce the poetic essence. By deeply understanding the connotations of poetry, the translator can transform its ecological wisdom into English expression and be able to convey the profound cultural implications of Chinese culture.

Over the years, research in Eco-translatology has focused on classical Chinese poetry translation (Chen, 2021). However, a common trend in previous research was to prioritize linguistic translation, with minimal attention given to the ecological concepts present within the original poems. This may have resulted in translations that failed to capture the profound ecological implications. To address this, this study places a greater emphasis on exploring the ecological aspects inherent in classical Chinese poetry and attempts to examine the natural philosophy, ecological ethics, and reverence for nature embedded within these poems. Such research aids in understanding how ancient poets expressed their perceptions of the natural environment and their concerns for ecological balance through poetry. Consequently, in the translation process, researchers can more comprehensively consider how to retain these ecological balance in English translations, ensuring that the poetry continues to convey its unique ecological values in another linguistic context.

In the following chapters, theoretical framework eco-translatology which establishes the theories on which the study is based will be elaborated on, the methodology including the selection criteria for poems and



methods for analyzing poem translation will be established in a descriptive way. Results and discussion parts will specify the major findings through three dimensions, namely, linguistic, cultural and communicative, and finally, the conclusion parts will conclude the whole in a clear and concise way.

Literature Review

In Translation as Adaptation and Selection, Hu (2003) explored in detail a translation methodology that integrates the Western "Darwinian Theory of Evolution" concepts of "adaptation/selection" with translation theory. He established a comprehensive and systematic ecological translation theory, and later formally introduced the research paradigm of "eco-translatology" (Hu & Tao, 2016). Eco-translatology's theoretical framework, grounded in ecological principles, views translation as an integral component of the cultural ecosystem. It metaphorically equates the translation process to an ecosystem, encompassing the cultural, social, and linguistic contexts of both source and target languages. This perspective emphasizes the dynamic interaction between translation activities and their environments, necessitating adaptation across diverse cultural and social landscapes (Hu, 2013). The field underscores the diversity and complexity of the global linguistic and cultural ecosystem, which advocates for respect of cultural differences while promoting cross-cultural understanding and effective communication. As explained by Hu (2013; 2020b), the defining characteristics of Eco-Translatology encompass the following fundamental principles: (1) the emphasis on holistic integrity and relevance, which underscores the interconnectedness of various translational elements within their respective ecological contexts; (2) the pursuit of dynamics and balance, advocating for a harmonious interplay between the stability and adaptability in translation practices; (3) the reflection of eco-aesthetics, which incorporates ecological values and aesthetics into the evaluation and appreciation of translation outcomes; (4) the identification of the "translation community," recognizing the collaborative nature of translation as a social endeavor involving multiple stakeholders; (5) the adherence to translation ethics, emphasizing the importance of ethical considerations in guiding translation practices and decisions; and (6) the highlighting of unity/diversity, which acknowledges the simultaneous presence of both uniformity and variation in translation, reflecting the complex and multifaceted nature of the discipline.

As Hu (2020b) states, its distinctive three-dimensional transformation which aims to comprehensively transform linguistic forms, cultural meanings, and emotional content could be used as the core strategy and methodology of translation. In the linguistic dimension, translators need to focus on the language forms (Wei, 2023) such as vocabulary choices, syntactic structures, and rhythmic patterns of the source language to ensure that the style and rhythm of the translation match those of the original text. The translator must adapt to the linguistic environment of the target language, thoroughly understand its linguistic characteristics, and be aware of the language preferences of its readers to effectively select and transform linguistic dimensions (Hu, 2013; 2020b). The transformation of the cultural dimension refers to the adaptation to the cultural background, symbolic meanings, historical allusions, and cultural customs reflected in the original text (Hu, 2013). It requires the translator not only adjusts to the linguistic nuances of the target language but also attend to the distinct differences that exist between bilingual cultures in order to ensure the effective transmission of cultural connotations and mitigate obstacles in cultural exchange (Jun, 2020). To transform communicative dimension, translators should consider the effectiveness and acceptability of the translation in the target language environment and make sure that the translation resonates with and emotionally engages target readers (Hu, 2013). The main purpose of translation is to build bridges between different languages and cultures to facilitate effective communication (Yu, 2022).

Overall, the extent of the translator's adaptability across various dimensions directly correlates with the appropriateness of their adaptive selection, and the holistic degree of adaptation and selection, which can "make target text 'survive' and 'thrive' in the translational eco-environment of target text" (Tao & Chen, 2020, p.127). Ultimately, the goal is to ensure translations convey the cultural values and emotional resonance of the original work across different cultural contexts, thereby advancing the protection and promotion of cultural diversity and ecological balance.

Among all related literature, applied research on eco-translatology holds the largest proportion and is notably interdisciplinary (Sun & Wang, 2022). This indicates that eco-translatology is highly explanatory and operable in translation practice research. These studies primarily focus on analyzing various translated texts, using the three-dimensional transformation from eco-translatology to assess the reliability and validity of translations. The text types studied are diverse, including the translations of literary works (Guo, 2021), external publicity (Xu & Zhou, 2015), film and documentary subtitles (Zhou & Zhang, 2019), public signs (Ma, 2014; Zeng, 2019), and advertising slogans (Bo, 2014). This research not only examines the

feasibility of translation methods but also provides an in-depth analysis of practical translation applications. These studies offer empirical foundations for translation research and valuable insights for the development of future translation practices and methodologies. Clearly, eco-translatology demonstrates broad applicability in interpreting different types of texts.

In the field of eco-translatology, the English translation of classical Chinese poetry has been a prominent topic of interest (Chen, 2021). Examining these translations through the lens of eco-translatology, especially in preserving ecological balance, represents a crucial direction in current research. Overall, approaching the English translation of classical Chinese poetry from an eco-translatology perspective is challenging but holds significant research value. However, existing literature reviews indicate some progress, yet unresolved issues and areas for further exploration remain. Just as Dasca & Cerarols (2024), state, the discipline of Eco-translatology is an emerging and little-worked area which deserves our attention. Past research often lacked a deep investigation into the ecological aspects of classical poetry, focusing primarily on literary and cultural transmission while neglecting the ecological balance embedded within the poems. This emphasis on linguistic translation over the ecological concepts of the original works may overlook the profound ecological insights of classical Chinese poetry, conveying only the surface-level language. Thus, future research should prioritize exploring the inherent ecological aspects of classical Chinese poetry, looking into elements such as natural philosophy, ecological ethics, and reverence for nature. Such studies can aid in understanding how ancient poets expressed their reflections on the natural environment and concerns for ecological balance through poetry. Consequently, researchers can more comprehensively consider how to preserve these ecological insights in English translations, and ensure that the poetry continues to convey its unique ecological values in a different linguistic context.

Methodology

This study uses a qualitative case study approach to analyze poetic texts, employing the core principles of eco-translatology, specifically the three-dimensional transformation, including linguistic, cultural nuances, and communicative dimensions. It examines how ecological elements are expressed and preserved in selected representative English versions of classical Chinese poems and explores how effectively these translations convey original ecological themes. The study aims to illuminate how translation practices contribute to conveying and maintaining the translated ecological environment of literary works, offering both theoretical insights and practical implications for the field of translating classical Chinese poetry.

Selection Criteria for Poems

The selection criteria for poems prioritize ecological themes, cultural and philosophical relevance, diversity in poetic styles and authors, and literary merit, as outlined:

Ecological themes

- Poems rich in clear and vivid descriptions of natural scenery, wildlife, and environmental interactions.
- Poems that reflect ecological balance and concepts like "unity between man and nature".

Cultural and philosophical relevance

- Poems that illustrate the ancient Chinese ecological philosophy and traditional ecological ethics.
- Works that express the poet's sensitivity and reverence towards nature.

Diversity in poetic styles and authors

- Inclusion of various poetic forms and styles, to ensure a comprehensive study.
- Selection of works by different poets to highlight diverse perspectives on ecological balance.

Literary merit

- Poems that are well-regarded for their literary quality and artistic expression.
- Works that have been influential in Chinese literature and have a significant impact on cultural heritage.





Methods for Analyzing Poem Translation

The analysis of selected poems is structured around the three-dimensional transformation of ecotranslatology: linguistic, cultural, and communicative dimensions. This framework ensures a holistic evaluation of how ecological elements are translated and preserved.

Linguistic dimension

The linguistic dimension attends to the precise depiction and lexical selection of ecological elements in classical poetry. Natural landscapes, climatic phenomena, and ecological environments in the original text must find accurate counterparts and expressions in the target language to preserve the poetic ambiance and intricacies. For instance, rendering "青山绿水" would involve selecting terms like "verdant mountains and clear Waters" that convey both color and scenic imagery. It is important to examine whether translators select appropriate vocabulary and sentence structures to describe ecological elements such as mountains, rivers, flora, and fauna, while maintaining the original poem's phonetic harmony and rhythmic cadence.

Cultural dimension

The cultural dimension focuses on the symbolic significance and aesthetic value of ecological elements within culture. Natural scenes in classical Chinese poetry not only depict objective existence but often carry profound cultural connotations and emotional symbolism, which should be reflected in translations. For instance, in Chinese culture, "松柏" (pine and cypress) symbolize resilience and longevity. Such symbolic meanings should be conveyed in English translations through cultural explanations or annotations, enabling target readers to understand the cultural connotations behind them. Thus, attention should be paid to whether translators comprehend and convey the cultural background and symbolic meanings of ecological elements in these poems.

Communicative dimension

The communicative dimension focuses on the reception of translations in the target language environment and the emotional resonance of ecological elements. Ecological elements in classical Chinese poetry are often closely tied to the poet's emotions, and translations should evoke similar emotional resonance among target readers. For example, when describing "春风又绿江南岸," translators should find words that convey the warmth and vitality of spring, such as "spring breeze once again greens the southern shores," to create a vibrant and natural scenery of spring in the text. When analyzing the poems, it is vital to see whether translators consider the ecological sensitivities and aesthetic preferences of target readers to ensure that ecological elements in the translation resonate with them.

Results and Discussion

Through textual analysis, it can be observed that the three-dimensional transformation comprehensively considers the linguistic, cultural, and communicative functions in the practice of translating classical Chinese poetry into English. This approach ensures that translations are not only linguistically accurate and fluent but also convey the ecological beauty and cultural significance of the original poetry, evoking emotional resonance among target readers. Some examples of English translations of classical Chinese poetry will be examined below from three dimensions to underscore the significance of preserving ecological balance in literary translation.

On linguistic dimension

Here are the two versions of Wang Wei's < 應柴 > (Deer Enclosure) "空山不见人,但闻人语响" (kōng shān bú jiàn rén ,dàn wén rén yǔ xiǎng).

Version One:

I see no one in mountains deep,

But hear a voice in the ravine. (Xu, 2000, p.56)

Version Two:

Deep in the mountain wilderness,



Where nobody ever comes, Only once in a great while, Something like the sound of a far off voice. (Rexroth, 1970, p.176)

Eco-translatology posits that translation is an adaptive and selective activity in the translational eco-environment (Hu, 2013). Xu (2000) translates "空山" as "mountains deep," which accurately captures the original poem's imagery. The term "mountains" indicates tall peaks, emphasizing their height and depth, which conveys the expansive and serene feeling of "空山." For "不见人," the translator uses "see no one" and adds the subject "I," making the translation more vivid and concrete. This choice allows readers to follow the poet's perspective and experience the solitude of the deep mountains. Furthermore, "ravine" in "但闻人语响" preserves the poem's mysterious tone by leaving the source of the voice ambiguous, aligning with the original's sense of solitude and introspection. Xu's translation achieves a rhythmic quality through rhyming pairs and maintains clarity and conciseness, respecting the poem's aesthetic integrity (Hu, 2013).

In contrast, Rexroth (1970) translates "空山" as "mountain wilderness." Although "wilderness" conveys a sense of desolation, it strays from the tranquil and serene nature of "空山," making it seem excessive and inaccurate. For "不见人," he uses "Where nobody ever comes," which involves a lot of subjective interpretation and diverges significantly from the original meaning. This translation lacks an objective description. Lastly, "但闻人语响" is translated as "Only once in a great while, something like the sound of a far-off voice," which introduces uncertainty with the word "like" and disrupts the poem's clarity and simplicity. Rexroth's translation, while descriptive, sacrifices the original's rhythmic structure and aesthetic coherence as denoted in the theory (Hu, 2013; 2020b).

In conclusion, analyzing the poetry translations through the lens of linguistic dimension underscores the importance of fidelity to the original's linguistic nuances and aesthetic qualities. Xu's translation aligns closely with the principles of ecological balance in translation, which preserves the poem's imagery and rhythm. Rexroth's translation, while descriptive, illustrates the challenges of balancing descriptive detail with fidelity to the poem's original linguistic and aesthetic integrity. This analysis highlights the critical role of the linguistic dimension in maintaining the ecological balance and cultural resonance of translated poetry, emphasizing the ecological wisdom embedded in classical Chinese poetic traditions (Chen, 2021; Wei & Geng, 2022).

On cultural dimention

Here is the translation of the line "烟花三月下扬州" (yān huā sān yuè xià Yángzhōu) from Li Bai's poem <送孟浩然之广陵>(Seeing Meng Haoran Off to Yangzhou in the Blossoming March):

"The smoke-flowers are blurred over the river". (Ezra, 2003, p.199)

Countless classical Chinese poems praise Yangzhou City, but this line is arguably the most famous, making Yangzhou's beauty widely known. The line features the cultural imagery of "烟花三月" (yān huā sān yuè). As an important cultural imagery in the original poem, "烟花" does not refer to actual fireworks, but rather uses the scenery to express the splendor of spring. From an ecological perspective, the phrase "烟花三月" cleverly integrates natural landscapes with human emotions. The character "烟" can be seen as an adjective modifying "花". Imagine in the misty rain, with willows fluffy catkins fluttering in the wind and flowers blooming in clusters—what a fresh, elegant, and vibrant scene of spring! This imagery merges the natural world with the poet's emotions, reflecting the classical Chinese literary tradition's ecological concept of unity between humanity and nature (Meng, 2004; Zhang, 2023).

Ezra's (2003) translation of "烟花" as "smoke-flowers" aims to evoke the fleeting and sorrowful nature of farewell, which is akin to the transient beauty of fireworks. While the translation indeed creates a hazy beauty, this literal translation fails to fully convey the ecological and cultural connotations of this imagery in the original poem. It focuses more on emotional expression rather than the fusion of natural scenery and emotions in spring. As noted in previous eco-translatology studies (Hu, 2013; Hu & Tao, 2016), translations should strive to maintain fidelity to both the linguistic and cultural dimensions of the original text to ensure ecological balance and resonance across languages. It is evident that Pond's translation has flaws, lacking in effectively conveying the ecological elements and cultural imagery. It does not enable readers of the



target language to fully grasp the world of meaning depicted in the original work, failing to achieve consistency between the source and target language ecologies.

In conclusion, while Ezra's translation effectively conveys emotional resonance, it falls short in fully conveying the ecological and cultural richness of Li Bai's original imagery. Scholars like Chen (2020) argue that translating cultural metaphors requires not only linguistic fidelity but also an understanding of their cultural significance. Therefore, it is notable that translators should attach great importance to the cultural sensitivity and ecological fidelity in translating classical Chinese poetry and ensure that the poetry's profound cultural and ecological messages resonate authentically in the target language (Jiang, 2018; Wei & Geng, 2022).

On communicative dimensión

Look at the translation of the line "思君如满月,夜夜减清辉" (sī jūn rú mǎn yuè, yè yè jiǎn qīng huī) from Zhang Jiuling's <赋得自君之出矣> (Ever Since You Left):

"For thinking of you, I am like the moon at the full, that nightly wanes and loses its bright splendor" (Kotewall & Smith, 1962, p. 59).

In the original poem, the faithful woman thinks of her husband every night, longing for the day they will reunite as she gazes at the full moon with hopeful anticipation. Kotewall & Smith (1962) keeps the poem's metaphorical style intact with phrases like "I am like the moon at the full," which can maintain the moon imagery despite cultural differences. This approach retains the poem's simple yet deeply touching emotion. The line "夜夜減清辉" vividly captures her restless thoughts, likening them to the moon gradually losing its brightness. This mirrors her physical and emotional decline due to longing. The word "減" perfectly conveys this feeling, and the translator's "that nightly wanes" not only describes the moon's fading light but also the woman's diminishing beauty from yearning, fitting well with "loses its bright splendor." This creates a powerful and imaginative image. Notably, this translation integrates human emotions with natural scenery, embodying the ecological concept of unity between man and nature (Chen, 2020).

The translation preserves this ecological element, using "full moon" and "nightly waning" to convey the emotional symbolism of the moon's changes and fading, suggesting a symbiotic relationship between humans and nature. This translation not only remains faithful to the cultural and ecological context of the original poem but also enables readers to appreciate the profound connotation of unity between heaven and humanity. It allows readers in the target language to understand the beauty of a different culture and share the same emotional depth as the original readers (Hu, 2013). Thus, the translation shows a skillful adaptation and faithful representation of the original poem.

As Yu (2022) states, the main goal of translation is to bridge different languages and cultures, and to facilitate smooth communication. This translation fosters a shared understanding of the interconnectedness between the human experience and the natural world. Therefore, translators should not only attempt to convey the poem's profound emotional depth but also promote cultural empathy, encouraging readers from diverse backgrounds to appreciate the ecological wisdom and emotional resonance embedded in the original work.

Conclusions

This study examines the ecological aspects of Chinese classical poetry, utilizing core principles of ecotranslatology to analyze whether translators effectively convey the natural philosophy and ecological ethics embedded in the original poems. The aim is to help readers gain a deeper understanding of ancient poets' ecological thoughts and to ensure that the ecological balance of the poetry is preserved in translation, thereby maintaining its unique ecological values in a different linguistic context. As Yang et al. (2019) mentioned, ecological wisdom is distinctly practical integrates science, technology, management, and culture and, hence, goes beyond the philosophical level. Therefore, integrating this into the translation principle, can ensure that translations not only retain the poetic beauty but also the embedded ecological wisdom to foster a holistic appreciation of the original texts.

Overall, Chinese literary translators should adopt an ecological perspective when translating Chinese cultural works. This perspective views translation as an integrated and harmonious system, recognizing the

diversity within the global language and cultural ecosystem. Seeking common ground while preserving differences is the optimal approach. Translators should have a clear and objective understanding of the current state and future development trends of Chinese translation theory and cultural translation practices. They should strive to discover more targeted translation methods and principles, aiming to create more refined and exquisite translations. As the Chinese language gains global prominence as a communication tool, traditional poetry education is poised for reappraisal and integration into international language instruction and cultural exchange endeavors, as highlighted by Wei and Geng (2022). To maintain vitality and relevance on a global scale, Chinese cultural classics need dedicated transmission across generations. Therefore, translators shoulder a responsibility to integrate outstanding Chinese traditional culture into the global cultural framework, enriching and harmonizing the global language and cultural ecosystem. This effort aims to achieve a harmonious and ideal translation ecology within the broader environmental context.

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Destilador solar innovador para la producción sostenible de esencias cítricas

Innovative solar distiller for sustainable production of citrus essences

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Resumen

Los destiladores tienen diversas aplicaciones, entre ellas la producción de esencias naturales. El alto coste y el impacto medioambiental de los métodos tradicionales de extracción hacen necesario el desarrollo de alternativas sostenibles. En este trabajo se presenta el diseño y la construcción de un destilador solar combinado que utiliza energía solar concentrada como fuente primaria y energía fotovoltaica como fuente secundaria para la producción de esencias naturales de cítricos. El destilador incorpora un concentrador de disco parabólico y un sistema de estabilización de temperatura. Las pruebas experimentales demuestran que el destilador solar alcanza las temperaturas requeridas para la destilación en menos tiempo y aumenta la producción de esencias en comparación con los métodos convencionales. Estos resultados ponen de relieve el potencial de este enfoque sostenible para la producción de esencias naturales.

Palabras clave: Destilación, concentración solar, esencias naturales, destilación solar, energía fotovoltaica.

Abstract

Distillers have various applications, including the production of natural essences. The high cost and environmental impact of traditional extraction methods necessitate the development of sustainable alternatives. This paper presents the design and construction of a combined solar distiller that utilizes concentrated solar energy as the primary source and photovoltaic energy as a secondary source for the production of natural citrus essences. The distiller incorporates a parabolic dish concentrator and a temperature stabilization system. Experimental tests demonstrate that the solar distiller achieves the required temperatures for distillation in less time and increases essence production compared to conventional methods. These results highlight the potential of this sustainable approach for producing natural essences.

Keywords: Distillation, solar concentration, natural essences, solar distillation, photovoltaic energy.

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Introducción

Las esencias naturales son líquidos volátiles destilados y obtenidos de semillas, cáscaras, pétalos, hojas, tallo, troncos y raíces de plantas, frutas, vegetales y flores, una de las características principales es que siempre contienen una molécula definida. Algunas de las más utilizadas son extraídas de los cítricos (naranja, limón, mandarina, toronja lima y pomelo (Ambuludi, 2014).

La destilación es una técnica utilizada en la separación de sustancias volátiles miscibles entre sí con puntos de ebullición diferenciados (Cedeño et al., 2019). dependiendo del tipo de muestra y de analito a purificar, esta técnica basa su eficacia de separación en las diferencias de presiones de vapor de dos o más sustancias en solución y consiste en ebullir la sustancia más volátil y recondensarla (Íñiguez, 2010).

No existe una fecha exacta para determinar cuándo se comenzaron a utilizar, sin embargo, desde los egipcios y árabes utilizaron esencias naturales como antinflamatorios, analgésicos y desinfectantes, además como remedios naturales contra dolores musculares, reumatismo, resfriados, dolores estomacales, de cabeza y dentales, enfermedades de la piel, ojos y oídos e incluso existen evidencias que llegaron a utilizar algunas mezclas de esencias naturales como anestesia para operaciones quirúrgicas. En China alrededor del año 800 a. C. la técnica de destilación se usaba para obtener alcoholes procedentes del arroz y los árabes fueron los primeros responsables en obtener perfumes a partir de la destilación de frutas y flores, así como triturados minerales para obtener maquillajes utilizados como pintura para los ojos de las mujeres del harén. En la Edad Media la destilación se practicaba en los monasterios y los alcoholes que se obtenían se utilizaban con un fin terapéutico (Grande Verdugo & Ortiz Blanco, 2019).

Actualmente se han diversificado los usos y aplicaciones de las esencias naturales, desde formar parte activa de medicamentos y darles olor y sabor a jarabes, emulsiones, pomadas y tabletas. En el sector alimenticio se utilizan para intensificar el olor y sabor de productos envasados, empaquetados o enlatados. En las bebidas tanto alcohólicas como no alcohólicas se ha tenido un aumento vertiginoso, además de tener una tendencia hacia lo natural y orgánico, impulsado su producción. De igual forma en varias industrias como perfumería, cosméticos y productos del cuidado personal existe una gran tendencia a la utilización de sustancias naturales debido a que tienen menores efectos secundarios negativos (Munir et al., 2014).

La producción de esencias naturales tiene dos grandes limitantes, lo que provoca que los costos de producción se eleven; primeramente, se necesita de una gran cantidad de materia prima para producir unos cuantos mililitros de esencia natural y el proceso de producción es muy lento además de utilizar gas butano lo que provoca un gran consumo de combustible. para reducir los costos se han implementado alternativas de combustibles (madera, carbón, neumáticos, basura) sin embargo esto provoca la contaminación de las esencias naturales obteniendo un grado de pureza insuficiente para la mayoría de las aplicaciones, además de producir más contaminantes al medio ambiente (Ambuludi, 2014).

No es posible ofrecer una solución a la primera limitación ya que por naturaleza las esencias naturales se encuentran en cantidades muy pequeñas en comparación con la masa total que se utiliza como materia prima, por lo cual nos centramos en presentar una solución viable para la segunda limitante mediante la sustitución del gas butano por una energía renovable. Como solución alternativa se presenta un destilador solar combinado y automatizado, capaz de obtener esencias naturales utilizando energía solar, además el destilador tiene un subsistema para sufragar las pérdidas de temperatura debidas a nubosidad o algún otro factor climatológico.

Este artículo presenta una descripción de los destiladores solares, así como sus aplicaciones en la destilación, en segundo lugar, se describe la metodología empleada en el escrito específicamente Jenkins, en tercer lugar, se describe detalladamente el problema y una solución alternativa a través del diseño de un destilador solar. Seguidamente, se presentan los hallazgos de la prueba del sistema sugerido, Por último, se presentan los resultados y conclusiones, donde se encuentran las principales contribuciones de esta investigación.

Revisión de Literatura

La destilación solar es un proceso complejo debido a la variabilidad de la fuente de energía debido a múltiples factores climatológicos, así como a las diferentes transformaciones energéticas que ocurren



durante el proceso, que incluyen evaporación, condensación, decantación, enfriamiento, transferencia de calor por contacto, conducción y convección. Por lo tanto, existe una pérdida de calor y volumen como resultado de la evaporación, condensación, decanta, enfriamiento, transferencia de calor por contacto, conducción y convección, por lo tanto, existe una carrera entre los diferentes modelos que se presentan en la literatura por presentar mejores resultados de producción en volumen, en la reducción de tiempos e incluso en el costo y tamaño de los destiladores solares.

Se realizó la búsqueda del estado del arte para poder revisar los avances en este campo; encontrando destiladores de tipo caja donde en su interior se replica el efecto invernadero; tienen un recubierta de material reflejante en el cual los rayos solares pueden entrar al interior del receptáculo, pero por el material de la cubierta ya no pueden volver a salir, existen varios modelos de este tipo, un ejemplo lo encontramos en la Figura 1 (Marchesi et al., 2009).



Figura 1. Destilador solar para potabilización de agua.

Encontramos destiladores solares de tipo caja con acumulación de energía, los cuales consisten en un módulo destilador con una superficie de batea de 1 m² y con cubierta asimétrica desmontable de vidrio. Estos destiladores permiten una única orientación para su operación, de esta forma la radiación solar ingresará al destilador por la placa de vidrio principal (Terrés et al., 2008) tienen en su parte inferior un tanque acumulador de acero inoxidable. Véase Figura 2 (Fasulo et al., 2008).



Figura 2. Destilador con acumulador de energía.

Se analizo una estufa solar capaz de reflejar la energía solar mediante 450 espejos en un punto focal donde se cocinaron 4.5 *kilogramos d*e carne de oveja en un tiempo de 3 horas y 25 minutos con lo cual podemos sustentar que mediante un sistema parabólico de concentración solar se pueden alcanzar las temperaturas suficientes para la destilación, como se ilustra en la Figura 3 (Olivares, 2009).





Figura 3. Estufa solar.

Existen varios modelos de estufas o concentradores solares y todos operan bajo el mismo concepto: reflejar una cantidad de iluminación captada por el área total del concentrador en un punto focal donde esa energía luminosa se transforma en energía calorífica.

En estos diseños se busca mejorar las relaciones de transferencia de calor al tomar en cuenta todos los parámetros, condiciones ambientales y configuraciones geométricas posibles. la tendencia actual es el diseño de procesos reales sustentables, viables técnica y económicamente (Torchia-Núñez et al., 2010).

Los concentradores esféricos se diferencian en que su superficie colectora es la mitad de un cilindro, teniendo como principal aplicación la producción de vapor. Debido a la concavidad de su geometría, en el foco se coloca un conducto por donde pasa un fluido como aceite o salmuera. Dependiendo de la longitud de exposición, el área de captación solar y la irradiancia, el líquido se calienta por encima del punto de ebullición. Una vez caliente, el fluido pasa a una caldera donde calienta agua y la convierte en vapor como se ilustra en la Figura 4 (Portela, 2018).



Figura 4. Concentrador cilíndrico.

En los concentradores parabólicos se dirigen los rayos solares en un punto mediante procedimientos ópticos, la radiación solar que entra a un concentrador a través de una superficie determinada es reflejada, para luego ser transformada en energía térmica (Máximo et al., 2020). La ventaja de este tipo de concentradores es la reducción de la pérdida térmica en el receptor, pues al ser éste de menor superficie habrá menos área para la radiación de calor. Los rayos solares se concentran mediante espejos y geometrías parabólicas como se observa en la Figura 5 (Servín et al., 2015).



Figura 5. Concentrador parabólico.

Metodología

Se implementó una metodología sistémica, para cumplir con los objetivos planteados para el desarrollo de un producto mínimo viable de un destilador solar combinado con estabilización de temperatura (Ossa, 2004) como se muestra en la Figura 6.



Figura 6. Metodología sistémica de Jenkins.

1. Análisis del sistema (Identificación del problema)

El proceso de extracción de aceites esenciales se llama destilación y para realizarlo se necesita de calor producido por la combustión de gas butano, es decir, entre más aceite esencial se desee producir, más se incrementará el gasto de este hidrocarburo. por lo tanto, la producción de aceites esenciales y su precio dependen de la oferta y demanda del gas butano.

Con otros métodos de destilación el precio de los aceites es aún más elevado, debido a que es necesario llevar a cabo varios procesos químicos mediante el uso de numerosos reactivos químicos, lo que supone un aumento del costo de producción y contaminación del medio ambiente, además de utilizar maquinaria especializada. En resumen, al producir aceites esenciales siempre se producen contaminantes. Por ello es necesario buscar alternativas para producir aceites esenciales sin dañar el medio ambiente.

Una posible solución la encontramos en la destilación solar, sin embargo, este proceso es sumamente inestable debido a la naturaleza periódica de la fuente de radiación y la baja eficiencia de los sistemas concentradores y/o reflectores de la radiación, además de que se presentan procesos simultáneos que es necesario controlarlos como; evaporación, condensación y transferencia de calor (Torchia-Núñez et al., 2010).

2. Diseño del sistema

Se diseñó y construyo un destilador combinado activado por concentración de energía solar como fuente principal y fotovoltaica como fuente secundaria. De concentrador se utiliza un plato parabólico con acabado



reflejante, automatizado para la producción de esencias naturales de cítricos capaz de reducir las variaciones de temperatura.

Se realizó el diseño del destilador solar combinado mediante un software de alto nivel de diseño mecánico(pro-engenier) usando las normas internacionales American Society of Agricultural Engineers (ASAE) S580 y BUREAU Indian Estandrs (BIS) que establecen parámetros y modelos matemáticos para evaluar la potencia y la eficiencia térmica de los concentradores solares, (García Rubio et al., 2019) además de establecer estándares para ejecutar diferentes pruebas experimentales; se muestra el diseño del decantador con medidas estándares de laboratorio en la Figura 7, donde se realiza la separación del aceite esencial y los hidro-latos producidos.

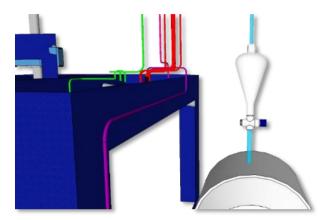


Figura 7. Decantador.

También se aprecia el tanque de almacenamiento y el tanque de alimentación de agua; ambos con capacidad de 4 litros en la Figura 8.

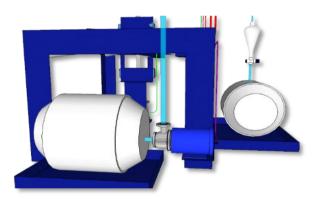


Figura 8. Depósitos.

La vista superior del plato parabólico con un diámetro de 1.45 metros con los cuatro sensores ópticos que se encargan de detectar el movimiento del sol en la Figura 9.

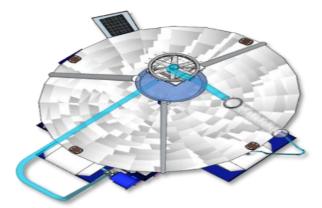


Figura 9. Vista superior.

Después de la simulación del destilador en 3D en el software se obtuvieron los planos con medidas y en la Figura 10 se muestra la vista lateral derecha del destilador con una altura total de 2.30 metros; donde se observa el plato parabólico de concentración solar, el sistema de destilación y el sistema de transmisión de movimiento.

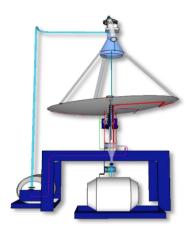


Figura 10. Vista lateral derecha.

En la Figura 11 se muestra el isométrico del destilador solar observando la estructura de soporte con un ancho de 1.20 metros y el sistema de control con medidas de 0.20 metros de ancho y 0.30 metros de largo.



Figura 11. Vista Isométrica.

En la Figura 12 se observa el sistema de destilación, el cual es colocado donde incide el punto focal del plato parabólico conectado con la columna de refrigeración.





Figura 12. Columna de destilación.

Se desarrollo la programación mediante la plataforma de Arduino para poder detectar el movimiento del sol por medio de 4 sensores ópticos y poder controlar los motorreductores de 1.8 rpm a 9 volt, capacidad de 12 Kg. Estos motores acoplados a la transmisión mecánica (tornillo sin fin corona) y la estructura de soporte proporcionan un movimiento rotacional de 180 grados y uno azimutal de 90 grados para la orientación del concentrador (Ramirez Gil, 2021).

3. Implementación del sistema.

Se eligió el material de acuerdo con el cálculo y diseño, se midió y corto de acuerdo con las medidas de los planos, se unieron las piezas mediante soldadura eléctrica y/o mecánicamente, finalmente se alienaron las piezas y se pintaron como se muestra en la Figura 13 a y b.



Figura 13(a). Transmisión mecánica.



Figura 13(b). Aplicación de pintura.

En seguida se acoplo el sistema de transmisión de movimiento, se conectaron los motores, se instaló del sistema de destilación y el sistema de control (Calderon et al., 2018). Posteriormente se instaló el sistema combinado mediante el calentador eléctrico tubular, un sistema de 4 paneles fotovoltaicos y un sistema de dos baterías de gel con su sistema de regulación de voltaje como se ilustra en la Figura 14.



Figura 14. Construcción del destilador solar.

Con el calentador tubular dentro del depósito cuando el sensor detecte la reducción de temperatura, entonces este calentador eléctrico compensara la temperatura.

A continuación, se muestran las características del segundo sistema que se combina con el de concentración solar:

Características del panel fotovoltaico: potencia máxima de 60w, voltaje en circuito abierto de 22 v, Voltaje en el punto de máxima potencia de 18 v, Corriente en el punto de máxima potencia de 3.33 A, medidas de 625mm por 835 mm y peso de 2 Kg.

Características del regulador de voltaje: Controlador de Carga Solar 1pc, 100A 60A 30A, regulador Inteligente de Panel Solar 12V/24V Con Pantalla LCD Ajustable, Puerto USB dual, temporizador de Parámetro Automático

Características de la batería de gel: Tensión Nominal de 12,8 V, capacidad Nominal de 100Ah, energía de1440Wh, vida útil del ciclo mayor a 4000 ciclos, voltaje de carga de 14,6 ± 0,2 V, corriente del cargador de 20A, corriente máxima de carga: 50A, corriente de descarga: 20A, dimensiones (largo/ancho/alto): 380x210x265mm, peso: 27,5 kg.

Características del calentador eléctrico: potencia de 250w, calentador de inmersión automático de acero inoxidable. Voltaje: 24V 60HZ. Acero inoxidable + plástico PP. Este calentador debe tener al menos 5 cm de distancia entre el dispositivo con respecto de la superficie y el fondo del depósito.

4. Operación y apreciación retrospectiva del sistema

Se presenta el sistema mediante el funcionamiento bajo condiciones reales de proceso y obtención de resultados, en la Figura 15 se observa el funcionamiento del destilador solar combinado bajo condiciones normales de trabajo.





Figura 15. Pruebas de funcionamiento.

Instrumentación utilizada en las pruebas experimentales (Radwan et al., 2020) Equipo: piranómetro hukseflux, 4 termómetros digitales, 4 termopares tipo K. de doble canal -HI935002, 1 luxómetro, 1 multímetro digital.

Herramientas varias (Desarmador de cruz y plano, pinzas: eléctricas, mecánicas, nivel de mano, regleta, escuadra).

Materiales de laboratorio (Matraz de fondo plano, mechero, pipeta, probeta, malla corchos, termómetro de vidrio, columna de destilación, bomba de agua, mangueras térmicas, pinzas de soporte, decantador).

Parámetros del lugar dende se realizaron las pruebas (Ixtapaluca, Estado de México): altura: 2,407 metros sobre el nivel del mar, latitud: 19° 31' 55" N, longitud: -98° 88' 28" W, inicio de la prueba: 11:00 horas de tiempo oficial = 9 horas, 43 minutos, 21 segundos tiempo solar, temperatura ambiente al inicio: 22.1°C.

Se realizaron las mediciones con el luxómetro como se muestran en la Tabla 1.

Tabla 1. *Tabla de cantidad de Iluminación*

Hora del día	Temperatura ambiente	Cantidad de Iluminación
11:00	21.3°C	750 lux
11:20	21.4°C	940 lux
11:40	21.6°C	860 lux
12:00	21.8°C	780 lux
12:20	22.1°C	890 lux
12:40	22.2°C	720 lux
13:00	22.5°C	790 lux
13:20	22.7°C	920 lux
13:40	22.6°C	750 lux
14:00	22.7 C	870 lux

En la tabla anterior se observan las cantidades de iluminación medidas con el luxómetro a un costado del concentrador solar parabólico comprobando los rangos teóricos que se pueden alcanzar con la irradiación solar directa.

Para conocer la radiación total reflejada por el plato parabólico es necesario conocer la radiación instantánea por unidad de área que alcanza una superficie horizontal tomando en cuenta el ángulo sólido entre la tierra y el sol, y la variación cenital a lo largo del día.

Para calcular la reflexión teórica del plato parabólico primero se calcula el área del plato parabólico de la siguiente forma:

Con la fórmula 1 representamos el área lateral de un paraboloide:



$$A = \iint \sqrt{1 + [Fx(x,y)]^2 + [Fy(x,y)]^2} \ dA \dots 1$$

Se obtienen las derivadas parciales y se sustituyen, posteriormente se factoriza el polinomio dentro de la raíz cuadrada, obteniendo la fórmula 2

$$A = \iint \sqrt{1 + 4(x^2 + y^2)} \, dA_{\dots, 2}$$

Transformando las coordenadas polares con las siguientes sustituciones:

 $(x = rcos\theta, y = rsen\theta, x^2+y^2=r^2, dA = rdrd\theta)$ con los siguientes intervalos: $0 \le r \le 1.45$ m y $0 \le \theta \le 2\pi$ obtenemos la fórmula 3:

$$A = \int_0^{2\pi} \int_0^{1.45} \sqrt{1 + 4r^2} \ r dr d\theta \dots$$

Resolviendo por cambio de variable e integrando se obtiene la fórmula 4:

$$A = \frac{1}{12} \left[\left(\frac{\sqrt{941}}{10} \right)^3 - \sqrt{1} \right] [\theta]_0^{2\pi} \dots 4$$

Evaluando los límites de la integral obtenemos el área lateral del paraboloide de 14.590 m² para el área total multiplicamos por dos y obtenemos 29.18 m².

Una vez obtenida el área del paraboloide procedemos a calcular la cantidad de luz solar que alcanza el suelo, tomando en cuenta la órbita elíptica de la tierra, como su atmosfera, indicando el número del día del año en que se realizó el procedimiento; conocido como fecha juliana. Por lo cual se utiliza la fórmula 5:

$$E \, ext = ESC \left(1 + 0.034 \cos \left(\frac{2\pi (J \, dl - 2)}{365} \right) \right)$$

Donde:

Eext = cantidad de luz solar que alcanza el suelo

ESC= constante de iluminación solar de 298 klux

Jd= número del día de año (utilizamos el día 156, que fue cuando iniciamos las pruebas, es decir el 4 de junio del 2023

Sustituyendo los datos en la formula y calculando obtenemos:

 $Eext = 308.121x10^3 lux/m2$

Calculamos el factor de corrección con la fórmula

$$End = (Eext)(e^{-cm})$$
....6

Donde:

Eext= cantidad de luz que alcanza la superficie del planeta

End= factor de corrección de la cantidad de luz que

C = coeficiente de extinción atmosférica de 0.000028 correspondiente a la región de Norte América en la cual nos localizamos.

m = masa óptica relativa del aire de 1,367 w/m²

Sustituyendo y calculando obtenemos:

$$Edn = 296,550.365 \, \frac{\text{lux}}{\text{m}^2}$$





Por lo tanto, en una superficie de 1 metro cuadrado se obtienen 296,550.365 lux provenientes del sol y con el dato del cálculo del área total del plato parabólico, calculamos la cantidad de iluminación que es capaz de captar el plato en forma de paraboloide igualando a "x", obteniendo 8,653,636.201 lux.

Dividiendo el dato anterior entre el numero promedio de la cantidad iluminación real medida en la tabla 1 podemos entonces determinar que aproximadamente el plato parabólico diseñado y calculado es capaz de concentrar 10,000 veces la cantidad de iluminación que puede medir el luxómetro en un punto en particular expuesto a la irradiación directa justo a un metro por encima del suelo y en condiciones geográficas antes descritas. Con estos datos podemos argumentar teóricamente la transformación de la energía luminosa en energía calorífica mediante la concentración del plato parabólico referente en el punto focal.

Para las pruebas reales se utilizó agua potable en las pruebas con el destilador convencional, el destilador solar simple y el destilador solar combinado. Los días de prueba no se escogieron tomando en cuenta pronósticos climatológicos con el objetivo de que las pruebas fueran con clima completamente al azar y los resultados fueran lo más objetivos posibles. las esencias naturales de los cítricos se encuentran entre las más utilizadas para proporcionar olor y sabor a medicinas, alimentos, bebidas, maquillajes, productos de limpieza etc.; por lo cual se eligió la naranja como producto de esencia a obtener y como materia prima para todas las pruebas de este experimento. Además, México es uno de los principales exportadores de cítricos y son algunos de los frutos más abundantes y económicos del país. Se utilizaron diferentes variedades de naranja las cuales pueden diferir en dulzura, acidez, tamaño, grosor de cascara, numero promedio de semillas por fruto, cantidad de jugo, nivel de madurez, color y sabor lo que puede provocar pequeñas diferencias en las cantidades de esencia natural obtenida. Si se comparan las producciones de esencia de naranja en cantidades industriales la se alcanza la superficie del planeta.

Resultados y Discusión

La destilación solar pertenece al estudio de los sistemas de energías renovables, los cuales en general no han logrado superar a los sistemas convencionales que utilizan derivados del petróleo o materiales nucleares al grado de sustituirlos o desaparecerlos. Una de las principales razones es la baja eficiencia energética con respecto de su costo y del espacio que utilizan, por lo tanto es necesario rediseñar sistemas y/o procesos en los cuales mediante la fusión de dos o más sistemas de energías renovables se pueda competir contra los sistemas tradicionales que utilizan hidrocarburos y precisamente esa es la principal aportación del presente trabajo presentar un destilador solar que funciona la concentración de energía solar mediante un sistema óptico y un sistema de almacenaje de energía mediante baterías y paneles fotovoltaicos que al menos pueda competir o superar un sistema básico de destilación que utiliza gas butano, sin lugar a duda la automatización de los sistemas de energías renovables es imprescindible para el aumento de eficiencia de estos y lo comprobamos en los resultados que se presentan a continuación mediante las gráficas registradas.

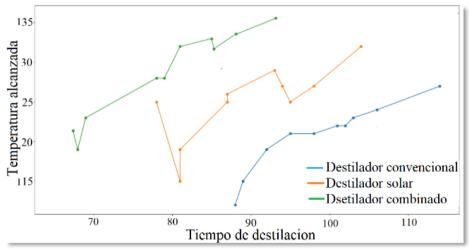


Figura 16. Temperaturas alcanzadas por los tres destiladores.

En la gráfica de la Figura 16 se comparan los tres destiladores: destilador convencional de laboratorio de gas butano, destilador simple de concentración solar mediante plato parabólico y destilador combinado de concentración parabólica con un sistema térmico en el interior del depósito de destilación alimentado por

baterías cargadas con paneles fotovoltaicos, las pruebas se realizaron con las mismas cantidades de materia prima y agua. Observamos que los tiempos necesarios para llevar a cabo el proceso de destilación son entre 10 y 15 minutos menores en el destilador combinado en comparación con el destilador simple y entre 10 y 20 minutos menores en comparación con los tiempos de producción de un destilador tradicional de laboratorio utilizando gas butano. En el destilador solar de concentración parabólica podemos observar que los cambios de temperatura son más frecuentes y además de que las variaciones de temperatura son mayores y pueden oscilar entre los 10 y 40°C, dependiendo completamente de la variación de la fuente de radiación solar interferida por los lapsos de nubosidad, esta característica provoca que el proceso de destilación sea interrumpido provocando tiempos mayores de producción y cantidades menores de aceite esencial obtenido en comparación con tiempos de producción similares pero con periodos completamente soleados. En el destilador combinado podemos observar que las variaciones de temperatura son menores comparado con el destilador de concentración parabólica por lo cual podemos considerar que el sistema de calentamiento con el sistema cargado de baterías con los paneles fotovoltaicos cumple con el objetivo de compensar las pérdidas de temperatura debido a efectos climatológicos adversos. Aun con el sistema para estabilizar la temperatura es imposible eliminar por completo las variaciones de temperatura debido al tiempo de rección del sistema, dependiendo del nivel de carga de las baterías y del tiempo que necesita la diferencia de producción por utilizar diferentes variedades de naranja suele ser despreciable, sin embargo, en pruebas de producción experimentales si se pueden apreciar las diferencias en las cantidades de esencia natural obtenida.

La temperatura del depósito tiene más puntos de inflexión debido a que depende de los cambios de la concentración de irradiación solar y de los cambios de temperatura del fluido provocados por el sistema de calentamiento interno, por lo tanto, tenemos menos puntos de inflexión en la temperatura del fluido debido al sistema de compensación de temperatura y cuando detecta disminución de la temperatura (de 2 °C a 5 °C) el sistema secundario de inmediato comienza a tratar de corregir la temperatura.

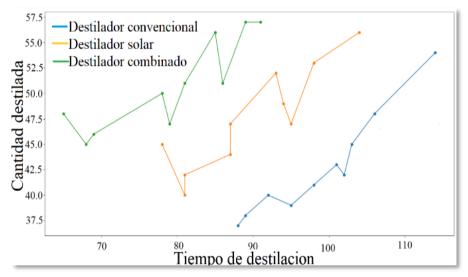


Figura 17. Comparación de la producción.

En la gráfica de la Figura 17 se compara un destilador de laboratorio convencional trabajando con mechero de gas butano, un destilador de concentración solar con reflejante de tipo parabólico y un destilador solar combinado es decir un destilador de concentración solar con reflejante de tipo parabólico sumando el sistema de calentamiento eléctrico mediante sistema fotovoltaico con calentador de tipo tubular; interno en el depósito de destilación, se comparó los tres destiladores durante un periodo de 10 días consecutivos en condiciones iguales de reactivos, en la cual notamos que el tiempo necesario para la destilación es 15 minutos menor en el destilador solar combinado en comparación con el destilador solar simple y 25 minutos menor en comparación con el destilador tradicional que utiliza gas. Sabemos que en un destilador de gas el tiempo del proceso se puede reducir con el aumento de la llama sin embargo esto se vuelve impráctico ya que también aumenta el gasto del combustible y por la tanto el costo del proceso. Con respecto a la cantidad de aceite destilado obtenido se observa que de forma general podemos obtener entre 5 y 10 ml en el destilador combinado con respecto al destilador solar simple y entre 10 y 15 ml con respecto a un destilador convencional de laboratorio; podría parecer que la diferencia no es tan significativa tomando en cuenta los recursos utilizados, sin embargo como se comentó en la introducción las cantidades de aceite esencial



obtenido con respecto a la cantidad de materia prima y combustible utilizado son muy pequeñas, por lo cual calculando en términos de porcentaje de producción podemos tener un aumento entre el 3 y el 9 % de aceite obtenido. En los tres tipos de destiladores comparados en esta prueba existen cantidades diferentes de producción de aceite producido comparado entre los diferentes días por eso en la gráfica observamos aumentos y disminuciones en esta variable incluso si comparamos con aumento en los tiempos de destilación, esto es debido a que la cantidad de aceite esencial presente en este caso en las cascaras y semillas de la naranja puede resultar ser sumamente variada, dependiendo del número y sistema de calentamiento elevar la temperatura para poder estabilizar el proceso de destilación.

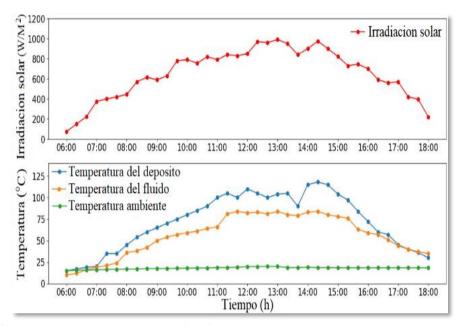


Figura 18. Comparación de temperaturas e irradiación solar.

En gráfica de la Figura 18 se comparan las tres temperaturas en el destilador solar combinado con respecto de la hora de un día normal que se pueden medir y que pueden afectar de manera directa e indirecta el proceso de producción de aceites naturales, primeramente podemos observar que la temperatura ambiente, aunque aumenta desde las 6 a.m. y tiene su punto máximo pasando del medio día y luego empieza a decrecer durante la tarde; es el factor que tiene menos variación comparada con la temperatura de depósito y la interna que es la del fluido. La temperatura ambiente influye de tal manera que dependiendo de ella al principio del proceso destilación entre sea menor su valor le llevara más tiempo al destilador solar alcanzar la temperatura necesaria. Por otro lado podemos observar que la temperatura del depósito y del fluido están directamente relacionadas con la irradiación solar que refleja el plato parabólico en su punto focal; en el cual está localizado el depósito de destilación, es decir durante la mañana comienza a aumentar su valor alcanzando su valores máximos pasando el medio día lo que provoca el mismo efecto en las temperaturas del depósito y del fluido, cuando se acerca el medio día las temperaturas sufren un crecimiento debido al aumento de concentración de irradiación solar. Por la tarde sucede exactamente lo contario comienza a descender la irradiación solar provocando la disminución de las temperaturas del depósito y del fluido, concluyendo que el valor de la concentración de irradiación solar es directamente proporcional al valor de las temperaturas del depósito y del fluido. La irradiación tiene múltiples variaciones en su magnitud y esto es debido a cambios en la nubosidad, a la irradiación difusa, reflexión solar total del suelo e inclusive a factores climatológicos. Con respecto al comportamiento de las temperaturas del depósito y del fluido vemos que su comportamiento es similar en todo el proceso y esto es debido a que la temperatura del fluido es directamente influenciada por la temperatura del tamaño de las semillas, la cantidad de albedo que no se puede desprender de la cascara e incluso del nivel de maduración del fruto y de la especie en particular de la planta que produjo en fruto.

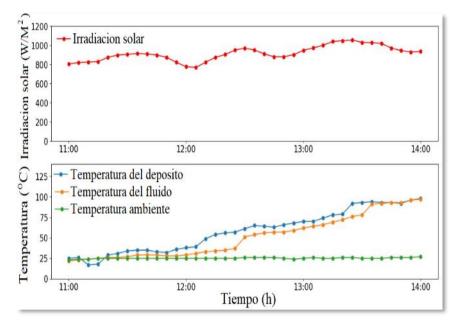


Figura 19. Comparación de temperaturas del destilador combinado y la irradiación solar.

En la gráfica de la Figura 19 observamos el comportamiento de las tres temperaturas que influyen en el proceso de destilación. El lapso del tiempo se eligió porque es el periodo en el que encontramos el máximo crecimiento de temperatura, además es el tiempo necesario para analizar un proceso completo de destilación. Estos experimentos se realizaron en días diferente con respecto de las pruebas del experimento anterior; observamos que la temperatura ambiente no tiene variaciones significativas, ni crecimiento tan pronunciado como la temperatura del depósito y del fluido. Las temperaturas del fluido y del depósito sufren un crecimiento más uniforme, no se observa ningún punto de flexión en la temperatura del fluido y solo dos puntos de flexión en la temperatura del depósito. Al principio observamos el único decremento que tiene la temperatura del depósito, pero es muy pequeño comparado con todo el crecimiento a lo largo del proceso de destilación, el cual puede ser producto de múltiples factores ambientales, sin embargo, notamos que este decremento no afecta de manera significativa el comportamiento de la temperatura del depósito, debido que la temperatura interna también está siendo influenciada por el calentamiento del sistema eléctrico fotovoltaico. Después de las 13:30 observamos que las temperaturas del depósito y del fluido son prácticamente iguales lo que supone las condiciones óptimas para proceso de destilación además de reducir depósito y viceversa, es decir existe transferencia de calor del depósito al fluido por la concentración calorífica del plato parabólico y existe transferencia de calor del fluido al depósito cuando disminuye la temperatura y el sistema combinado trata de compensar la temperatura con el calentador eléctrico interno al depósito. Su empleo no debe pasar por argumentos teóricos, sino por viabilidades de material, costos y mantenimiento.

Conclusiones

En el estado del arte revisado correspondiente a todos los diseños y modelos de destiladores solares además de captadores o concentradores solares; no se encontró ningún destilador que utilice simultáneamente dos sistemas de calentamiento además de poseer un sistema de control de temperatura que permita el censado de temperatura y la posibilidad de corregir esta variable mediante un sistema de lazo cerrado.

En los destiladores encontrados y consulados en la bibliografía no se encontró destiladores automatizados que sean capaces de controlar movimientos rotacionales y azimutales mediante motores y sistemas de transmisión mecánica que protejan al sistema de fuerzas externas como el viento, además del control detección y corrección de la temperatura.

La metodología utilizada en esta investigación fue de suma importancia ya que mediante su aplicación se logró describir las necesidades del sistema desde múltiples aristas como, por ejemplo: factor energético, resultados esperados, automatización, selección de materiales, fenómenos físicos y químicos inmersos en el proceso de destilación y la ampliación de la destilación solara a otras aplicaciones.



Un destilador solar combinado es un dispositivo de alta eficiencia, según la segunda ley de la termodinámica no existe maquina térmica perfecta y la discusión de las perdidas por transferencia de calor.

El fenómeno de destilación solar es un proceso sumamente inestable donde se tiene concentración de energía, transformación de energía luminosa a energía calorífica, evaporación, presión de vapor, convección, conducción y radiación de calor, condensación, decantación y perdidas de energía en diferentes formas y etapas del proceso. Sin embargo, con el suficiente control de sus variables se ofrece una opción viable para la producción de esencias naturales mejorando tiempos y costos de producción.

Los resultados muestran que la irradiancia solar es el parámetro más influyente en los procesos de transferencia de calor dentro del destilador, seguido por el calentamiento interno del depósito con el sistema combinado.

Las ventajas del destilador solar combinado surgen a partir de la posibilidad de incorporar energía desde el exterior en forma de energía eléctrica y que no la tienen los destiladores solares normales.

Los resultados indican que una mayor temperatura ambiente contribuye a una mayor producción de destilado, debido a que la diferencia es menor entre la temperatura inicial y la temperatura de destilación, sin embargo, resulta ser el parámetro menos influyente en el proceso de destilación solar (Hilali et al., 2019).

La conversión entre fracción masa y fracción volumen, no representa mayor problema para aquellos componentes que forman soluciones ideales, siendo una característica que el proceso de mezclado no altera los volúmenes iniciales de los componentes de la mezcla, es decir que no es necesario ningún tipo de molienda y/o mezclado de la materia prima con el agua para el presente proceso (Munir, & Hensel, 2010).

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¿Hacia dónde va la investigación científica en la educación superior ecuatoriana? Análisis FODA y mirada prospective

Where is scientific research in Ecuadorian higher education headed? SWOT analysis and prospective view

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Resumen

La educación superior desempeña un papel fundamental en el desarrollo económico y social de un país en vías de desarrollo, como lo es, Ecuador. En este contexto, la formación en investigación científica es clave para garantizar la producción de saberes teóricos, metodológicos y prácticos que requiere la sociedad para resolver sus problemas y desarrollar sus capacidades generales. Por este motivo, este artículo analiza los problemas generales de la investigación científica en educación superior en siglo XXI, identificando las fortalezas, oportunidades, debilidades y amenazas que intervienen en el proceso. Metodológicamente, se trata de una investigación cualitativa próxima al pensamiento crítico que se sirvió de dos herramientas cognitivas particulares: el análisis FODA y la visión prospectiva que, desde el conocimiento de la realidad presente,

Abstract

Higher education plays a fundamental role in the economic and social development of a developing country such as Ecuador. In this context, training in scientific research is key to guarantee the production of theoretical, methodological and practical knowledge required by society to solve its problems and develop its general capabilities. For this reason, this article analyzes the general problems of scientific research in higher education in the XXI century, identifying the strengths, opportunities, weaknesses and threats involved in the process. Methodologically, it is a qualitative research close to critical thinking that used two particular cognitive tools: the SWOT analysis and the prospective vision that, from the knowledge of the present reality, allows predicting, with certain coherence, the future trends that will mark the guidelines of scientific research in the near future.

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permite predecir, con cierta coherencia, las tendencias futuras que marcaran las pautas de la investigación científica en el futuro próximo. Los resultados obtenidos permiten concluir que, es muy importante entender en los órganos de toma de decisiones que, para mantener este impulso desarrollista y afrontar los desafíos del futuro, se debe implementar políticas que promuevan una distribución más equitativa de los recursos, fortalezcan la cooperación internacional y alineen la investigación con las necesidades estratégicas del país.

Palabras clave: investigación científica, educación superior en el Ecuador, análisis FODA, análisis prospectivo, sistema educativo.

The results obtained allow us to conclude that it is very important to understand that, in order to maintain this developmental momentum and face the challenges of the future, it is necessary to implement policies that promote a more equitable distribution of resources, strengthen international cooperation and align research with the strategic needs of the country.

Keywords: scientific research, higher education in Ecuador, SWOT analysis, prospective analysis, educational system.

Introducción

La investigación científica en el sector de educación superior del Ecuador ha experimentado un crecimiento significativo en las últimas décadas y se ha convertido en una fuerza importante del desarrollo académico y socioeconómico del país. Según un reciente análisis de Peñafiel (2024) publicado por Forbes sobre la producción científica del Ecuador, entre 1920 y 2024 se registraron 36.839 publicaciones, cifra que ha aumentado significativamente en los últimos años. Este crecimiento refleja el compromiso de las instituciones de educación superior ecuatorianas de fortalecer sus capacidades de investigación y, al mismo tiempo, contribuir al desarrollo de bagaje epistémico global. Sin embargo, es importante evaluar críticamente los factores que influyen en este desarrollo para identificar fortalezas, oportunidades, debilidades y amenazas.

La Secretaría de Educación Superior, Ciencia, Tecnología e Innovación, en adelante (SENESCYT) de Ecuador, juega un papel crucial en la promoción de la investigación científica en el país. Según se indica en su portal web (SENESCYT, 2024), su misión incluye la formulación de políticas nacionales y el liderazgo estratégico para articular los sistemas de educación superior, los sistemas nacionales de ciencia, tecnología, innovación y los conocimientos ancestrales, así como las prácticas de los sectores manufactureros a nivel nacional e internacional. En líneas generales, el propósito de esta política de desarrollo e innovación es promover la generación de conocimiento científico y su aplicación práctica en beneficio de la sociedad ecuatoriana en su conjunto. Sin embargo, el apoyo estatal directo a través de SENESCYT representa solo el 4,5% de las investigaciones publicadas, lo que indica la necesidad de un mayor apoyo estatal a la investigación (Peñafiel, 2024).

Según refieren Araujo-Bilmonte, Huertas-Tulcanaza y Párraga-Stead (2020), al menos para el año de su estudio, un aspecto llamativo de la investigación en educación superior en Ecuador es su diversidad temática. El 80% de la investigación se centra en 13 campos específicos del conocimiento, entre ellos la medicina, las ciencias agrícolas y biológicas, las ciencias sociales, las ciencias ambientales y la ingeniería. Esta diversidad refleja la capacidad de las instituciones de educación superior para abordar diversos desafíos y oportunidades de investigación científica y humanística. No obstante, también plantea un desafío de centrar los esfuerzos de investigación en áreas estratégicas que pueden contribuir más directamente al desarrollo nacional y abordar cuestiones específicas de cada región y localidad.

La internacionalización de la investigación científica en el Ecuador, o al menos de las publicaciones científicas en revistas de alto impacto, se refleja en que el 77% de los artículos científicos se publican en inglés (Peñafiel, 2024). Esta tendencia promueve la difusión global del conocimiento desarrollado en el Ecuador y promueve la cooperación internacional, bajo determinadas condiciones. Pero también crea la necesidad de equilibrar los resultados científicos en los idiomas locales para garantizar su disponibilidad y aplicabilidad en el contexto nacional. En este orden de ideas, la cooperación entre universidades locales y extranjeras y otros centros de investigación internacionales es esencial para financiar y realizar investigaciones, lo que enfatiza la importancia de fortalecer estas redes de cooperación en materia de investigación científica.



Otro aspecto para considerar en esta amplia temática es, al decir de Romero Fernández et al., (2021), la implementación de modelos educativos basados en la investigación científica multidisciplinaria, en las instituciones de educación superior ecuatorianas, que ha demostrado ser una estrategia efectiva para mejorar la calidad de la enseñanza y, mejor aún, el impacto social del quehacer universitario. Estos modelos utilizan un enfoque constructivista que fortalece el papel de la educación y, al mismo tiempo, promueve la aplicación práctica del conocimiento en diferentes regiones. Sin embargo, todavía es necesario fortalecer aún más la formación de los docentes como investigadores y mejorar el mecanismo de evaluación de la calidad de la investigación que se produce en cada institución, para garantizar en cada momento la pertinencia y coherencia de la investigación en general.

De cara al futuro, la educación superior en el Ecuador debe desarrollar una visión de futuro centrada en la investigación científica de alto impacto económico y social (Arbeláez-Campillo & Rojas-Bahamón, 2021). Esta visión debe tener en cuenta los desafíos y oportunidades creados por el entorno global y local, incluida la necesidad de promover la sostenibilidad (desarrollo sostenible), mejorar la calidad de la educación y fortalecer los vínculos entre la academia y el sector manufacturero, entre otros asuntos de interés colectivo (Zambrano-Noboa et al., 2023). Además, se deben fortalecerse los acuerdos público-privados para dirigir los esfuerzos de investigación a áreas de ventaja estratégica (competitividad nacional) y utilizar la investigación científica como catalizador del desarrollo endógeno. Como se verá a lo largo de esta publicación, solo a través de enfoques estratégicos y colaborativos será posible maximizar el potencial de la investigación científica en la educación superior en el Ecuador, contribuyendo al progreso sostenible, la pertinencia y la relevancia del país.

Por las razones aludidas, este artículo analiza los problemas generales de la investigación científica en educación superior en siglo XXI, identificando las fortalezas, oportunidades, debilidades y amenazas que intervienen en el proceso de enseñanza-aprendizaje de esta disciplina en la Escuela Superior Politécnica del Chimborazo. El texto se divide en cinco secciones es a saber: en la primera se describe el estado del arte; en la segunda, la estructura metodológica de la investigación; en la tercera sección, se efectuó análisis FODA sobre la investigación científica en el ámbito de la educación superior del Ecuador; en la cuarta, se muestra las principales conclusiones y recomendaciones a las que arriban los autores del artículo y finalmente, se muestra de forma detallada el índice de las fuentes citadas en las referencias.

Marco teórico y revisión de literatura

En los últimos años, la investigación científica en el campo de la educación superior en el Ecuador ha experimentado un crecimiento significativo, impulsado por la necesidad de mejorar la calidad de los procesos de enseñanza-aprendizaje y ligado a la competitividad de las universidades. Según indica Galarza, Sánchez, Ochoa & Ronquillo (2020), Ecuador ha logrado avances significativos en la producción científica, con un aumento significativo en el número de publicaciones y colaboración internacional. Este crecimiento ha sido impulsado por políticas gubernamentales para fomentar la investigación científica en diversas áreas del saber y la innovación permanente en las instituciones de educación superior.

Uno de los efectos perdurables de la pandemia de Covid-19 fue las transformaciones que impulso en la educación superior en Ecuador y el mundo, obligando a las universidades a adaptarse rápidamente a nuevos modelos de aprendizaje, de carácter virtual y digital. Un estudio sobre las habilidades de educación digital de docentes universitarios ecuatorianos durante la pandemia, de la autoría colectiva de Mendoza Velazco et al., (2021) muestra la necesidad de mejorar las habilidades técnicas de los docentes para garantizar una educación de calidad en un entorno completamente virtual. Esta situación pone de relieve la importancia de la formación continua en tecnologías de la información y la comunicación (TIC) para los docentes.

En este contexto de cambios vertiginosos, la evaluación y acreditación de las universidades ecuatorianas siempre ha sido un factor clave para mejorar la calidad de la investigación científica. El análisis de los procesos de evaluación y acreditación implementados desde 2009 por Gutiérrez, Yaguarema, Ayala, Zambrano & Gutiérrez (2023) muestra que estos procesos han tenido un impacto positivo en la producción científica de las instituciones de educación superior ecuatorianas. Las publicaciones en revistas influyentes y la colaboración internacional son indicadores clave de la calidad de la investigación, y las universidades están cada vez más comprometidas con estos estándares. Por supuesto, no cabe duda sobre el hecho de que el desarrollo científico rebasa la práctica de publicar artículos.

La inclusión social es otro aspecto importante de la educación superior en el Ecuador. En este aspecto crucial Abad Peña et al., (2021) destacan los desafíos y perspectivas para la inclusión educativa en Ecuador y describen la importancia de garantizar el acceso igualitario a una educación de alta calidad para todos los estudiantes, independientemente de sus diferencias y necesidades. Todo indica que abordar estas cuestiones es esencial para mejorar la calidad de la educación superior y avanzar hacia una sociedad más inclusiva y justa. En este sentido, el desarrollo de habilidades investigativas es esencial para la promoción de la educación superior en el Ecuador y, definitivamente, refleja el compromiso de las universidades con la investigación y la innovación como pilares fundamentales de su misión educativa.

En líneas generales toda la literatura consultada y citada, destaca a su modo la necesidad de mejorar la calidad y el impacto de la investigación en educación. Por estas razones y por otras, Díaz de Perales (2022) destaca la importancia de invertir en calidad científica, utilizar métodos para construcción de aprendizaje significativos sobre la ciencia para hacer de la investigación una parte fundamental de la educación superior. Estas acciones son fundamentales para mejorar el desempeño de las universidades ecuatorianas y, sin lugar a duda, impulsa indirectamente desarrollo social y económico del país. Y es que:

La investigación es el eje transversal de la educación superior, en especial la investigación científica en los diferentes escenarios de las ciencias constituyéndose en un pilar fundamental por la contribución a la calidad de vida y bienestar de las personas, además en la formación de los nuevos profesionales con miras a desempeñarse en las áreas investigativas. (Díaz de Perales, 2022, p. 222)

No obstante, en un posicionamiento crítico sobre el tema surgen algunas preguntas que, por su naturaleza polémica, no son de fácil resolución. ¿Cuáles son las principales debilidades de la investigación científica en el Ecuador avanzado ya el siglo XXI? ¿En qué condiciones materiales se puede hacer ciencia de calidad en el sur global? ¿Hasta qué punto hemos pensado que el desarrollo de la ciencia se reduce a la publicación de artículos arbitrados en determinados índices hegemónicos? ¿La ciencia que se produce ahora en Ecuador responde a las necesidades y problemas del país? Llama la atención el hecho de que la mayoría de los artículos consultados por los autores de esta investigación no formulan preguntas de esta naturaleza.

Algunas de estas preguntas pueden ser respondidas por la visión prospectiva, entendida como una herramienta cognitiva que permite formular algunos escenarios sobre las realidades futuras, como condición de posibilidad para anticipar los desafíos y problemas que se pueden presentar en el futuro. En palabras de Arbeláez-Campillo & Villasmil (2020), este tipo de análisis es pertinente cuando la incertidumbre sobre el devenir justifica la necesidad estratégica de plantear un conjunto de escenarios que, con base a la evidencia empírica, vienen a profundizar las tendencias actuales. Estos escenarios, aunque muchos de estos escenarios muy probablemente queden en nada, facilitan la labor de los hacedores de políticas y científicos sociales que están obligados a pensar en los futuros probables como parte de su labora de planificación.

No obstante, la visión prospectiva como herramienta cognitiva o en algunos casos metacognitiva no se limita a un ejercicio de imaginar los futuros probables desde la comprensión de la relación dialéctica que se da entre el pasado, presente y futuro.

La prospectiva nos ayuda a explicar los problemas complejos que están entretejidos en las telarañas de las estructuras sistémicas, a descifrar los niveles del análisis, deslindar lenguajes simbólicos, traducir códigos, llegar a los significados profundos para saber lo que realmente dicen los discursos y las estrategias del poder. (Baena, 2004, p. 4)

Tal como afirman Rodríguez, Guerra & Elizalde (2020), el análisis prospectivo en la educación superior de Ecuador busca anticipar y planificar el futuro de este sector, considerando factores como la calidad educativa, la inclusión y la adaptación a cambios globales. Este enfoque permite proyectar variables y reconocer actores clave para transformar las universidades y responder a las necesidades del país hacia el año 2030. La prospectiva es esencial para integrar diferentes sectores educativos y, al mismo tiempo, estudiar nuevos modelos que promuevan oportunidades equitativas y el desarrollo humano de los estudiantes. Por esto motivos, resulta útil realizar un análisis detallado de los posibles escenarios futuros para garantizar acciones viables y pertinentes en la educación superior ecuatoriana.



Metodología de la investigación

Un enfoque cualitativo del pensamiento crítico utilizado en el análisis FODA junto a la visión del futuro se basa en la capacidad de evaluar y cuestionar la información de manera sistemática y reflexiva. En este contexto gnoseológico, según Wilman (2023), el pensamiento crítico es esencial para la interpretación de datos cualitativos porque permite, hasta cierto punto, a los investigadores cuestionar sus propios supuestos y sesgos, lo cual es esencial para un análisis profundo y preciso de las fortalezas, oportunidades, debilidades y amenazas vinculadas dialécticamente a la investigación científica en el ámbito de la educación superior del Ecuador: "Shaw (2014) considera que el pensamiento crítico implica la capacidad de analizar, evaluar y sintetizar información de manera objetiva y reflexiva, identificando supuestos, prejuicios y sesgos, desarrollando argumentos sólidos y bien fundamentados" (Citado por: Wilman, 2023, p. 278).

Junto al pensamiento crítico útil para descifrar los códigos y signos de los textos en sus contextos de origen o, lugar de enunciación, también usamos la técnica de investigación documental, la cual al decir de Arias (2009), sirve para analizar, interpretar, contrastar y comparar fuentes textuales o audiovisuales desde una perspectiva novedosa que, según las capacidades hermenéuticas de cada investigador, pueden aportar nuevos o renovados conocimientos sobre un tema. Para seleccionar las fuentes documentales que proporcionaron la información necesaria para alcanzar el objetivo general de la investigación, se empleó el criterio de veracidad objetiva. En consecuencia, todas y cada una de las obras y autores consultados y citados en este artículo, provienen de revistas científicas o instituciones académicas de reconocido prestigio internacional, lo cual garantiza, más allá de toda duda razonable, la calidad y fiabilidad de los datos proporcionados por estas fuentes.

Por su parte, el análisis FODA es una herramienta cognitiva que permite a los investigadores identificar y evaluar los factores internos y externos que afectan a una institución educativa. Un artículo de la revista Docentes 2.0 de la autoría de Mujica-Sequera (2016) afirmó que el análisis FODA es un método para estudiar las características internas (debilidades y fortalezas) y las condiciones externas (amenazas y oportunidades) de una organización, fenómeno material o simbólico u estructura, lo cual es útil en la planificación estratégica futura de lo que se debe y quiere lograr para mejorar una realidad determinada. Esta herramienta es particularmente útil en el campo de la educación, ya que permite a las universidades ecuatorianas identificar áreas de mejora y oportunidades de desarrollo en el contexto multidimensional en el que estan inmersas.

La prospectiva, por otro lado, se centra en la previsión y la planificación futura a largo plazo, teniendo en cuenta posibles situaciones, escenarios y acontecimientos. Al decir de Castillo (2011), se destaca la importancia de la prospectiva en la educación superior, ya que permite a las instituciones anticipar desafíos futuros y desarrollar estrategias para abordarlos. Esta herramienta cognitiva es esencial para la planificación estratégica en el sector educativo, ya que ayuda a las universidades a adaptarse al cambio y ser más competitivas. No obstante, queda claro que con la tecnología y conocimientos disponibles en la actualidad, nuestra visión del futuro posible es limitada y parcial, pero tal como argumentan Arbeláez-Campillo & Villasmil Espinoza (2020), la necesidad de plantear escenarios racionales desde el conocimiento de las tendencias históricas, en política, economía o desarrollo científico, entre otras áreas de interés estratégico, resultan muy importante para los hacedores de políticas como mecanismo de previsión ante la incertidumbre.

En términos operativos, para efecto del cumplimiento del objetivo general de esta investigación, se integró la metodología documental centrada en la acción hermenéutica de información proveniente de fuentes de reconocido valor académico, junto a las herramientas cognitivas del llamado análisis FODA y la visión prospectiva, como un intento, quizá fútil, de imaginar los escenarios posibles en el futuro. Todo indica que incorporar el pensamiento crítico en la investigación cualitativa permite una interpretación más precisa y completa de los datos. De hecho, para la práctica y el discurso de la científica en general, el pensamiento crítico y la resolución de problemas son habilidades esenciales en el contexto educativo actual. Utilizando estas habilidades para el análisis y pronóstico FODA, los investigadores pueden formular estrategias efectivas, basadas en evidencia, que mejoran la educación superior en Ecuador.

Además, conviene mencionar que los autores de esta investigación estuvieron motivados en cada etapa del proceso de indagación científica por los principios de honestidad y la integridad. En líneas generales, estos principios éticos resultan esenciales en la investigación documental. Ya que los investigadores responsables deben evitar la manipulación de datos, la falsificación de resultados y el plagio. La transparencia en la

presentación de los métodos y resultados es fundamental para permitir que otros investigadores evalúen y reproduzcan el estudio que se presenta para su consideración. Por lo tanto, la ética en la investigación científica promueve la búsqueda de la verdad y el conocimiento, lo que es vital para el avance científico y la confianza pública en una investigación como esta.

Resultados y discusión

La investigación científica en el ámbito de la educación superior del Ecuador. Análisis FODA y visión prospectiva

En el presenta aportado que viene a mostrar los resultados mas destacados de esta investigación, en consecuencia, a partir de la información interpretada se hacer un análisis FODA para luego discutir su alcance y significados.

Tabla No. 01. *Análisis FODA.*

Objetivo general de la investigación: analiza los problemas generales de la investigación científica en educación superior en siglo XXI, identificando las fortalezas, oportunidades, debilidades y amenazas que intervienen en el proceso.

Fortalezas			Amenazas	Observaciones
La producción	Existe potencial	Debilidades Desde una visión	La competencia	
científica en general	para aumentar el	crítica, se observa	internacional en	
ha crecido	apoyo público a la	que la producción	investigación y	
significativamente,	investigación, ya	científica se	publicaciones puede	
concentrándose el	que sólo el 4,5% de	concentra en unas	relegar a Ecuador	
81% de la	la investigación	pocas	sino se incrementan	
investigación en los	recibe apoyo	universidades, lo	sus capacidades de	
últimos 9 años (2016-	público directo	que indica una	producción de	
2024) (Peñafiel,	(Galarza et al.,	distribución	conocimientos	
2024).	2020)	desigual de las	científicos.	
,	,	capacidades de		
		investigación en el		
		país.		
La investigación	Con una política	La financiación	Posibles cambios en	
científica está	eficaz de	estatal para la	la política de	
altamente	intercambio	investigación	educación	
concentrada en áreas	científico, hay la	científica es	universitaria e	
clave como la	posibilidad real de	limitada (Díaz de	investigación, de	
medicina, la	utilizar las	Perales, 2022).	carácter neoliberal,	
agricultura y las	conexiones	, ,	pueden afectar la	
ciencias biológicas y	académicas		financiación y el	
sociales (Gutiérrez et	existentes para		apoyo público a la	
al., 2023)	fortalecer la		investigación	
	cooperación		científica nacional.	
	internacional en			
	investigación e			
	innovación.			
Investigadores	Fortalecimiento de	Algunas	Por la precarización	
ecuatorianos son	la capacidad para	instituciones	de las condiciones	
ampliamente citados	realizar	universitarias del	laborales de los	
a nivel mundial en	investigaciones para	país carecen de la	científicos y	
diversos campos, en	el desarrollo	infraestructura y los	académicos hay	
distintas	sostenible, de	recursos para	riesgo de perder	
publicaciones	acuerdo con las	realizar	investigadores	
científicas de alto	necesidades	investigaciones	talentosos debido a	
impacto (Peñafiel,	nacionales, que se	científicas de alto	mejores	
2024).	desglosan en las	nivel.	oportunidades en el	
	demandas		extranjero (fuga de	
	regionales y locales.		cerebros).	
Colaboración	Potencial para	Posibles brechas en	El rápido desarrollo	Por ser el inglés la
internacional de	aumentar, bajo	habilidades técnicas	de la tecnología	lengua franca, la
científicos	determinas	y de investigación	puede hacer que	mayoría de los



ecuatorianos en artículos y proyectos de investigación, mediante la publicación de artículos en inglés (Peñafiel, 2024).	condiciones, la visibilidad global y el impacto de la investigación ecuatoriana.	entre profesores y estudiantes de las distintas regiones y universidades de Ecuador	determinadas áreas y programas de investigación queden obsoletas si no se actualizan constantemente.	artículos científicos se publican en inglés, lo que multiplica su impacto en términos de visualización y citaciones.
En términos bibliométricos, la concentración de la producción científica se da en doce (12) universidades líderes, lo que indica la consolidación de al menos 12 centros de excelencia académica en materia de investigación científica y productividad de papers de alto impacto (Peñafiel, 2024).	Capacidad para implementar políticas que promuevan la investigación en todas las universidades del país.	En algunos proyectos de investigación, puede haber una desconexión entre la investigación académica y las necesidades de los sectores social y manufacturero del país.	La desigualdad socioeconómica puede afectar el acceso a la educación superior y, a su vez, la formación de jóvenes investigadores.	

Fuente: Elaboración propia con arreglo a la información de las fuentes consultadas.

Este breve análisis FODA de la investigación científica en el sector de educación superior de Ecuador revela el crecimiento y el potencial de este en Ecuador, así como algunos de sus desafíos importantes. Fortalezas como el crecimiento significativo de la producción científica y la colaboración internacional demuestran un fuerte compromiso nacional con la investigación y la capacidad de competir globalmente. Del mismo modo, la concentración de la investigación en áreas clave y la presencia de investigadores altamente citados subrayan la calidad y relevancia del trabajo realizado. Sin embargo, la desigual distribución de estas competencias en las universidades muestra la necesidad de políticas públicas más acertadas que promuevan una mayor igualdad y desarrollo entre las instituciones universitarias.

Por su parte, las oportunidades identificadas en el análisis FODA muestran caminos claros para fortalecer el sistema de investigación del Ecuador. Aumentar la financiación nacional y fortalecer la cooperación internacional son pasos importantes para consolidar los avances logrados. Además, adaptar la investigación a las necesidades estratégicas del país puede aumentar el impacto social y económico de la investigación que se produce. En este orden de ideas, la implementación de políticas que promuevan la investigación en todas las universidades y, al mismo tiempo, aumenten la visibilidad de los resultados científicos ecuatorianos en el mundo son las principales estrategias para aprovechar estas oportunidades y asegurar un desarrollo sostenible y competitivo al servicio de las mayorías nacionales y no solo de las élites educadas.

Sin embargo, desde la perspectiva crítica no se deben subestimar las carencias, contradicciones y amenazas identificadas en el análisis FODA. El apoyo gubernamental limitado y la concentración de recursos en algunas universidades de vanguardia pueden limitar el crecimiento y la integridad de la investigación científica y el desarrollo sostenible a algunos sectores y regiones en detrimento de otros menos aventajados. La falta de infraestructura adecuada y las brechas en las habilidades técnicas son obstáculos que deben superarse para seguir siendo competitivos. Por lo demás, la fuga de cerebros (fenómeno común en el sur global) y la competencia internacional plantean amenazas importantes que pueden poner en peligro los avances logrados, si no se mejoran las condiciones generales para el avance de la ciencia. Definitivamente, para mitigar estos riesgos, es importante implementar estrategias políticas que fortalezcan el apoyo a la investigación, mejoren la infraestructura y promuevan la permanente del talento científico nacional.

Conclusiones y recomendaciones desde la mirada prospectiva

En los últimos años, la investigación científica en educación superior en Ecuador ha logrado avances significativos, facilitados por políticas gubernamentales y una mayor cooperación internacional, todo lo cual se ha desarrollado en el marco de la constitución política de 2008 (Asamblea Nacional Constituyente, 2008). En este contexto de cambios y mejoras continuas, el análisis FODA se ha convertido en una

herramienta importante para identificar las fortalezas, debilidades, oportunidades y amenazas que enfrentan las instituciones educativas. Desde el punto de vista de los autores de esta indagación, el análisis FODA permite a las universidades evaluar eficazmente la situación actual y planificar estrategias futuras. De modo que se trata de enfoque cognitivo es esencial para mejorar la calidad de la investigación científica y la educación en el país.

A grandes rasgos los resultados obtenidos por esta investigación preliminar incluyen el aumento de la producción científica y la cooperación internacional en Ecuador. Tal como ya se dijo, Un artículo de Forbes (Peñafiel, 2024) destacó que el 81% de la investigación ecuatoriana se concentró en un período de nueve años, con un aumento significativo en el número de artículos científicos publicados, no obstante, combine preguntar de forma responsable ¿la productividad científica solo se expresa en la publicación de artículos arbitrados de alto impacto? De cualquier modo, esta tendencia refleja el compromiso de las universidades ecuatorianas con la investigación y su capacidad para competir internacionalmente.

Sin embargo, también se identificaron algunas brechas, como la necesidad de mejorar las habilidades técnicas de los docentes y de fortalecer la infraestructura de investigación. Las oportunidades de educación superior en Ecuador incluyen la necesidad de aumentar la cooperación internacional y de afianzar la financiación pública de la investigación, más allá del relato neoliberal imperante que busca la privatización de la educación y la ciencia. Según el Plan Estratégico de Desarrollo Institucional de la Universidad Nacional de Loja (2024) la ampliación de la cooperación institucional y la influencia política a nivel nacional e internacional es fundamental para el desarrollo sostenible de la universidad. En clave prospectiva esto también permite a las organizaciones anticipar desafíos futuros y desarrollar estrategias para abordarlos, lo cual es esencial para seguir siendo competitivos en un entorno globalizado.

Mas específicamente, las amenazas identificadas en el análisis FODA son la falta de financiación y la competencia internacional. Pero en general, se han logrado avances significativos en el desarrollo científico de la educación superior en el Ecuador utilizando herramientas como el análisis FODA y la perspectiva de futuro. Por lo que se impone ahora la necesidad de integrar el pensamiento crítico en estos procesos como factor esencial para asegurar el desarrollo sostenible y competitivo del sector educativo superior en Ecuador.

En términos enteramente prospectivos, la investigación científica en el campo de la educación superior en el Ecuador ha ido creciendo recientemente y seguirá creciendo, con un enfoque específico en la innovación y la cooperación internacional. Más allá de sus dificultades, las universidades ecuatorianas invierten cada vez más en investigación científica, como lo demuestra el aumento de la producción científica y las publicaciones en revistas de alto impacto. No obstante, en los próximos años, se necesita un acuerdo público-privado para impulsar estos esfuerzos, lo cual es fundamental para avanzar en la investigación y fortalecer las ventajas estratégicas competitivas. Un acuerdo nacional de impulso a la ciencia permitirá a las instituciones educativas adaptarse a la agenda estratégica de desarrollo y así beneficiar a los sectores académico, social y económico del país.

Finalmente, las instituciones de educación superior ecuatorianas están adoptando estrategias para abordar desafíos actuales y futuros como la digitalización y la inclusión educativa, de modo que en un futuro próximo estas estrategias darán sus frutos. Los autores de esta investigación enfatizan en la importancia de la innovación educativa y la capacidad de adaptarse a las necesidades de la educación en línea como esenciales para garantizar la alta calidad y accesibilidad de la educación superior para todos. En este contexto de mejoras continuas, la implementación de políticas que promuevan la investigación y el mejoramiento integral de la infraestructura y los recursos técnicos resultan esenciales para mantener la competitividad y relevancia de la investigación científica en el Ecuador en los próximos años.

En conclusión, este estudio ha proporcionado una visión integral de la situación actual y futura de la investigación científica en la educación superior en Ecuador. A través del análisis FODA y la visión prospectiva, se han identificado fortalezas clave, como el crecimiento de la producción científica y la colaboración internacional, así como desafíos importantes, como la distribución desigual de los recursos y la necesidad de fortalecer la infraestructura de investigación. Se han destacado oportunidades prometedoras, como el aumento de la financiación pública y la cooperación internacional, y se han señalado amenazas potenciales, como la fuga de cerebros y la competencia internacional.



Para asegurar un desarrollo sostenible y competitivo del sector de investigación en la educación superior en Ecuador, se recomienda:

- A las universidades: Fortalecer sus capacidades de investigación, fomentar la colaboración interdisciplinaria e internacional, y alinear sus agendas de investigación con las necesidades estratégicas del país.
- Al gobierno: Aumentar la financiación pública para la investigación, promover una distribución más equitativa de los recursos y crear incentivos para la retención del talento científico nacional.
- A las instituciones de investigación: Fomentar la colaboración con universidades y el sector productivo, y contribuir a la formación de jóvenes investigadores.

Es fundamental que todos los actores del sistema de educación superior trabajen de manera conjunta para superar los desafíos y aprovechar las oportunidades identificadas en este estudio. Solo a través de un enfoque estratégico y colaborativo será posible maximizar el potencial de la investigación científica en la educación superior en Ecuador, contribuyendo así al progreso sostenible y al bienestar de la sociedad ecuatoriana.

Además, se sugieren las siguientes líneas de investigación futuras:

- Estudios longitudinales para evaluar el impacto de las políticas de investigación en la educación superior en Ecuador a lo largo del tiempo.
- Análisis comparativos con otros países de la región para identificar buenas prácticas y lecciones aprendidas.
- Investigaciones sobre el papel de la investigación científica en la promoción de la inclusión social y la reducción de las desigualdades en el acceso a la educación superior.
- Estudios sobre los factores que influyen en la retención del talento científico en Ecuador y estrategias para prevenir la fuga de cerebros.

En este hilo conductor, se recomienda que:

- Aumentar la financiación pública para la investigación científica, ya que actualmente solo el 4,5% de la investigación recibe financiación pública directa.
- Promover una distribución más justa de la capacidad de investigación en todas las universidades nacionales, en lugar de concentrarse únicamente en 12 universidades líderes.
- Fortalecer la cooperación internacional en investigación, aprovechando que el 77% de los artículos científicos ya se publican en inglés.
- Implementar programas para mejorar las habilidades técnicas y de investigación de profesores y estudiantes, particularmente en áreas emergentes como la inteligencia artificial y la realidad virtual.
- Alinear la investigación con las necesidades estratégicas del país y mejorar el impacto social y económico de la producción científica.

Para terminar, es muy importante entender, tal como indica Lopes (2019), que, en los órganos de toma de decisiones, para mantener este impulso y afrontar los desafíos del futuro, se debe implementar políticas que promuevan una distribución más equitativa de los recursos, fortalezcan la cooperación internacional y alineen la investigación con las necesidades estratégicas del país. El futuro de la investigación científica en Ecuador dependerá de la capacidad de cada institución universitaria para adaptarse a las nuevas tecnologías y tendencias globales, centrándose en la sostenibilidad y el impacto social de sus productos y servicios.

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Gamification and student engagement in higher education: The moderating role of concentration

التعلم بالألعاب ومشاركة الطلاب في التعليم العالى: دور التركيز المُعتدل

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Abstract

Gamification in the teaching and education system is an innovative approach incorporating game elements into educational activities to enhance student engagement, motivation, and learning outcomes. Thus, this study investigates the relationship between attitude towards using gamification and student engagement (skill engagement and participation engagement) while exploring the moderating role of student concentration in this relationship. The 306 data were collected from the students in the Saudi public university to verify these proposed hypotheses. The findings indicate employing Structural Equation Modeling (SEM) via Partial Least Squares (PLS). The research framework evaluated the impact of attitude towards gamification on student engagement. Results revealed a significant positive relationship between attitude towards using gamification and student engagement, which is more noticeable when student concentration is high than when it is low. This study contributes to understanding the dynamics between gamification, student attitudes, concentration levels, and engagement within educational contexts.

Keywords: Gamification, Student Engagement (SE), Student Concentration, Learning and educational contexts.

الملخص

إن التعلم بالألعاب في نظام التعليم والتدريس هي نهج مبتكر يدمج عناصر اللعبة في الأنشطة التعليمية لتعزيز مشاركة الطلاب وتحفيزهم ومشاركة المشاركين) مع استكشاف الدور المعتدل لتركيز الطلاب في هذه العلاقة تم جمع البيانات البالغ عددها 306 من الطلاب في الجامعات الحكومية السعودية للتحقق من هذه الفرضيات المقترحة. تشير النتائج الى استخدام نمذجة المعدلات الهيكلية عن طريق برنامج Partial Least Squares (PLS)

قام إطار البحث بتقييم تأثير الموقف تجاه التعلم بالألعاب على مشاركة الطلاب. كشفت النتائج عن وجود علاقة إيجابية كبيرة بين الموقف تجاه استخدام التعلم بالألعاب ومُشاركة الطلاب، والتي تكون أكثر وضوحًا عندما يكون تركيز الطلاب مرتفعًا مقارنة بتركيزهم المنخفض. تساهم هذه الدراسة في فهم الديناميكيات بين التعلم بالألعاب ومواقف الطلاب ومستويات التركيز والمشاركة في السياقات

الكلمات المفتاحية: التعلم بالألعاب، مشاركة الطلاب، تركيز الطلاب، سياقات التعلم و التعليم

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Introduction

In the realm of modern education, fostering student engagement is paramount for effective learning outcomes (Aboramadan et al., 2023). Within this framework, the integration of gamification strategies offers a dynamic approach to captivate students' attention and enhance their participation (Huber et al., 2023). Skill Engagement (KE) and Participation Engagement (IE) serve as cornerstones in this endeavour. Skill Engagement focuses on developing and mastering specific skills essential for academic success and beyond (Schnitzler et al., 2021; Wong, & Liem, 2022). Through gamified activities, students are immersed in interactive experiences that challenge them to apply and refine their cognitive abilities, problem-solving skills, and creativity. Whether it's solving puzzles, completing quests, or participating in simulations, students actively engage in tasks designed to cultivate critical thinking and adaptability (Lin et al., 2024). The beauty of gamification lies in its ability to transform learning into a thrilling adventure, where students eagerly embrace challenges, overcome obstacles, and emerge as confident, skilful learners. On the other hand, Participation Engagement underscores the importance of active involvement and collaboration within the learning community. Gamification strategies encourage students to collaborate, communicate, and contribute collectively towards shared goals (Bouchrika et al., 2021). By incorporating elements like leaderboards, badges, and rewards, educators incentivize participation and foster a sense of achievement, fostering a positive learning environment where students feel valued and motivated to excel. Moreover, gamification facilitates peer interaction and teamwork, as students work together to strategize, problemsolve, and achieve common objectives. This collaborative spirit enhances academic learning also cultivates essential social and interpersonal skills crucial for success in the modern world (Taşkın, & Kılıç Çakmak, 2023).

Through the cooperative integration of Skill Engagement (KE) and Participation Engagement (PE) within gamified learning experiences, educators can cultivate an exciting classroom atmosphere where students are not just passive recipients of knowledge but active participants in their learning journey (Bilro et al., 2021). The gamified classroom becomes a hub of exploration, discovery, and innovation, where students are empowered to take ownership of their education and unleash their full potential. Furthermore, gamification surpasses traditional boundaries, catering to diverse learning styles and preferences, therefore ensuring inclusivity and accessibility for all students (Nkomo et al., 2021). By leveraging the intrinsic motivation and engagement inherent in gamified learning, educators can inspire a lifelong love for learning and equip students with the skills and mindset necessary for success in academia and beyond. As navigate the ever-evolving landscape of education, gamification stands out as a powerful tool for transforming teaching and learning, concrete the way for a brighter, more engaging future for students worldwide (Chen et al., 2024).

Concerning student concentration is an intricate aspect of the learning process that plays a critical role in academic success. Concentration is the ability to focus on a task that encompasses a complex interplay of attention, engagement, and cognitive processing (Deng, & Gao, 2023). In today's fast-paced and technology-driven world, students face a myriad of distractions that can impede their ability to concentrate effectively. From social media notifications to the constant buzz of electronic devices, preserving sustained focus can be a significant challenge (Pérez-Juárez et al., 2023). Nevertheless, fostering strong concentration skills is essential for deep learning and retention of information. Educators employ various strategies to promote concentration in the classroom, such as minimizing distractions, creating a conducive learning environment, and implementing mindfulness techniques. They may arrange the classroom layout to minimize visual and auditory distractions, establish clear routines, and set expectations for focused work periods (Flanigan, & Babchuk, 2022). Furthermore, educators can integrate technology in meaningful ways, leveraging it as a tool for learning rather than a distraction. By incorporating interactive educational apps or online platforms, educators can engage students while also promoting concentration and active participation (Ng et al., 2022). Moreover, incorporating active learning methods, such as hands-on activities, group discussions, and interactive exercises, can help capture students' interest and enhance their engagement, thereby bolstering their concentration levels. These activities stimulate multiple senses and encourage students to actively participate in their learning, fostering deeper engagement and concentration. Group discussions, for example, encourage students to actively listen to their peers, formulate responses, and contribute to the conversation, thereby promoting sustained attention and concentration. Moreover, collaborative learning experiences foster a sense of community and accountability, motivating students to stay focused and engaged (Chen et al., 2024).



Moreover, teaching students' self-regulation techniques, such as goal-setting, time management, and self-monitoring, empowers them to take control of their learning and overcome distractions effectively (Yin, & Luo, 2024). Educators can explicitly teach these skills through modelling, guided practice, and reflective exercises. By setting achievable goals, breaking tasks into manageable steps, and monitoring their progress, students learn to manage their time effectively and stay focused on their academic responsibilities (Martins et al., 2024). Additionally, mindfulness techniques, such as deep breathing exercises or mindfulness meditation, can help students develop greater awareness and control over their attention, enabling them to redirect their focus when distractions arise (Lai, & Hwang, 2023). Ultimately, by nurturing a supportive learning environment and equipping students with the tools and techniques to enhance their concentration, educators can empower them to reach their full potential and excel academically. By fostering a culture of focus, engagement, and self-regulation, educators lay the foundation for lifelong learning and success beyond the classroom (Janković et al., 2023).

Therefore, this study aims to examine the direct effect of the attitude towards using gamification on skill engagement and participation engagement which are regarded as crucial implications. Importantly, this study takes a sept further to make an important contribution by introducing the moderating role of student concentration while using gaming the teaching. Consequently, this study's contributions to theory and practice will help advance the education system within KSA.

Literature and Hypotheses Development

Attitude of Using Gamification and Students' Engagement

Various research has yielded different perspectives on student participation. Some scholars, including Mohd et al. (2016) and Marx et al. (2016), define student engagement as activities students undertake in their quest for knowledge, whether physically or mentally. According to Hu et al. (2016), it also encompasses the dedication shown when students utilize online learning platforms, where resources are individually accessible (Pardim et al., 2023). These studies also examine the factors influencing student participation. Mohd et al. (2016) and Hu et al. (2016) identify three components of student engagement: cognitive, behavioral, and emotional. However, further research by Handelsman et al. (2005) and Marx et al. (2016) categorizes student engagement into four groups: skill engagement (related to student abilities), emotional engagement (linked to student sentiments), participation (reflecting students' activities in learning), and performance engagement (indicative of student assessment outcomes). Conversely, Marx et al. (2016) and Thongmak (2018) acknowledge an additional aspect, total commitment, which gauges students' overall impression of their involvement in a particular course completed at their institutions.

The literature, as highlighted by Mohd et al. (2016) and Marx et al. (2016), underscores several key factors shaping students' engagement, particularly the dynamic between student attitudes and teacher interactions. Marx et al. (2016) further emphasized that educators' expectations for student engagement can be met through reciprocal engagement efforts. Consequently, with the abundance of available technologies in education, traditional teaching methods such as the "chalk and talk" approach are gradually losing prominence (Ab Rahman et al., 2018). This teacher-centred approach is increasingly less favoured among modern educators. In recent years, gamification in education has emerged as a significant research area. For instance, Hanus and Fox (2015) found that learners participating in gamified learning experiences showed decreased motivation, which impacted their engagement with game-based learning. Hence, contemporary research suggests that attitudes towards gamification can influence participation and engagement with game-based learning (Ab Rahman et al., 2018; Davis et al., 2018; Uz Bilgin & Gul, 2020). As a result, researchers have developed hypotheses to explore these anticipated effects.

H-1: Students' attitude toward using gamification positively influences student engagement (i.e., skill engagement of gamification).

H-2: Students' attitude toward using gamification positively influences student engagement (i.e., participant engagement of gamification).

Augmenting Role of Students' Concentration

For a game to be enjoyable, it necessitates concentration, with players capable of focusing solely on the game. The more demanding a task within the game, the more enticing it becomes. When a player's essential skills are required to tackle obstacles within the game, their concentration becomes fully absorbed by the

activity, leaving no excess capacity to address other matters (Csikszentmihalyi, 1990). Consequently, games should swiftly capture the player's interest and maintain it throughout, whether for 10 seconds, 10 minutes, 10 hours, or even 100 hours (Lazzaro & Keeker, 2004; Pitoyo, 2019). Games achieve this by offering compelling elements that draw players into immersive environments (Johnson & Wiles, 2003; Alabbasi, 2017; Yang et al., 2023). It is crucial to balance the workload in games, ensuring it remains challenging yet manageable within the player's perceptual, cognitive, and memory limitations (Lazzaro & Keeker, 2004).

Moreover, it's essential to avoid assigning tasks to participants who don't feel essential (Tikhonov et al., 2024). Ultimately, games, non-game-related interactions (e.g., setting choices), and game interfaces may need to be limited to optimize the screen space dedicated to game action (Johnson & Wiles, 2003; Ab Rahman et al., 2019). This study underscores the significance of concentration while using the game, positing that it leads students to engage more with it. Thus, drawing from the aforementioned theories and empirical evidence, the components are deemed significantly related to the attitude toward using gamification, and this attitude, in turn, affects students' engagement with the gamification method (Lampropoulos et al., 2023). Importantly, this study suggests that students' concentration may play a critical role in influencing the association between the attitude toward using gamification and its engagement. Consequently, the study proposes the following hypotheses:

H-3a: Students' concentration moderates the relationship between students' attitude toward using gamification and their engagement (i.e., skill engagement of gamification), such that the relationship will be stronger for those with high concentration than those with low.

H-3b: Students' concentration moderates the relationship between students' attitude toward using gamification and their engagement (i.e., participant engagement of gamification), such that the relationship will be stronger for those with high concentration than those with low.

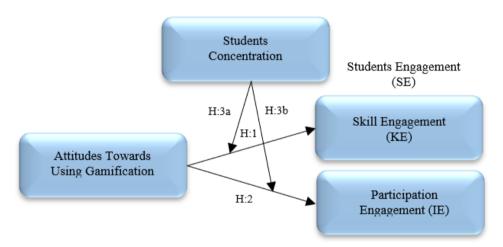


Figure 1. Research Model.

Method

Sample and Procedures

This study employs a quantitative research design to assess gamification's impact on student engagement in Saudi public universities. A convenience sampling method was chosen due to practical difficulties in accessing a complete target population list (Hulland et al., 2018). This approach enabled the researchers to concentrate on a readily accessible subset of students relevant to the study's objectives.

Before the primary data collection, the study employed a pilot test to ensure the reliability and validity of the measurement instruments. This pilot testing phase involved a smaller sample 54 of students similar to the target population, allowing us to refine the questionnaire and assess the clarity of the questions. The pilot test also provided an opportunity to evaluate the internal consistency of the survey items, using statistical methods such as Cronbach's alpha to measure reliability. Moreover, the measurement instruments used in the study were either adapted from previously validated scales or underwent rigorous validation



procedures, ensuring their appropriateness for the educational context. This process helped to enhance the accuracy and relevance of the data collected, ultimately contributing to the robustness of the study's findings (Memon et al., 2017).

The sample size of 306 participants was carefully considered and justified based on the dual need to achieve sufficient statistical power and to manage the logistical constraints inherent in reaching and surveying a large student population. This sample size was selected to balance the need for robust data with the practical limitations of conducting research within a specific educational setting. The size also aligns with typical standards in academic research, ensuring that the study's findings are statistically significant and reliable.

The study's data collection process was meticulously planned and executed in two distinct phases to provide a comprehensive evaluation of the participants' experiences with gamification. The first phase involved an introduction to gamification technology at the beginning of the semester, ensuring that students were familiar with the tools and concepts being studied. This phase included integrating gamification elements into the curriculum, primarily through formative assessments conducted using popular online platforms such as Kahoot and Quizizz. These platforms were chosen for their widespread recognition and effectiveness in enhancing student engagement through interactive and competitive learning activities. Using these platforms was integral to the research, as it allowed for the practical application of gamification techniques in a real-world educational context. The second phase of data collection took place at the end of the semester, where a detailed questionnaire was administered to capture the students' attitudes toward gamification, their levels of engagement, and their interactions with the gamification methods employed throughout the course. This two-phase approach ensured that the data collected reflected the students' immediate reactions to gamification and their sustained engagement over an entire semester. By structuring the research in this manner, the study provided a more holistic understanding of the impact of gamification on student engagement, taking into account both the initial novelty of the approach and its long-term effects on learning behavior and outcomes.

Therefore, the research approach and techniques employed in this study were designed to systematically investigate the effectiveness of gamification in enhancing student engagement in higher education. The study offers a robust framework for understanding the dynamics of gamification in educational settings through the careful selection of sampling methods, phased data collection, and the use of validated online platforms for gamification. The thoughtful design and execution of this research provide valuable insights into the immediate effects of gamification but also lay the groundwork for future studies that can build on these findings to explore the broader implications of gamification in diverse educational contexts.

Research Instrument

The questionnaires utilized in this analysis were adapted from established instruments and administered to undergraduate students enrolled in Saudi public universities. One set of questionnaires was provided to the target population, focusing on their attitudes toward using gamification and their level of concentration. The questionnaires aimed to gauge students' engagement with and interaction with gamification, with the content assessed through students' self-reports. Specifically, a standard questionnaire instrument was employed to collect all necessary information from the selected respondents. Each construct was measured using multi-item scales, and the response format utilized a 5-Likert Scale ranging from 1=Strongly Disagree to 5=Strongly Agree.

Regarding attitudes towards using gamification, 3-items are adapted from previous studies to measure users' technology acceptance (Davis, 1989; Fathema et al., 2015). A sample item is "I think using an online gamification system is a good idea". For the student concentration was measured with 4-items which were initially developed by Csikszentmihalyi (1990) and used by several studies (e.g., Hamari & Koivisto 2014).

Therefore, these items were slightly modified to clarify the context of the statements to ensure students understood the items thoroughly. A sample item is "games help me to quickly grab the attention and maintain their focus throughout the game". The students' engagement was measured students' engagement using the construct defined by Handelsman et al. (2005), which is skill engagement (3 items) and participation/interaction engagement (4 items). Then, these items were combined as another factor, student engagement (total of 7 items) (see Ab Rahman et al., 2018). The sample items are "Online gamification system encourages me to take good notes in the classroom" and "Online gamification system contributes to me having fun in the classroom".

Data Analysis and Results

This study utilized Structural Equation Modeling (SEM) through Partial Least Squares (PLS) via Smart PLS 4 software for data analysis. This approach is ideal for complex causal models and does not impose strict distributional assumptions. The PLS technique was selected for its robustness and capability to manage intricate relationships within the research model.

The analysis employed a two-stage approach for rigorous evaluation. First, the measurement model was assessed to confirm the validity and reliability of the study's scales, ensuring the credibility of the constructs. The second stage tested the structural model to examine the hypothesized relationships between variables. PLS analysis utilized a bootstrapping technique with 5,000 subsamples, as recommended by Hair et al. (2017, 2019), to determine the statistical significance of the path coefficients. This method provided bootstrap t-statistics, allowing for a more precise evaluation of the model relationships, thereby enhancing the study's results' robustness, overall reliability, and validity.

Minimization Common Method Bias

The potential issue of standard method bias (CMB) arising from using a single questionnaire to collect data on both independent and dependent variables was carefully addressed in this study. To mitigate this concern, rigorous attention and significant efforts were devoted to minimizing CMB, employing procedures and statistical techniques in a two-pronged approach, as suggested by Podsakoff et al. (2003; 2012). Firstly, a variety of measurement scales were incorporated into the research instruments to assess process components. Participants were explicitly informed that there were no correct or incorrect answers, encouraging unbiased responses. Importantly, data collection occurred in two stages: the initial phase involved introducing gamification technology at the beginning of the semester, followed by lectures and formative assessments using online gamification platforms (e.g., Kahoot and Quizizz) throughout the semester. Subsequently, phase 2 commenced at the end of the semester, with students completing a questionnaire to evaluate their attitude, engagement, and interaction with the utilized gamification. This comprehensive approach aimed to minimize potential biases and enhance the validity of the study's findings.

Second, in the statistical techniques, the approach of the Harman single-factor was employed. Thus, by employing exploratory factor analysis, Harman's single-factor analysis seeks to ascertain whether a single individual accounts for the preponderance of the covariance among all the items in this investigation. This test exposed no principal component since the variation of the initial element only contributed to 23% of the total variance, which was significantly less than 50%, and five variables with eigenvalues higher than one were found, contributing to 68% of the entire variability. The CMB is not a problem in this experiment (Podsakoff et al., 2003). Furthermore, we took it further and performed a complete collinearity study using full collinearity based on variance inflation factors (VIFs) (Kock, 2015). Kock and Lynn (2012), who established a method to measure both vertical and lateral collinearity, suggested the approach used. They suggest that when VIF values are more significant than 3.3, it is a sign of collinearity. As shown in Table 1, the maximum VIF was 2.114. Thus, these tests suggest that common method bias is not a significant concern in this study.

Table 1.Common Method Variance Assessment Via Full Collinearity Estimate Criteria

Components	Attitude Towards Using Gamification	Students' Concentration	Skill Engagement	Participation Engagement
VIF	2.101	1.258	1.631	2.114

Note (s): VIF = Variance Inflation Factor

Construct Validity and Reliability

To develop the measurement model, we conducted assessments for item reliability, internal consistency reliability, convergent validity, and discriminant validity. Results indicated no significant issues regarding item reliability, with most items surpassing the recommended threshold of 0.707 (Hair et al., 2017), as illustrated in Table 2. Cronbach's Alpha and Composite Reliability (CR) were utilized to evaluate the internal consistency of constructs, yielding values ranging from 0.701 to 0.859 and 0.705 to 0.861,



respectively, surpassing the 0.70 cutoff (Hair et al., 2017). Convergent validity was assessed through the calculation of average variance extracted (AVE), with values ranging from 0.594 to 0.676, exceeding the required threshold of 0.5 (Hair et al., 2017). These findings are summarized in Table 2.

Table 2. *Measurement Model, Item Loadings, Construct Reliability and Convergent Validity*

First-Order Constructs	Second-Order Constructs	Items	Factor Loading (> 0.5)	Cronbach's alpha (> 0.7)	Composite Reliability (rho_a) (> 0.7)	Average Variance Extracted (AVE) (>0.5)
Attitude Towards Using Gamification		ATUG-1	.810	.709	.723	.633
9 11 11 11 11 11 11 11 11 11 11 11 11 11		ATUG-2	.860			
		ATUG-3	.845			
Students' Concentration		SC-1	.877	.825	.840	.654
		SC-2	.787			
		SC-3	.868			
		SC-4	.852			
Skill Engagement		SKE-1	.828	.701	.705	.626
		SKE-2	.837			
		SKE-3	.801			
Participation Engagement		PRE-1	.791	.859	.861	.543
		PRE-2	.713			
		PRE-3	.782			
		PRE-4	.807			
	Students' Engagement	Skill Engagement	.745	.821	.823	.551
	<i>Gg</i>	Participation Engagement	.890			

Regarding discriminant validity, Fornell-Larcker's method revealed no issues; the Average Variance Extracted (AVE) for each construct exceeded the variance shared with other latent variables, as displayed in Table 3 (Hair et al., 2017). Additionally, Henseler et al. (2015) proposed the Heterotrait-Monotrait Ratio (HTMT) of correlations based on the Multitrait-Multimethod Matrix as an alternative, more precise approach to Fornell-Larcker's technique. Table 4 illustrates that all HTMT values are below 0.90, indicating discriminant validity for each pair of variables. Moreover, as the 95% confidence intervals exclude 1, all HTMT values significantly differ from 1, confirming discriminant validity between each pair of variables (Henseler et al., 2015).

Table 3. *Measurement Model, Discriminant Validity via Fornell and Larcker Criterion*

Constructs	1	2	3
1. Attitude towards Using Gamification	0.796		
2. Students' Concentration	0.447	0.639	0.379
3. Students' Engagement	0.586	0.520	0.561

Note (s): Diagonals represent the square root of the average variance extracted while the other entries represent the correlations.

Table 4. *Measurement Model, Discriminant Validity via (HTMT Criterion)*

Constructs	1	2	3
1. Attitude towards Using Gamification			
6. Students' Concentration	0.579		0.434
7. Students' Engagement	0.750	0.615	

Hypotheses Testing

Table 5 presents the results of the direct effect hypotheses, specifically focusing on hypotheses 1 and 2. Hypothesis 1 examines the direct relationship between attitude towards using gamification and skill engagement the analysis reveals a statistically significant positive with H1 being accepted ($\beta = 0.154$, t = 3.412, p < 0.000). Similarly, H2, which explores the relationship between attitudes towards using gamification and participation engagement, also shows significance ($\beta = 0.157$, t = 3.545, p < 0.000). All relevant values are displayed in Table 5.

In regards to the interaction test (moderation), which indicated the attitude towards using gamification x students' concentration -> students' skill engagement ($\beta = 0.231$, t = 2.204, p < 0.001). In regards to the second interaction of attitude towards using gamification x students' concentration -> students' participation engagement ($\beta = 0.242$, t = 4.672, p < 0.000). Therefore, the relationship between attitude towards using gamification and students' engagement (i.e., skill engagement and participation engagement) is more robust when students' concentration is higher than low (see Table 5).

Table 5. *Hypotheses Test*

Hypothesis	Direct Effect	Original sample	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Decision
H-1	Attitude towards Using Gamification-> Skill Engagement	0.154	0.045	3.412	0.000	Supported
H-2	Attitude towards Using Gamification -> Participation Engagement Interaction Effect (Moderation)	0.157	0.044	3.545	0.000	Supported
H-3a	Attitude towards Using Gamification x Students' Concentration -> Students' Skill Engagement	0.231	0.036	2.204	0.001	Supported
H-3b	Attitude towards Using Gamification x Students' Concentration -> Students' Participation Engagement	0.242	0.052	4.672	0.000	Supported

The interpretation of the interaction term, following Dawson's (2014) recommendations, was conducted. Accordingly, after plotting the regression of high versus low students' concentration, it was observed that a positive relationship between attitude towards using gamification and students' engagement (i.e., skill engagement and participation engagement), becomes more pronounced when students' concentration is high compared to when it is low (Figure 2 and 3). This observation provides apparent support for Hypothesis 3a and 3b.

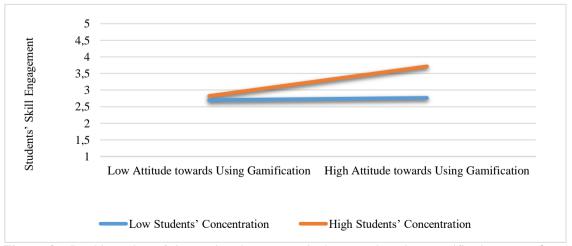


Figure 2. Graphing plot of interaction between attitude towards using gamification **x** students' concentration towards Students' Skill Engagement.

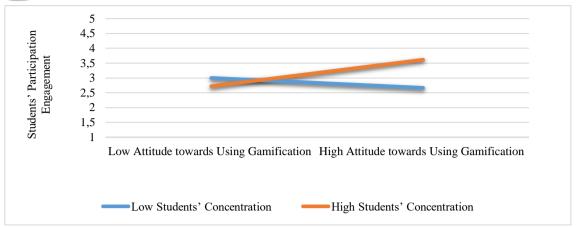


Figure 3. Graphing plot of interaction between attitude towards using gamification x students' concentration towards Students' Participation Engagement.

Thus, Figure 2 illustrates the relationship between attitudes towards gamification and student skill engagement, differentiated by high and low concentration levels. The steepness of the high concentration line indicates that as students' positive attitudes towards gamification increase, their skill engagement rises more significantly compared to when concentration is low, as shown by the flatter slope of the low concentration line. This suggests that changes in attitudes towards gamification have a diminished effect on skill engagement when concentration is low.

In regards to Figure 3 represents a similar interaction but focuses on another type of engagement, such as participation engagement, the interpretation of the slopes would follow a similar pattern. A steeper slope at high concentration levels than at low levels would confirm that gamification's effect on participation engagement is more pronounced when students are highly focused.

Significance of concentration levels, the difference between high and low concentration levels is significant in understanding the effectiveness of gamification. When students' concentration is high, their engagement in skills or participation increases significantly with positive attitudes towards gamification, as indicated by steeper slopes. In contrast, when concentration is low, the impact of gamification on engagement is less pronounced. This suggests that while gamification can enhance engagement, its effectiveness is contingent upon students being in a state of high concentration.

Moderation hypothesis H-3a posits that concentration moderates the relationship between attitude towards gamification and skill engagement, and Figure 2 shows a significant interaction effect with steeper slopes for high concentration, and this would support the hypothesis. The increased impact of gamification on skill engagement at high concentration levels confirms that concentration moderates this relationship. If H-3b suggests a similar moderating effect for participation engagement, and Figure 3 shows that the relationship between attitude towards gamification and participation engagement is more robust at high concentration levels, this would support the hypothesis. If the slopes are less steep or insignificant at low concentration levels, it further supports that concentration moderates the relationship.

Discussion and Implications

This study is significant in education as it explores the dynamics of gamification in teaching. It examines how attitudes toward gamification relate to student engagement, particularly skill, and participation engagement while considering the moderating effect of student concentration. Conducted among Saudi public university students, the research provides valuable insights into a diverse educational landscape, with all findings showing statistical significance. The results reveal a notable positive correlation between attitudes toward gamification and student engagement, especially at higher concentration levels. This study enhances our understanding of the relationship between gamification, student attitudes, concentration, and engagement, paving the way for more effective and tailored teaching methods to improve student learning experiences.

This study enhances our understanding of gamification in higher education by underscoring the critical role of student concentration as a moderating factor. While previous research, such as Nkomo et al. (2021), has

shown that gamification boosts student motivation and engagement, this study reveals that its effectiveness varies significantly based on students' ability to concentrate. This finding challenges the assumption that gamification alone enhances engagement, suggesting that its success depends on students' cognitive states. Additionally, by focusing on skill engagement and participation engagement, the study offers a more nuanced exploration of how different facets of student involvement are affected by gamified strategies, thereby expanding the research landscape.

Based on these findings, educators are encouraged to consider not only the incorporation of gamification into their teaching practices but also the creation of an environment conducive to sustained concentration. For instance, instructors could implement gamification techniques aligned with structured learning activities, such as using rewards and challenges that require critical thinking and sustained effort, thereby promoting deeper engagement. Moreover, educators might consider using short, focused, gamified tasks when students are most likely to be attentive, such as at the beginning of a class session, to capitalize on natural peaks in concentration (Lazzaro & Keeker, 2004). To further enhance concentration, educators could introduce techniques such as mindfulness exercises or brief breaks designed to refresh and refocus students, ensuring they are cognitively prepared to engage with gamified content fully. Tailoring gamification strategies to the unique needs of students, perhaps through personalized learning paths or adaptive learning technologies, can also help address varying levels of concentration among students, thus maximizing the potential benefits of gamification (Pitoyo, 2019).

Regarding, theoretical implications, this study holds significant theoretical implications and contributes substantially to the body of knowledge in education by investigating the relationship between attitudes toward gamification and student engagement. Significantly, while also considering the moderating role of student concentration, this research advances our understanding of the dynamics underlying gamified learning environments. This study enhances the body of knowledge by shedding light on the intricate interplay between gamification, student attitudes, concentration levels, and engagement within educational settings, offering valuable insights for educators and researchers seeking to optimize teaching practices and enhance student learning experiences.

For the practical aspects, thus, the practical implications of this study are far-reaching and hold substantial significance for policymakers and stakeholders in the education system in Saudi Arabia. By elucidating the relationship between attitudes towards gamification and student engagement, particularly in terms of skill engagement and participation engagement, while also examining the moderating effect of student concentration, this research offers actionable insights to enhance teaching methods and improve the overall education system. The findings provide policymakers with evidence-based guidance on the effectiveness of gamification in fostering student engagement and motivation. Policymakers can leverage these insights to inform the integration of gamification strategies into curriculum design and instructional practices, thereby promoting more interactive and dynamic learning experiences for students. Furthermore, the identification of the moderating role of student concentration underscores the importance of creating conducive learning environments that facilitate student focus and attention. Policymakers can use this knowledge to implement strategies aimed at optimizing student concentration levels, such as reducing distractions and promoting mindfulness techniques in classrooms. Ultimately, by embracing gamification and tailoring teaching methods to enhance student engagement and concentration, policymakers can work towards cultivating a more effective and impactful education system in Saudi Arabia, empowering students to achieve their full academic potential and succeed in an increasingly competitive global landscape.

Conclusion

This study strongly demonstrates that gamification effectively enhances student engagement in Saudi educational settings. Students with positive attitudes exhibit higher skill and participation levels, and this effect is intensified when their concentration is high, indicating that gamification fosters engagement more effectively during focused learning. The research highlights the critical role of student concentration as a moderating factor, suggesting that successful gamification strategies should enhance and maintain focus to maximize the advantages of gamified learning.

This study demonstrates a strong positive correlation between students' attitudes toward gamification and their engagement in educational activities. Students who view gamification favorably are more actively engaged in skill development and participation. This relationship is significantly pronounced when students maintain high concentration levels, suggesting that gamification is most effective in enhancing engagement



when the focus is intense. The findings reveal critical insights into the interplay between gamification, student attitudes, and concentration. The effectiveness of gamification largely hinges on students' concentration, underscoring the importance of integrating gamified elements while ensuring optimal focus to maximize benefits. This dual emphasis aids in optimizing gamified learning strategies.

Furthermore, the study contributes to educational discourse by showcasing effective gamification integration to enhance student engagement. It provides empirical evidence for designing educational interventions aligned with students' attitudes and cognitive states (Chen et al., 2024). Educators and policymakers can utilize these insights to develop gamification strategies that foster student interest and promote sustained engagement through improved concentration. Overall, this research deepens our understanding of gamification's connection to psychological factors like concentration and its impact on educational outcomes, offering practical implications for creating engaging and effective learning experiences (Schnitzler et al., 2021).

Limitations and Future Direction

This study offers valuable insights, but several limitations must be acknowledged, and future research directions need consideration. Using a convenience sample of 306 students from a single public university in Saudi Arabia may restrict the generalizability of the findings, especially in contexts with different educational systems, cultural norms, or levels of technological integration. Additionally, the unique characteristics of Saudi higher education may mean that the results do not apply directly to other educational settings. The reliance on self-reported data to measure attitudes, engagement, and concentration introduces potential biases, such as social desirability or inaccurate self-assessment, which could impact the outcomes.

Future research should expand the sample size and include multiple universities from diverse regions or countries to address these limitations to enhance generalizability. Longitudinal studies tracking changes in student engagement and concentration over time, especially related to sustained exposure to gamification, would provide deeper insights into its long-term effects. Experimental designs manipulating concentration levels through controlled interventions could offer more robust evidence of causality in the relationship between gamification and engagement. Additionally, exploring the impact of specific gamification elements (e.g., competition vs. collaboration, rewards vs. narrative) on various forms of engagement could help educators refine their approaches for greater effectiveness. Research could also examine the intersection of gamification with other pedagogical innovations, such as flipped classrooms or blended learning, to understand how these strategies might further improve student learning outcomes.

The study provides valuable insights into the relationship between attitudes toward gamification and student engagement. Yet, it primarily focused on this relationship, potentially overlooking other critical factors that could influence engagement levels. For instance, instructor characteristics, such as teaching style, experience, and rapport with students, along with the classroom environment—including the physical setup, social dynamics, and access to technological resources—are all variables that might significantly impact how students engage with gamified learning. Future research should incorporate these variables to gain a more nuanced and holistic understanding of the determinants of student engagement in gamified environments. By doing so, educators and researchers can better identify the interplay between these factors and how they collectively shape student outcomes in gamified settings.

Furthermore, while the study effectively explored the moderating role of student concentration, it did not consider other potential moderators that could influence the effectiveness of gamification. For example, individual differences in gaming experience could play a critical role in how students respond to gamified elements, with those more familiar with gaming potentially finding these elements more engaging or intuitive. Similarly, students' intrinsic motivation—whether logically inclined to find the material interesting or driven by external rewards—could significantly affect how they engage with gamified content. Future studies should investigate these and other potential moderators, such as personality traits or learning styles, to uncover additional insights into the conditions under which gamification is most effective. This would enable a more tailored approach to gamification, where strategies could be adapted to suit different student profiles, thereby maximizing their educational impact.

Furthermore, the study's reliance on self-reported measures for assessing attitudes, concentration levels, and engagement introduces the possibility of bias and measurement error, which could affect the reliability of the findings. Self-reporting often comes with the risk of social desirability bias, where respondents may

answer in a way, they believe is expected rather than reflect their true feelings or behaviors. Future research should consider utilizing objective measures or observational methods to mitigate these concerns. For example, tracking actual engagement through behavioral indicators, such as time spent on tasks, participation in class discussions, or performance on gamified activities, could provide a more accurate reflection of student engagement. Similarly, physiological measures of concentration, like eye-tracking or heart rate variability, could offer a more objective assessment of students' focus during gamified learning sessions. These methods would enhance the validity of the findings and provide a more robust foundation for understanding the dynamics of gamification in education.

Moreover, the study primarily examined the relationship between attitudes towards gamification and student engagement, neglecting other potential factors that may influence engagement levels, such as instructor characteristics or classroom environment. Future research could incorporate these variables to gain a more nuanced understanding of the determinants of student engagement in gamified learning environments. Furthermore, while the study explored the moderating role of student concentration, other potential moderators, such as individual differences in gaming experience or motivation, were not examined. Future studies could investigate these factors to uncover additional insights into the conditions under which gamification is most effective. Lastly, using self-reported measures for attitudes, concentration levels, and engagement may introduce bias and measurement error. Future research could utilize objective measures or observational methods to enhance the validity of findings. Addressing these limitations and exploring additional variables and moderators will contribute to a more comprehensive understanding of gamification dynamics in educational contexts and inform the development of more effective teaching practices.

Thus, addressing these limitations and expanding the scope of future research to include additional variables, potential moderators, and more objective measurement tools will significantly contribute to a more comprehensive understanding of gamification dynamics in educational contexts. This, in turn, can inform the development of more effective, evidence-based teaching practices that are better aligned with students' diverse needs and preferences. By integrating these considerations, educators can create more engaging, inclusive, and impactful learning experiences that harness the full potential of gamification to enhance student learning outcomes.

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Tax implications of influencer income in Peru through social media platforms

Implicaciones fiscales de los ingresos de influencers en Perú a través de plataformas de medios sociales

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Abstract

This article investigates how influencers in Peru who generate income through platforms such as Facebook, Instagram and YouTube are subject to taxation under Peru's Income Tax Law (LIR). The main sources of income include: advertising income and affiliate income. Advertising income is derived from payments that brands or companies make to influencers to promote their products or services. On the other hand, affiliate revenues are commissions that influencers earn by recommending products or services to their followers through affiliate links. This study analyzes in detail how this income is classified and taxed under Peru's LIR. In conclusion, the research highlights the importance of understanding the tax implications of influencers' income in Peru through social platforms. In addition, it highlights how easily these business models allow tax evasion, due to the informality of the transactions and the lack of effective control mechanisms,

Resumen

Este artículo investiga cómo los influencers en Perú que generan ingresos a través de plataformas como Facebook, Instagram y YouTube están sujetos a impuestos bajo la Ley del Impuesto a la Renta (LIR) del Perú. Entre las principales fuentes de ingresos se destacan: ingresos publicitarios e ingresos por afiliación. Los ingresos publicitarios se derivan de pagos que las marcas o empresas realizan a los influencers para promocionar sus productos o servicios. Por otro lado, los ingresos por afiliación son comisiones que los influencers obtienen al recomendar productos o servicios a sus seguidores mediante enlaces de afiliados. Este estudio analiza detalladamente cómo estos ingresos se clasifican y gravan según la LIR del Perú. En conclusión, la investigación destaca la importancia de comprender las implicaciones fiscales de los ingresos de los influencers en Perú a través de plataformas sociales. Además, se subraya lo fácilmente que estos modelos de

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which poses a significant challenge for tax compliance within the established legal framework.

Keywords: Influencers, income, digital marketing, followers, advertising.

negocio permiten la evasión fiscal, debido a la informalidad de las transacciones y la falta de mecanismos de control efectivos, lo que plantea un desafío significativo para el cumplimiento de las obligaciones tributarias dentro del marco legal establecido.

Palabras clave: Influencers, renta, marketing digital, seguidores, publicidad.

Introduction

Commercializing goods and services through social media platforms and collaborating with recognized influencers have generated significant monetary income (Belanche et al., 2021). This situation derives from the various strategies companies use to take advantage of the services of these individuals to effectively position their products in the market and capture consumers' attention (Arora et al., 2019). This phenomenon is based on the trust and prominence that influencers have managed to establish in contemporary society. In addition, corporate giants such as Google, Meta, and other corporations disseminate certain content to promote a wide range of products, which generates economic benefits for these influencers (Arora et al., 2019; Audrezet et al., 2020).

Social media platforms have been shown to significantly impact traditional revenue streams by capturing attention and audience, according to several studies examining the relationship between social media and traditional media (Ren et al., 2024). Unsafe content present on these platforms can cause safety issues for brands, negatively impacting advertisers and market performance (Liu et al., 2022). In addition, the social media revolution has threatened traditional media, such as print newspapers, leading to declining circulation and operational issues affecting revenue streams (Shkarupa et al., 2019). Also, public awareness of platform-based businesses, as evidenced by research with Twitter and news articles, indicates a changing landscape that could further impact traditional revenue streams (Kounadeas et al., 2022). The dual role of social networks as attention grabbers and disruptors of traditional communication channels underscores their profound influence on traditional revenue streams in various industries.

According to the National Superintendence of Customs and Tax Administration (SUNAT) in Peru, influencers stopped paying the state around fifty million soles between 2016 and 2018 (Kassa, 2021). The Tax Court of Peru evaluated the activities carried out by the content creators. It concluded that the income generated by said activity corresponds to the business income category since the everyday use of capital and work was identified to sustain its source. Production company such as web pages and profiles. However, this resolution is not binding and may not be a systematic analysis in the last administrative instance, which generates uncertainty for the taxpayer.

This study examines the tax implications of income influencers generate through social media platforms such as Facebook, Instagram and YouTube. Influencers create and share content online that appeals to a broad and engaged audience. The income derived from these activities may be subject to tax evasion, depending on how they are classified and declared under the Peruvian Income Tax Law (LIR) (MEF, 2004; Patricio Aparicio et al., 2023).

In this article, the fiscal implications of the income generated by influencers in Peru through platforms such as Facebook, Instagram and YouTube will be analyzed. First, the theoretical framework will present the key theoretical foundations related to the digital economy and the taxation of income earned by influencers. Following this, the methodology section will detail the qualitative approach used to conduct the research, including data collection and analysis techniques. Subsequently, in results and discussion section, the most relevant findings of the research will be presented, analyzing their fiscal implications and how they affect both influencers and the Peruvian tax system. Finally, the conclusions will synthesize the main results and offer recommendations based on the findings obtained.

Theoretical Framework

The term "influencer" is an Anglicism commonly used to describe people who can influence others, mainly through social media platforms (RAE, 2014). As an alternative in Spanish, the term influential is





recommended for individuals who are effective in social networks. Other valid alternatives are "influencer" and "influencer". In Peru, the National Council for Advertising Self-regulation, through Resolution No. 05-2018-CONAR/CPE (Narvaez & Meza, 2023), defines influencers as those people who enjoy recognition in digital networks and have the power to influence, impact, or motivate the actions of a large number of followers using social networks.

Additionally, Indecopi, the National Institute for the Defense of Competition and the Protection of Intellectual Property of Peru affirms that an influencer can be an individual or character with credibility in a particular area (Mendoza-Moreno & Turriate Guzman, 2022). Influencers become significant market factors, influencing consumer decisions based on their ability to persuade and involve their followers (Vrontis et al., 2021). According to Alkan & Ulas (2023), trust also plays a crucial role in influencing purchase intention. By advertising trust, consumers can reduce the perceived risk and complexity in purchasing decisions and increase the perceived certainty of expected outcomes, leading to higher purchase intent (Dwidienawati et al., 2020). In addition, trust significantly impacts the purchase intention of products and services.

Therefore, the term "influencer" refers to individuals who, under their credibility, can influence consumer behavior, whether purchasing products or using services. They achieve this by creating and disseminating content on social media platforms like Instagram and YouTube.

In Peru, the income of individuals is classified into five categories, which are determined by SUNAT. First category rents are those obtained by giving up the use of movable or immovable property in exchange for a payment. These rents are based on the qualification of the capital to generate income. A rate of 6.25% is applied to 80% of the gross income (SUNAT, 2023).

Second-category income is that obtained from other capital concepts that are not first-category income. These incomes can be a product or a flow of wealth, depending on whether the capital is maintained or transferred. The exact rate is applied as in the first category.

The third income category is called business income, obtained by natural or legal persons who carry out activities with capital and work. Other income not classified in other classes is also included. The tax rate is 29.5% on net income.

The fourth category, income, is the income obtained from self-employment without a dependency relationship. If commercial activities complement self-employment, they are considered third-category income.

The fifth category of income is income from dependent work. The tax is calculated by adding the net income from dependent and independent work plus foreign source income.

Peru's tax system categorizes income into distinct categories to effectively tax different sources of earnings, ensuring that both capital-based and labor-based incomes are appropriately taxed. Each category has specific rules and tax rates, reflecting the nature and source of the income. This structured approach aims to create a fair and comprehensive tax system, balancing the taxation between self-employed individuals, employees, businesses, and capital income earners (Lira Camargo et al., 2023; Cabrera Sánchez et al., 2021). The Table 1 summarizes revenue by category in Peru.

Table 1. *Income category*

Income Category	Income Category Activity	
First	First Lease, sublease, and assignment in use	
Second	Second Capital income and capital gain	
Third Business income		29.5%
Fourth	Self-employment income	8%, 14%, 17%,
Fifth Dependent Work income		20% y 30%

Source: Information obtained from (SUNAT, 2023).



In Peru, given that influencers can generate substantial income by promoting products and services aligned with their personal brand (Hamdan & Lee, 2022), this income is part of the second category if it comes from capital not classified in the first category, or the fourth category if it comes from self-employment activities without a dependency relationship.

As influencers increase their credibility and trust, they boost consumers' purchase intention, which can translate into higher revenues from promotions and collaborations (Jun & Yi, 2020). This revenue is taxable and, therefore, can increase the country's tax revenue. Likewise, this income generated by influencers represents a new source of tax revenue that diversifies the country's tax base (Kulikovskaja et al., 2023). As this industry grows, more influencers are expected to contribute their taxes.

The visibility and success of influencers may lead to increased scrutiny and regulation by tax authorities, ensuring that this income is properly reported and taxed, which could strengthen the tax system (Di Gioacchino & Fichera, 2022). The consistency of influencers in promoting products and services not only strengthens their impact on the market but can also have a positive effect on Peru's tax revenues. This is because the higher revenues generated by these influencers, subject to taxation, contribute to the country's tax collection and diversification.

In the same way, according to Article 5 of the Regulation of the Income Tax Law (LIR) of Peru, taxpayers are obliged to pay taxes based on their domiciliary situation (Ministerio de Economía y Finanzas, 2022). The regulation specifies that individuals domiciled in Peru are subject to tax on their worldwide income, including income derived from both Peruvian and foreign sources. On the other hand, non-residents are only required to pay taxes on income that is considered to be of Peruvian origin.

This legislative provision demonstrates that the Peruvian government taxes residents for their entire income, regardless of whether it originates in Peru or abroad. The requirement remains applicable irrespective of whether the payment is also subject to tax in the foreign jurisdiction.

Methodology

This study set out to explore and describe the tax implications of income generated by influencers through social media platforms. The research was conducted through a non-experimental design and used a qualitative approach with an exploratory scope.

For data collection, the technique consisted of analyzing the social media accounts and channels of recognized influencers. The platforms selected were Facebook, Instagram and YouTube, due to their high influence in Latin America (Global Stats, 2023).

Among the criteria for the selection of the sample, the engagement rate was considered, which measures the interaction of followers with the influencer's content (likes, comments, shares, etc.). A high engagement rate indicates an active and engaged audience. The influencers selected had more than 100,000 followers. In addition, the relevance of the influencer's niche in relation to the products or services they promote was analyzed, given that an influencer with a well-defined and relevant niche can have a greater impact on the purchase intention of their followers. Follower growth over a given period was also evaluated; steady or rapid growth may indicate greater popularity and recent relevance. For this, content management tools such as Hootsuite and Sprout Social were used to monitor influencers' activities. Finally, the use of hashtags and keywords in the publications was examined to understand the trends and topics that the influencer addresses and how they impact their audience.

By considering these criteria, a more complete and accurate collection of Peruvian influencers with greater acceptance was achieved, which is crucial for data analysis and understanding the impact of these influencers on the audience and on the potential tax collection of their activities (Rivera-Rogel et al., 2022).

The data collection technique consisted of conducting random interviews (Gonzalez-Carrion & Aguaded, 2020) with some of the influencers selected according to the criteria, in order to delve deeper into their experiences and challenges (León & Espinoza, 2023; Mateus et al., 2022).



To ensure that the selection of influencer accounts was clear, objective and consistent, a rubric was developed with the help of digital marketing experts. Table 2 presents the criteria evaluated for sample selection.

Table 2.Sample selection criteria

Criteria	Characteristics	
Engagement rate	Number of subscribers	
Niche relevance	Number of views	
Growth	Hootsuite and Sprout Social Ratios	
Keywords	Scope of their publications	

Prepared by the authors.

Results and discussion

In the development of this research, 35 influencer accounts were initially selected based on criteria established in the methodology; however, during the data collection process, a total of 25 in-depth interviews were conducted. The decision was based on the criterion of theoretical saturation (Nascimento et al., 2018), which refers to the point at which additional interviews do not contribute new relevant or significant information, indicating that the variety and depth of the topics of interest have been captured.

As the interviews progressed, it was observed that responses began to repeat themselves and no significant new categories or themes emerged. This phenomenon was particularly evident in the last five interviews, where patterns and trends identified in the previous interviews were consistently confirmed without providing new elements. Therefore, it was considered that continuing with the interviews would not contribute significantly to the enrichment of the results.

In the analysis of the interviews, several main sources of income were identified that are subject to taxation and simultaneously present significant challenges in terms of tax compliance due to the ease with which they can be evaded. The interviews revealed that influencers' income predominantly comes from the following sources:

Influencers' taxable income from Advertising.

In the context of the phenomenon of influencers, it is crucial to determine the origin of their activities. In this sense, the main activity carried out by influencers is the generation of content, which is subsequently disseminated through the appropriate channels on their social media platforms.

Once the engagement with their followers occurs, the visibility of the influencers becomes apparent, and their opinions are considered influential factors in the configuration of specific trends. Consequently, it can be said that an influencer's asset resides in the degree of influence or recognition that he has acquired within the social network, which makes him an attractive entity within the consumer market. This asset is effectively demonstrated through creating and sharing content, photos, and videos uploaded to their profiles on social networks.

As stated, content creators and influencers use their channels to deliver promotional content for their contracted brand partners. They are compensated for such promotional posts in either monetary or non-monetary form.

It is essential to recognize that influencers are aware that the primary goal of their promotional efforts is not simply to increase the number of followers on their respective channels. Instead, your goal is to use these initial followers to signify the superior quality of the endorsed product or service. Consequently, these initial supporters assume a position of significant credibility, and their expressed opinions are duly considered.

The activity carried out by the influencers is accompanied by its corresponding consideration, predetermined based on the frequency with which they agree to promote products or services through social media platforms, either in the form of monetary compensation or non-monetary benefits. Undoubtedly, the

income generated by this activity allows its individualization, serving the use of social networks as a means of access to the market.

Additionally, the revenue source may be identified as different for influencers who earn revenue through YouTube ads embedded in their channel content. There is a distinction between content creators who monetize their activities through the YouTube Partner Program (YPP) and those who do not. By opting for monetization, influencers consent to including ads in their content with the expectation of earning revenue based on the level of engagement with these ads.

It determines the durability of these sources of income; it is observed that the very structure of the social network facilitates long-term sustainability. In the case of Instagram, the constant creation of uploaded content through various options within the platform allows influencers to consolidate their position in the market, thus demonstrating the potential for a sustained source of income.

In the same way, concerning YouTube, the durability of the source of income is demonstrable through the prerequisite of registration in the YPP, which implies the fulfillment of specific requirements such as the accumulation of 4,000 hours of content viewing and the collection of at least 1,000 followers. By imposing these criteria, the social network ensures that influencers have achieved initial recognition for their activities, thus offering them the opportunity to monetize their channels and earn revenue. In addition, by continuously adhering to the social network's community standards, income generation remains sustainable over time.

In addition, when advertisements are embedded within videos as a form of promotion, this is known as "instream advertising." we find ourselves before another endless source of income. These advertising contracts are established based on the recognition and positioning that the content creators have achieved within their respective social networks.

Influencers' taxable income by marketing agencies.

The activities carried out by marketing companies present similarities with those carried out individually by influencers. Advertisers aim to create advertising campaigns to promote their products or services, considering the target audience and trying to establish the closest possible interaction with said audience.

In this sense, marketing companies play an essential role in developing campaigns by offering various alternatives for advertising strategies. One of the most sought-after options is influencer campaigns through social networks.

Observations have revealed that representation agencies have a pre-established portfolio of influencers. This portfolio is presented to the advertiser, who selects the most suitable proposal based on the desired characteristics to execute the advertising campaign.

Unlike representation agencies, media agencies do not have a pre-existing portfolio of influencers to offer advertisers. Instead, your initial responsibility is to define the influencer characteristics necessary for the successful execution of the ad campaign. Once the advertiser's preferences have been determined, the search for the ideal influencer for the campaign begins.

In addition, the specialized agencies executing the advertising campaign are to define the strategies and contents. It allows them to provide comprehensive campaign development services, including searching and hiring influencers who will participate in the advertising campaign.

Consequently, there are several avenues through which influencers can interact with advertising agencies. Such interactions can give rise to various tax implications that deserve further analysis.

Influencers' taxable income from affiliations.

The affiliate activity carried out by influencers on YouTube aims to generate income through exclusive content offered to subscribers. It implies a channel development to increase its attractiveness for users who pay to access additional content.



The income derived from this option is easily identifiable since the influencers offer complementary content in exchange for a fee collected through the social media platform. In addition, this income source is individualized since the content creator can decide whether to incorporate this alternative source of income into his channel.

It has taken all of these things into consideration, and two factors emerge from this activity that contributes to verifying the sustainability of the source of income over time. First, meeting the requirements to remain in the YouTube Partner Program (YPP) ensures that the influencer retains the opportunity to monetize their channel through this option. Secondly, choosing to offer exclusive content for channel members implies an implicit commitment on the part of the influencer to upload original content to maintain their membership periodically.

Regarding the inclusion of advertising by YouTube in the influencers' content, the source of income is considered enabled once the YPP membership application has been accepted and the monetization option has been activated. It is because the operations of the social media platform predominantly revolve around placing advertisements within the content.

In the case of affiliations, accepting to be part of the program serves as the initial step to enable the source of income and only the monetization functionalities are activated. Only when the influencers decide to start the affiliate option is the income generation source considered fully enabled. This activation allows users to become channel members, thus paying for exclusive content.

Influencers' taxable income from other activities on Social Media Platforms.

These activities generate revenue through remuneration for facilitating commercial interactions, such as enabled links or affiliations, in which the seller or advertiser provides compensation. Additionally, bonuses are acquired for Reels Play based on the number of views the reel obtains.

The production revenue stream is identifiable as it originates from rewards received when content creation is used to enable the purchase option. Similarly, bonuses can be traced back to revenue earned from several views.

Regarding the authorization of the source of income, in the case of affiliations, influencers access this form of payment by opting for the affiliation program within the social network. Once this source of income is obtained, only products affiliated with the program can be labeled.

A similar situation applies to bonuses, as influencers can sign up for the program within a specific time frame.

Regarding enabling links to generate the corresponding purchases, it is observed that the generation occurs when the connection is embedded in the content of the feed, allowing followers to use it to make purchases.

The merchandising showcase option offered by social networks allows influencers to promote products associated with their channels or brand. This function will enable subscribers or track members to access a page to purchase the advertised products.

In addition, influencers can incorporate links from their advertisers into their content, thus receiving compensation based on the sales generated through these links.

Regarding revenue from YouTube Premium, influencers receive a percentage of payments made for subscriptions related to views or downloads of their content.

The source of income is identifiable regarding sales through merchandising links or services in exchange for payment from advertisers. It is expected to persist over time since such transactions may occur continuously.

Similarly, revenue from the percentage earned through YouTube Premium is also recognized as a lasting source. The enduring nature of this revenue stream stems from the established positioning of the influencer

and the influence it exerts on its subscribers, which ensures its sustainability, like revenue from advertising services.

The following Table 3 resume the analysis carried out in this investigation:

Table 3. *Analysis categories and justification*

Analysis Categories	Justification
Influencers' income from Advertising.	Advertising revenue allows influencers to monetize their online presence and content creation efforts, reflecting the value they
	bring to businesses looking to reach their target audience through influencer marketing.
Influencers' income by marketing agencies.	Marketing agencies act as intermediaries between influencers and brands, facilitating collaborations and negotiating contracts on their behalf. These agencies connect influencers with brands looking to promote their products or services to a specific target audience. Influencers earn income through marketing agencies by participating in brand campaigns, sponsored content, product endorsements, and other promotional activities.
Influencers' income from affiliations.	When influencers join an affiliate program, they receive specific links or codes to share with their audience. When their followers click on these links or use the codes provided to make a purchase, the influencer receives credit for the referral and gets a percentage of sales or a flat commission. The amount of income earned through affiliations can vary based on factors such as the commission structure of the affiliate program, the influencer's audience share, and the number of successful conversions.
Influencers' income from other activities on Social Media Platforms.	The various activities of social influencers allow them to earn revenue by leveraging their online presence and influencing purchasing decisions among their audience. This creates a mutually beneficial relationship between influencers, affiliate programs, and brands.

Prepared by the authors.

Discussion

The In the context of influencer services provided through social networks such as Instagram and YouTube (Spangler & Harden, 2022), it is evident that the income generated by these activities constitutes a qualified, long-lasting, and periodic source and, therefore, can be classified as taxable income.

In the case of the income obtained by influencers through advertising services on Facebook, Instagram and YouTube, in addition, to pay related to monetization, they can be classified as business income within the third category for tax purposes due to their commercial nature.

Regarding the application of withholding taxes on YouTube royalties obtained by influencers, the challenge of determining the tax jurisdiction to impose such tariffs arises. In Peru, for example, according to subparagraph b) of article 9 of the Income Tax Law (MEF, 2012), royalties are considered Peruvian source income when they are used economically within the country or when paid by a resident entity. However, the criteria for establishing the economic connection of such activities may vary in other jurisdictions.

In Peru, business income is subject to tax based on net income, which implies deducting the necessary expenses incurred in generating and maintaining the source of income. This deduction mechanism operates under the principle of correlation between income and expenses in Consultation No. V0992 – 16 (Dirección General de Tributos, 2016), the Spanish General Directorate of Taxes analyzed the deductibility of the costs of an influencer, highlighting that the deductible expenses must be proven in the development of the activity, not being admissible the sporadic costs related to the creation of contents.



The results of the interviews suggest that, although these sources of income should be subject to taxation under Peruvian regulations, the lack of effective control mechanisms and the prevalence of informal transactions allow many influencers to avoid complying with their tax obligations (Kassa, 2021). This situation underscores the need to develop more robust strategies adapted to the digital economy to ensure fair and effective taxation of income generated in the field of social networks.

Thus, influencers can request deductions for expenses directly related to income-generating economic activities. This income, in turn, creates the obligation to maintain adequate accounting records to justify the deductibility of such costs (Patricio Aparicio et al., 2023).

Conclusions

In conclusion, this research sought to achieve the objectives related to the taxation of income obtained by influencers:

- Examined how to determine the taxable income of influencers based on various factors established in the Income Tax Law (LIR) in Peru and whether it applies to natural or legal persons. He discovered that factors such as the business structure, the regularity in generating income, and the existence of advertising contracts are significant in income classification.
- Evaluated the tax consequences of the income obtained by influencers on Instagram and YouTube and
 the necessary measures to comply with the provisions of the LIR in Peru. He highlighted the
 importance of adequately declaring and taxing the income generated through these platforms,
 considering the business nature of the influencers' activity.
- Analyzed how the regularity in content creation affects the income qualification for tax purposes. It
 concluded that the frequency and regularity in generating income and the professionalization of the
 activity could be decisive in considering income as business returns.
- Identified potential tax risks and challenges influencers face and proposed recommendations to address
 them appropriately. Tax stressed the importance of keeping accurate accounting records, complying
 with tax obligations, and having professional advice to avoid the risks of tax evasion and guarantee
 compliance with regulations.

In general, this research offers a complete vision of identifying the tax base of influencers, the tax implications of their income on platforms such as Instagram and YouTube, the role of regularity in the classification of payment, and the associated tax risks. The recommendations are intended to promote the correct taxation of these activities, guaranteeing compliance with legal provisions and contributing to a fair and equitable tax system.

Although the research exhaustively addressed the proposed objectives, it is essential to recognize some limitations that could have influenced the results and conclusions obtained:

Legal and tax environment: The legal and tax environment may differ between countries and regions. This research focused on the Peruvian Income Tax Law. Therefore, the results and interpretations may not be relevant to other legal and tax environments.

Changes in technology and platforms: Technology and digital platforms, like Instagram and YouTube, are constantly changing. Changes in policies, terms, conditions, and new revenue sources could affect the relevance of this research findings over time.

Diversity of business structures: Influencers can operate as individuals or companies with various business structures. Influencer taxation may depend on the variety of business models and systems used, making it difficult to generalize the results.

Time and Scope Limitations: This research was conducted in a limited time frame and with a specific scope. Some deeper aspects or approaches may have been left out due to time and resource constraints.

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Enhancing language proficiency in non-philological students using interactive online linguistic courses

Підвищення рівня володіння мовою у студентів нефілологічних спеціальностей за допомогою інтерактивних лінгвістичних онлайн-курсів

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Abstract

The relevance of the research is determined by Ukraine's European integration educational development strategy. This outlined concept of progress highlights the importance of increasing speech competence among higher education learners, including those in non-philological specialities. The article aims to analyse the impact of online courses as an innovative tool for forming speech competence in studying linguistic disciplines by learners of non-philological specialities. The research methods used include online diagnostics of speech competence level, experimental research, assessment of result dynamics, and analysis of the effectiveness of

Анотація

Актуальність дослідження зумовлена євроінтеграційною стратегією розвитку освіти України. Окреслена концепція прогресу підкреслює важливість підвищення мовленнєвої компетентності здобувачів вищої освіти, зокрема нефілологічних спеціальностей. Мета статті - проаналізувати вплив онлайн-курсів інноваційного інструменту формування мовленнєвої компетентності при вивченні лінгвістичних дисциплін студентами нефілологічних спеціальностей. Метоли дослідження онлайн-діагностику включають сформованості мовленнєвої компетентності,

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interactive online platforms. The research mainly focused on studying the potential of interactive online courses in forming speech competence. It has been proven that using digital educational platforms in educational programmes allows for enforcing the teaching process of linguistic disciplines at a high professional level, stimulating aspects of motivation and effectiveness in forming speech competence. The research determined that implementing innovative approaches educational programmes allows learners to acquire practical skills through active interaction with various non-standard methods and forms of work. The article demonstrates that innovative methods of teaching linguistic disciplines in educational programmes have the potential to form an effective learning environment, ensuring a significant improvement in the quality of education.

Keywords: digitalisation, interactive technologies, educational platform, integration, online courses.

експериментальне дослідження, динаміки результатів, аналіз ефективності інтерактивних онлайн-платформ. дослідженні основна увага була зосереджена на вивченні потенціалу інтерактивних онлайнкурсів формуванні мовленнєвої компетентності. Доведено, що використання цифрових освітніх платформ в освітніх програмах дозволяє забезпечити процес лінгвістичних дисциплін викладання високому професійному рівні, стимулюючи аспекти мотивації та результативності у формуванні мовленнєвої компетентності. У результаті дослідження визначено. впровадження інноваційних підходів в освітні набувати програми дозволя€ студентам практичних навичок через активну взаємодію з різними нестандартними методами формами роботи.

Ключові слова: діджиталізація, інтерактивні технології, освітня платформа, інтеграція, онлайн-курси.

Introduction

Implementing innovative methods for teaching linguistic disciplines is considered within the concept of improving the effectiveness of mastering these disciplines by learners of non-philological specialities and acquiring practical speaking skills. Active interaction with a wide range of materials, active forms of work, continuous feedback, and non-standard educational tools contribute to a deep understanding of the learning material.

The accumulation of significant amounts of information that needs to be mastered and processed necessitates the introduction of innovative technologies into educational programmes for teaching linguistic disciplines, mainly English. In this regard, one of the fundamental advantages of using interactive online courses is the gradual shift from traditional verbal methods of information transmission to audiovisual ones, which significantly enhances the level of effectiveness in perceiving and assimilating educational material, activates the educational process, stimulates learners' motivation for learning effectiveness, and promotes the formation of stable speech competence skills. Based on the above, studying the potential of interactive online courses as a progressive method of teaching linguistic disciplines in the educational programmes of learners of non-philological specialities is currently considered a priority and relevant scientific direction.

Research aim

This study aims to analyse the impact of online courses as an innovative tool for forming linguistic competence in studying linguistic disciplines by students of non-philological specialities.

Research objectives

To investigate the level of English language competence of non-philological students.

To implement a pedagogical experiment combining the ascertaining, formative and control stages.

To introduce elements of educational process optimisation in the context of interactive online courses.

To experimentally test the effectiveness of the proposed technology.

Literature Review

The topic of implementing innovative interactive methods for teaching linguistic disciplines in educational programmes of the modern digital era has been reflected in the results of scientific developments by several researchers. In particular, the publications by Bardadym (2022), Haleem et al. (2022), and Kementsev et

al. (2020) explore the variability of innovative tools for teaching English in a digital environment. Pylypets (2021) and Sharples et al. (2015) analyse the potential of educational platforms within the concept of integration into the global educational environment. Furthermore, Shevtsova & Kozubai (2020) investigate the possibilities of incorporating modern software solutions into English language teaching programmes, while Slukhenska et al. (2022) and Tsepko (2023) study online courses as a prospective pedagogical technology.

Among the scientific developments in the researched field, it is appropriate to highlight the research materials by Snikhovska (2020), Susanty et al. (2021), and Zhao et al. (2021), who see the potential of information systems as the basis for the development of speech competence among learners of nonlinguistic speci0alities. The conceptual horizons of the researched issue are expanded in the works of Alam (2021) and Castro & Tumibay (2021), who pay significant attention to developing an individualised model of the digitalisation process of educational training based on the principles of informative-operational communication, which are sufficiently implemented in interactive online courses.

Acknowledging the importance of the researcher's contributions to the studied topic, the deficit of practical scientific-methodological solutions in the outlined field is worth noting, which requires further active searches.

The study of a foreign language lies in its practical application due to communicative situations, and the main principle of communicative learning is language activity. This is the view of researchers P. Chakraborty et al. (2021). According to the authors, students should learn to solve real and imaginary tasks of joint activity through a foreign language. This approach represents the implementation of such a method of teaching, where systematic, correlated, and orderly learning of a foreign language as a means of communication takes place under conditions of modular language activity in classes. At the same time, the researchers do not specify how, as a result of this approach, the system of English language proficiency is formed, implemented, and operates in the learning process.

Furthermore, A. Demir et al. (2021) attribute a significant role to the principle of novelty in using the communicative approach. According to the researchers, a crucial aspect of this is the development and integration of material that considers different types of perception. Online platforms such as Duolingo, Memrise, and Rosetta Stone allow teachers to create interactive tasks that consider visual, kinaesthetic, and auditory types of perception. For instance, video lessons, game elements, and audio materials can be used for effective learning. However, the scientists do not mention the risks associated with partial or complete digitalisation of the learning process.

There are several gaps in existing scientific studies. In particular, contemporary researchers have not defined or discussed how the mentioned method allows for the systematic monitoring of the improvement of speaking competencies of each listener with the aim of further adequate response and adaptation of educational activities. This study aims to fill existing gaps by analysing how the use of online platforms in the learning process allows for expanding students' access to virtual learning resources, increasing the intensity of learning activities and the level of individualisation.

Methods

The research methodology involved a case-control approach. For the theoretical study, a representative period was chosen to analyse the directions of practical implementation of online strategies for forming foreign language competence. A representative period of three months was chosen for the experimental part of the research. The study used questionnaires and surveys to assess knowledge, analyse the effectiveness of technological elements, and evaluate the methodology of expert assessments.

Several methods were used in the course of the study, including:

- Online diagnostics of the level of language competence;
- A pedagogical experiment conducted with applicants for non-philological specialities during one academic semester, the control group consisted of 35 students, the experimental group of 37;
- Assessment of the dynamics of results, and analysis of the effectiveness of interactive online platforms.





At the diagnostic (ascertaining) stage of the experimental part of the study, students took specialised tests to determine their English proficiency on platforms such as EnglishDom, British Council, Cambridge Assessment English, Exam English, and EF SET. These tests evaluated four main parameters: grammar, reading, writing, and listening comprehension, allowing for the determination of the average level of speech competence in the concept of the English language. Several of these tests were presented for comparison to accurately determine the level of English proficiency, which ranged from A1 to C1.

Students in the experimental group were offered a series of interactive online courses: Duolingo, LearningApps, and Rosetta Stone. After completing the experiment, students underwent repeated testing to determine their level of English language competence. The results of the dynamic indicators of the effectiveness levels of interactive online courses in the experimental and control groups are presented in graphical form, and appropriate conclusions were made.

The selected duration of the study was three months, as a necessary condition for the success of pedagogical research is its connection with practice. Its specifics are determined by the uneven course of acquiring foreign language competence and the unpredictability of their results. The three-month study is designed to obtain comprehensive data on the dynamics of the development of the pedagogical phenomenon, taking into account the conditions in which it functions. As a rule, pedagogical research results require prolonged verification, as they do not appear immediately. Therefore, three months is the recommended period for implementing significant innovations in pedagogical practice to form conclusions about their effectiveness. The process of selecting and distributing participants into groups was based on the principle of equivalence and random selection. Performance was assessed based on level testing.

Ethical considerations included informed consent regarding the openness of test results from adult participants in the experiment.

The study is limited by time and administrative resources.

Results and Discussion

Current requirements for the level of training of a modern specialist involve intensifying the quality of speech competence, which is advisable to achieve through the transformation of traditional methodologies, particularly in mastering the English language. Implementing pedagogical technologies for studying linguistic disciplines using online platforms allows for successful results through the potential of resources available on the Internet, which are accessible and easy to use for participants in the learning process.

The study of linguistic disciplines lies in their practical application due to communicative situations, with the main principle of communicative learning being speech activity. The approach proposed by interactive online courses involves implementing a learning method where systematic, correlated, and organised teaching of a foreign language as a means of communication occurs in the context of simulated language activities in classes. As a result of this approach, a system of English language proficiency is formed, implemented, and operational in the learning process. The principle of novelty plays a significant role in using the communicative approach (Yuzkiv et al., 2020).

An important aspect is the development and integration of material that considers different types of learner perception. Online platforms such as Duolingo, Memrise, and Rosetta Stone allow teachers to create interactive tasks that consider visual, kinesthetic, and auditory types of perception, such as video lessons, game elements, and audio materials.

Several effective online platforms can be used for productive English language learning. These include targeted resources with interactive video lessons, audio, and text materials. Notably, platforms like Khan Academy, BBC Learning English, and Quizlet, each with advantages and potential capabilities, allow for a personalised approach to the methodological process that best synergises with individual needs and learning styles for English.

Analysing the list of modern applications, it was found that there are few platforms where students can independently develop learning materials. Such a function can be encountered in LinguaLeo, where users can create their vocabulary with pronunciation. In applications like Duolingo, Busuu, Rosetta Course, Byki, and Polyglot, didactic material is presented in audio and video fragments, flashcards, and texts. The study

material is primarily offered in the form of various exercises. A point accumulation system to progress to the next higher level forms a motivational component of the learning process. Additionally, learners can share their successes and compare their achievements on popular social networks using these platforms.

With the help of the learning apps service, non-philological specialities learners studying English can creatively develop learning exercises with teachers and actively apply them in practical classes, embedding them into their priority web resources. Students can access online learning materials as available educational materials without spatial and temporal restrictions.

Students can perform various tasks through the Duolingo online platform, such as translating texts, using vocabulary, and answering questions. Tracking progress and receiving instant feedback promote active and effective language learning. Learners develop basic writing and sentence construction skills and new vocabulary by engaging in personally chosen time intervals (this could be just 5-10 minutes a day). The Duolingo platform is structured like a tree of achievements. A certain number of points must be earned to advance to a new level. This approach is an effective stimulus for self-improvement and continuing English studies. If desired, the online platform allows students to form groups, allowing them to compare their progress and learning outcomes.

Another example is non-philological speciality learners' use of the Rosetta Stone online platform. This platform is a comprehensive set of mobile applications for one of the most popular interactive English textbooks. The advantage of Rosetta Stone is its unique methodological approach, which enables language acquisition without dictionaries and grammar references more intuitively. Using the microphone, the platform can assess pronunciation accuracy. This approach is considered adequate and engaging, with its standout feature being the simulation of immersion in an English-speaking environment. Rosetta Stone offers a variety of interactive lessons aimed at forming associative links.

A pedagogical experiment was conducted to illustrate the effective use of interactive online courses in the research process. The experiment involved 72 non-philological speciality students. The control group (using a traditional English language teaching programme) consisted of 35 individuals, while the experimental group (using the proposed interactive online course technology) consisted of 37 individuals. The experiment lasted throughout the academic semester of 2023-2024 and included diagnostic, formative, and summarising stages.

At the diagnostic (ascertaining) stage of the experimental part of the study, students took special tests to determine their level of English proficiency. They were assessed based on grammar, reading, writing, and listening parameters, which determined the average level of speech competence in English (Appendix 1).

Resources offered for testing included EnglishDom, British Council, Cambridge Assessment English, Exam English, and EF SET. Students were asked to take several of these tests and compare the results to determine their English level accurately. Proficiency levels ranged from A1 to C1. Results are shown in Table 1.

Table 1. English Language Proficiency of Non-philological Specialities Students

Group	English Language Proficiency	Number of students
Experimental	A1	15
	A2	11
	B1	5
	B2	4
	C1	2
Control	A1	12
	A2	10
	B1	7
	B2	5
	C1	1

Source: compiled by the author



The ascertaining stage of the experiment revealed that the levels of speech competence in English of the experimental and control groups are comparable and require effective adjustment. Three levels were identified: high (B2-C1 levels), intermediate (A2-B1 levels), and beginner (A1 level).

Learners in the experimental group were offered various interactive online courses (Table 2).

Table 2. *Online Courses Used in the Experimental Study by Applicants of Non-Philological Specialities*

Interactive online platform	Educational process features		
LearningApps	Creative development of educational exercises by the learner and their active application in practical lessons, incorporating then into their preferred web resources. Students can access educationa materials via the Internet, in the form of available study materials without spatial or temporal limitations.		
Duolingo	Students can track their progress and receive instant feedback, contributing to active and effective language learning. There is the option to choose the time interval personally. The format is presented as a tree of achievements, where advancement to a new level is possible only if a certain number of points are obtained. The online platform provides opportunities for students to be grouped.		
Rosetta Stone	It represents a comprehensive set of mobile applications for a popular interactive English language textbook. The platform's advantage is its unique methodological approach to acquiring speaking skills without dictionaries and grammar guides on an intuitive level. Using a microphone, the platform can assess pronunciation accuracy. A distinctive feature is the simulation of immersion in an English-speaking environment. The platform offers a varied set of interactive lessons aimed at forming associative chains.		

Source: compiled by the author

After completing the experiment, students underwent a retest to determine their level of speech competence in English (Appendix 1). It was found that students in the experimental group showed more significant progress than those in the control group, which used traditional teaching methods. In particular, the intermediate level (A2-B1) indicators of English proficiency increased by 35% in the experimental group, while in the control group, they increased by 12%. At the same time, the indicators of the high level (B2-C1) in the experimental groups increased by 50% and in the control groups by 17% (Table 3). The results of comparing performance level indicators of the use of interactive online courses by the experimental and control groups are shown in Figures 1 and 2.

Table 3. *English Language Proficiency of Non-philological Specialities Students*

Group	English Language Proficiency	Number of students
Experimental	A1	5
	A2	15
	B1	8
	B2	7
	C1	2
Control	A1	9
	A2	10
	B1	9
	B2	6
	C1	1

Source: compiled by the author

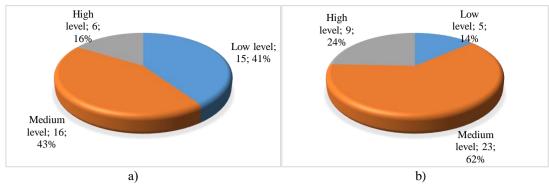


Figure 1. Dynamics of English Language Proficiency in the Experimental Group: a) before the experiment; b) after the experiment, number of students Source: author's modelling.

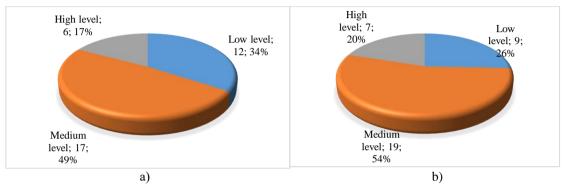


Figure 2. Dynamics of English Language Proficiency in the Control Group: a) before the experiment; b) after the experiment, number of students Source: author's modelling

The control phase of the experiment evaluated the effectiveness of the proposed elements of interactive educational tools in studying linguistic disciplines by learners of non-philological specialities, indicating the feasibility of further research in the outlined direction.

Table 4.Levels of Speech Competence according to the European Language Assessment System (CEFR or CEF), which was used for diagnostics of non-philological students

Level	Grammar	Reading	Writing	Listening
A1	Students distinguish between plural and singular, know Present Simple, Past Simple, and Future Simple, and can ask simple questions.	He/she reads short sentences (up to 9 words) with simple vocabulary.	He/she can write first name, surname, date of birth, city, and age.	He/she comprehends short sentences (up to 9 words) spoken slowly and with clear articulation.
A2	Students know the Present Continuous and Past Continuous tenses.	He/she reads short texts (up to 300-400 words) on simple topics.	He/she can write short notes or stories but with a dictionary.	He/she comprehends simple dialogues and stories about everyday life.
B1	Students know modal verbs, conditional clauses, gerunds, infinitives, the Present Perfect, Present Perfect Continuous, and degrees of comparison of adjectives.	He/she reads texts of different types and styles despite 10-15% of unfamiliar words.	He/she can write a personal or business letter or a short story (up to 20 sentences) without using a dictionary.	He/she comprehends the story's plot and the character's feelings and actions and can guess specific vocabulary from the context.
B2	Students know the features of all conditional clauses, modal verbs, gerunds,	He/she reads both thematic professional reports and non- adapted fiction texts	He/she writes texts with a lot of details and examples on various topics	He/she listens almost fluently to texts - from fiction stories to



	infinitives, and all tense forms.	without a dictionary and with a complete understanding of the		interviews and reports.
		content.		
C1	Students use inversion, the	He/she reads unadapted	He/she can write a	He/she perceives
	causative form of the verb,	texts, understands their	wide variety of texts	standard English and
	and the tenses required for	essence, and can work	using artistic	speech with different
	narration.	with analytical reports	techniques.	accents and
		and scientific materials.		peculiarities.

According to modern researchers Abuhassna et al. (2020), Adıgüzel et al. (2023), and Vassilakopoulou & Hustad (2023), a significant advantage of digital educational platforms is that learners of non-linguistic specialities studying English through online courses have the opportunity to check their level by completing tests and assignments on various topics. In addition, they can independently search for additional lexical or grammatical material due to their difficulty level and individual needs. Researchers believe that such an individualised approach increases motivation and learning effectiveness.

As evidenced by the scientific developments of Kit et al. (2023), Naumenko (2018), and Povoroznyuk et al. (2022), the correct application of the potential of online platforms significantly enriches English language learning in terms of didactic possibilities, particularly in the listening and speaking sectors. Researchers argue that by using modern targeted online platforms, one can listen to audio recordings or watch videos at an individually comfortable pace, corresponding to the general level of language skills in the foreign language. According to scientists, a significant advantage is the ability to listen to parts of the text that cause difficulties an unlimited number of times.

Scientists Bodnar et al. (2023), Burbules et al. (2020), and Szymkowiak et al. (2021) emphasise that social media in the presented concept can be considered a creative space for learners of English language competence. They represent platforms where students freely interact, showcase their talents, and seek mutual support in mastering English. Thanks to the wide variety of platform choices, learners use social media to discuss projects, intensifying the effectiveness of lessons and consolidating acquired skills. Given the rapid growth in social media platforms, the variations in the delivery methods of educational materials have increased, allowing students to effectively learn English in their space and time, with complete personal control over the learning process.

The authors Cherchata (2023) and Dovzhenko & Dyachuk (2021) emphasise that using online platforms in the learning process allows for expanding access to resources in the virtual learning space, increasing educational activities' intensity and enhancing individualisation. The method of online courses also allows for systematic monitoring of the improvement of the language competencies of each listener with the aim of further adequate response and adaptation of the course's educational activities, which, according to scientists, is an additional advantage of interactive learning.

The practical and theoretical significance of the research results is manifested in filling the gaps in existing scientific developments on the given topic. The results highlight the need to develop and implement optimised online foreign language learning strategies, emphasising the importance of self-education skills and restoring a positive attitude towards the digitalisation of education. In particular, the results of the current study demonstrate that online technologies contribute to the development of cognitive abilities and active interaction skills, communicative foreign language competence, and the formation of social activity. Interactive technologies help to implement the acquired skills and abilities in various fields.

These conclusions partially contradict the general deductions of scientists in the field of the researched issue. They mainly consider online courses in linguistics to be additional and insignificant. Meanwhile, this article argues for the opposite functionality of the proposed methods. When the potential of online platforms is correctly applied, lessons in linguistic disciplines are significantly enriched regarding didactic possibilities, particularly in the listening and speaking sectors. Using modern targeted online platforms, students can listen to audio recordings or watch videos at an individual comfortable pace corresponding to their general language skills. A significant advantage is the ability to listen to parts of the text that cause difficulties an unlimited number of times. Some variations of applications allow for initial testing, based on which the online platform offers individual recommendations that help to start learning effectively from the necessary level.

The study is limited by the complexity of implementing experimental verification of theoretical conclusions, which requires significant time and administrative resources.

Conclusion

Based on the research, innovative approaches to teaching English within educational programmes in the digital age form the basis for the promising development of pedagogy and language education. Leveraging the potential of interactive platforms, online resources, mobile applications, and other digital tools can significantly optimise learners' motivation, develop communication skills, and facilitate effective and intensive mastery of linguistic disciplines.

Thanks to digital technologies, new opportunities are emerging for individualising the educational process and improving the quality of education while mastering linguistic disciplines. Using innovative educational approaches, methods, and tools helps acquire the main concepts of synergy between speech and communication competence, skills for independently acquiring new knowledge, and developing personal creative potential.

As a result of the analysis within the research, the effectiveness of implementing promising directions for developing and improving the speech competence of non-linguistic speciality learners was examined, particularly the use of online courses for learning foreign languages. After implementing the proposed elements into the educational process at the control stage of the pedagogical experiment, it was found that the intermediate level of English language competence indicators increased by 35% in the experimental group and by 12% in the control group. Meanwhile, the high-level indicators in the experimental groups increased by 50% and in the control groups by 17%.

The results obtained in the study can be applied to improve the process of teaching English and to develop effective educational programmes in the modern digital age. The prospect of further research is seen in developing methods for improving digital tools for teaching English and studying the impact of digital technologies on the development of language skills in learners.

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The impact of online resources on students' digital competence: an empirical study

Вплив онлайн-ресурсів на цифрову компетентність студентів: емпіричне дослідження

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Abstract

This article examines the role of online resources in developing students' digital competence skills. It discusses the importance of digital competence in today's society and the need for educational institutions to provide students with the necessary skills and knowledge to thrive in the digital age. The study involved a survey of 147 first-year university students to assess their level of digital competence. The findings reveal that the majority of students have a moderate level of digital competence, with some demonstrating a high level and others requiring additional support. The article concludes by emphasizing the need for ongoing efforts to enhance students' digital competence through the effective integration of online resources in educational settings.

Keywords: online resources, digital competence, principles, approaches, functions, levels of

Анотація

У статті розглянуто роль онлайн-ресурсів у розвитку навичок цифрової компетентності студентів. У ньому обговорюється важливість цифрової компетенції в сучасному суспільстві та потреба навчальних закладів надавати студентам необхідні навички та знання для процвітання в епоху цифрових технологій. У ході дослідження було опитано 147 студентів першого курсу вищих навчальних закладів для оцінки рівня їх цифрової компетентності. Результати показують, що більшість студентів рівень мають помірний цифрової компетентності, причому деякі демонструють високий рівень, а інші потребують додаткової статті підтримки. Ha завершення наголошується на необхідності постійних підвищення цифрової компетентності учнів ефективної ШЛЯХОМ

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formation of digital competence, future specialists, information and digital technologies.

інтеграції онлайн-ресурсів у навчальні заклади.

Ключові слова: онлайн-ресурси, цифрова компетеність, принципи, підходи, функції, рівні формування цифрової компетентності, майбутні фахівці, інформаційно-цифрові технології.

Introduction

In modern conditions, processing and storage technologies are developing, and access to information is increasing. Since the development of information and digital technologies makes the educational process more effective and contributes to the development of new learning tools, the higher education system is one of the public institutions influenced by information (Yefimova & Zhernovnikova, 2018).

Digital education is the key to the foundation of a new life in society, building a different reality, because today the world is undergoing a rapid educational transformation to digital, from traditional. Since modern education is the most important tool for society's socio-economic, value, cultural, and political development it, in the future perspective, based on the forecast requirements of the social sphere of the country and the economy, has an anticipatory character. The development of formation and digital competence, and the use of online resources in the formation of digital competence skills of specialists of all industries is the main task of the world level. It is digital competence based on highly developed skills, a high level of information management, logical thinking, and mastery of digital technologies (Henseruk & Martyniuk, 2020).

In modern conditions, the importance of the ability to innovatively solve various problems, scientific and critical thinking, and coordinated actions is growing in citizens. The digital transformation of education, which is rapidly developing, in particular, contributes to the use of online resources in the formation of digital competence skills of the future specialist, contributes to the creation and effective use of online resources, the transfer of the educational process to a distance form of learning, requires updating, development of services and tools and improvement the level of digital competence of future specialists, education organizers, and higher school teachers.

Nowadays, to achieve success in the digital society, it is mandatory for every person, student, and specialist, to possess digital competencies. Nowadays, modern professions require the ability not only to cooperate and communicate with the help of gadgets but also to critically evaluate information, to process large data sets available on the Internet and other media, to program and manage "smart things", and to understand the needs of cyber security.

In 5 years, society will have a shortage of personnel with digital professional competencies. Formed digital competencies for specialists of all fields, researchers, and students are important for the development of scientific education in a digital society, for cooperation, effective professional communication, use of online resources, virtual laboratories, digital tools and services, artificial intelligence, augmented and virtual reality, robots during the conduct and organization of the cognitive research process during life (Hrynevych et al., 2020).

The development of the influence of online resources on the digital competence of students is currently an urgent issue of theory and teaching methods in the educational process. Based on this, we considered the following questions in the article:

- The content and importance of digital competence of future specialists in educational and professional activities.
- Levels of digital competence and tasks at all levels of education reflect the needs of educational
 activities, particularly scientific and methodological support of education when using modern online
 resources.
- 3. Principles of designing a digital educational environment and principles, approaches, functions, and levels of formation of digital competence of the future specialist.
- 4. The content of online resources that are important in the formation of digital competence skills of specialists.

- 5. The main advantages of online resources.
- 6. The influence of online resources on students' digital competence was experimentally tested.

Literature Review

The analysis of scientific research indicates the existence of a large number of approaches of scientists to the study of the essence of the concept of "digital competence".

Scientists have not paid enough attention to the role of online resources in forming digital competence skills, and the problem of developing digital competence in the conditions of the digital educational environment of future specialists.

Thus, in the conditions of a digital educational environment, the problem of the development of the digital competence of future specialists was actualized by H. Henseruk, & S. Martyniuk (2020) by providing this process with new resource support. Regarding the formation of the digital competence of specialists, an analysis of international documents was made, and the approaches of scientists regarding the interpretation of the concept of "digital competence" were determined. The public need for the transition to developing future specialists in digital competence and digitalization of education at all levels of the education system is formulated. The ways of designing a digital educational environment, one of the aspects of developing a person's digital competence, are revealed. The principles that must be followed are highlighted while creating a digital educational environment. In training future specialists, the advantages of the digital environment are highlighted: individualization of the educational process; intensification of interpersonal communication; and increasing the efficiency of the educational process. Strategies for updating methodical and substantive components of higher education, and developing and creating a digital educational environment have been determined.

O. Zhernovnykova, L. Peretiaha, A. Kovtun, M. Korduban, O. Nalyvaiko, & N. Nalyvaiko (2020) conducted a scientific analysis of the essence of the concepts "digital competence", "digital training of the future teacher", "gamification of education" and it was convincingly proven that the main the factor that contributes to the effective development of the educational process in a modern institution of higher education is the formation of digital competence in future specialists using gamification since the ideology based on the digitalization of education and gamification prevails in higher education, where traditional specialists are replaced by "game specialists", coordinators of online resources, online platforms, and educational trajectories. It has been proven that the formed digital competence is the result of the formation of digital training of future specialists. The results of the conducted testing, questionnaires, and surveys made it possible to theoretically substantiate and develop "the technology of forming the digital competence of future teachers using gamification, which is implemented at the following stages: professional-motivational, content-activity, reflective-corrective".

The conditions for the formation of the digital competence of a specialist in postgraduate education were defined by I. Vorotnykova (2019) and the European framework of digital competencies for citizens was considered, UNESCO international standards were analyzed from the university level of education, and the criteria for evaluating and determining digital competence in future specialists were summarized. The main requests of specialists regarding developing and forming individual trajectories of professional development of specialists made it possible to decide on the conducted questionnaire to increase digital competence. In the system of postgraduate pedagogical education, the conditions for the formation of digital competence of specialists are defined: digitization of education, the availability of documents regarding the requirements for the digital competence of a specialist, the need to implement and develop criteria for the development of digital competence of specialists, the readiness to ensure the formation of digital competence of specialists through postgraduate education, the developed IT infrastructure of educational institutions, ways of motivating a specialist to self-assessment, continuous professional development, and digital competence are clarified.

Considering the concept of specialist motivation, the ability to use ICT to deepen and develop knowledge, the Norwegian researcher R. Krumsvik (2012) defines the digital competencies of a specialist from the point of view of their professional development. Influences the plan of training specialists of different countries – expansion of the concept of digital competence. For example, in Norway, digital competencies at all levels of education and in all subjects are the fifth basic competence, changing the basic conditions of learning and teaching in modern education. By introducing a holistic model, the scientist developed and



expanded the definition of the digital competence of a specialist, which combines the prerequisites for individual ability and analytical levels, together with scientists from different countries of the world, J. Tondeur, K. Aesaert, B. Pynoo, N. Fraeyman, & O. Erstad (2015) conducted international research to prepare future teachers to integrate ICT into education. The researchers substantiated the two-component structure of the teacher's digital competence: in educational planning – competence in the use of ICT, competence in supporting students to use ICT in the classroom and noted: "that the obtained empirical data indicate that pedagogical workers often do not feel well prepared for the effective inclusion of ICT in their professional activities and this indicates a gap between technical and pedagogical skills among teachers and requires an emphasis on teaching methods of using digital technologies".

- L. Hrynevych, N. Morze, & M. Boiko (2020) substantiated the concept of "digital competence" and proved the need for the introduction of scientific education in educational institutions under the conditions of the digital transformation of education, presented an overview of innovative pedagogical technologies that are introduced in education for distribution to a wider list of academic subjects of scientific thinking and the purpose of effective application of innovative competences, STEAM education and as the main idea of forming key competences of future specialists. The authors provided a list of skills, knowledge, and activities, and explored the theoretical foundations of the concept and components of digital competence, which contribute to quality STEAM education. It has been proven that for the formation of the specialist's digital competence, it is advisable to use the research-cognitive method, problem-based learning, and the method of educational projects in the educational process of a higher school. When implementing scientific education in universities, the features of innovative technologies based on modern tools and digital technologies are shown. The practice of using and mastering such technologies among teachers was studied to study modern educational trends and identify needs and appropriate digital tools for providing innovative pedagogical technologies.
- I. Hrebenyk (2019) considered the features of the digital competence of managers, particularly: the concept of "digital literacy of the head of an educational institution", the principles of forming digital competence were revealed; the functions of digital competence are highlighted. The essence of the concept of "digital competence" is revealed. The main aspects of digital competence are shown as the basis of a new paradigm in education, namely: the justified, effective application of digital technologies in educational activities, the presence of a high level of functional literacy in the field of ICT, understanding of digital technologies for solving professional tasks, which is aimed at the development of students of higher education as subjects of the information society. three levels of digital competence of the manager are distinguished. The ways of formation of digital competence in the heads of educational institutions are identified, and the components of digital competence of heads of educational institutions are formulated. The analysis of the essence of non-formal education, the formation of digital competence of the heads of educational institutions was carried out, the "structural model of the methodology of the formation of digital competence of the heads of educational institutions" was developed, the practicality of using andragogic principles of adult education was taken into account.
- O. Ivanytsky (2019) defined the "digital competence of a physics teacher" as the ability of an individual to safely, critically, and expediently choose new ways of innovation in education and in the professional activity of a specialist, proposed ways of creating and changing digital resources, ways of managing them, distributing them, contributing to the formation of digital competence of future specialists and expanding the opportunities of educational space acquirers. The components of the physics teacher's digital competence are substantiated: communicative, media, information, and technical competence.
- O. Plakhotnik, V.Zlatnikov, I. Strazhnikova, N. Bidyuk, A. Shkodyn, & O. Kuchai (2023) in their article considers the main ways of using information technologies in education (creation of information environments in each educational institution. The factors without which the modern implementation of educational information technologies is impossible are singled out. Emphasis is placed on the most effective means of educational multimedia systems in classes (automated learning systems; computer simulators; multimedia presentations; educational films; video demonstrations, etc.).
- I. Palshkova, D. Bidyuk, O. Balalaieva, O. Shynkaruk & V. Karhut (2023) examines digital learning technologies, shows the effectiveness of information technologies, introduces the aspects of digitalization of the educational space, analyzes the current state of the use of information technologies in the conditions of digitalization of education.

Therefore, the analysis of literary sources allows us to draw conclusions that the researchers have analyzed international documents and defined approaches to interpreting the concept of "digital competence". We observe the absence of a single scientific opinion in explaining the idea of "digital competence" and its components. The social need for the transition to developing future specialists in digital competence and digitalization of education at all levels of the education system is formulated. It has been proven that the formed digital competence is the result of the formation of digital training of future specialists. The system of postgraduate pedagogical education defines the conditions for the formation of digital competence of specialists.

Scientists have not paid enough attention to the role of online resources in forming digital competence skills, and the problem of developing digital competence in the conditions of the digital educational environment of future specialists.

PURPOSE OF THE RESEARCH: elucidation of the role of online resources in the formation of digital competence skills of specialists and elucidation of the ways and levels of students' digital competence formation.

Methodology

A complex of general scientific theoretical, statistical, and empirical methods was used to conduct the pedagogical experiment: to form the main provisions of the work – conceptualization, and synthesis of theoretical knowledge; for educational motivation and obtaining results – a pedagogical experiment; to process the results that were obtained during the pedagogical experiment – mathematical and statistical methods.

A study was conducted among students in the first year to determine the level of digital competence of higher education students.

A total of 147 respondents took part in the survey. Google Forms software was used to collect the information required for the study.

Data entry and processing were carried out using Microsoft Excel programs.

Questionnaires of specialists regarding the conditions for the development of digital competence and the needs of the individual made it possible to identify the main conditions for the formation of digital competence in formal and informal education:

We use the experimental research method, which assumes that in the context of the conducted research, it is important and necessary to get the respondents' opinions regarding their personal vision of the ways and levels of the formation of digital competence.

The experiment was conducted in Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, V. N. Karazin Kharkiv National University, Pavlo Tychyna Uman State Pedagogical University. The conduct of the experiment is permitted by the scientific councils of the universities in order not to violate ethical considerations in institutions of higher education.

Results and Discussion

1. The content and importance of digital competence of future specialists in educational and professional activities.

The digital transformation of education for making effective and quick management decisions based on Big Data technologies involves the primary transformation of teaching methods and the educational process, a new level of cooperation with all participants in the educational process, and meeting the academic needs of students – expanded opportunities with the introduction of adaptive learning technologies. All these processes require an understanding of the operation of services, the ways of using digital technologies, the use of online resources, and the current trends in developing digital technologies and techno trends (Bykov et al., 2020). Such tasks are solved by introducing the latest educational technologies, particularly digital ones, into a person's education and professional activity, which is possible due to the growing role of



scientific education. The best international experience in leading educational systems captures these positions. Based on the comparison and analysis of various DigComp documents for all citizens and practitioners, a European framework was developed in 2017 to determine the digital competence of teachers (DigCompEdu). We implemented research based on these materials.

DigCompEdu is a science-based database that can be directly adapted to curriculum implementation, and national and regional tools and helps guide policy. The DigCompEdu database provides an approach and a common language that facilitates sharing best practices and dialogue across borders. The DigCompEdu framework is aimed at professionals at all levels of education, from adult education to early childhood education, including special needs education, vocational and general education, and non-formal learning contexts. It can provide a common reference point for the developers of digital competence models, i.e. Member States, institutions, regional governments, and interested parties (Punie & Redecker, 2017). The formation of the specialist's digital competence in education and professional activity is widely discussed and researched by the international community of scientists.

C. Scott (2015) believes that "digital competence is a professional quality that indicates a level of proficiency from basic visual perception and practical skills to more critical, evaluative and conceptual approaches to the use of ICT, and also includes attitudes and awareness in the field of ICT".

Digital competence, as defined by the European Commission, involves the responsible, safe, critical use of digital technologies for participation in society, work, and education.

Digital competence involves the development of abilities, not just basic technical skills:

- View, manage, evaluate information;
- Create digital content;
- Communicate and cooperate with information;
- Solve problems in informal, formal, informal learning contexts;
- Keep safe.

Digital competence comprises communicative, information-operational, practical-active, productive-creative, and cyber security components (Samoilenko, 2023).

Digital competence, according to the recommendations of the European Parliament and the Council of the EU, includes critical, confident, responsible use of digital technologies, and gives access to interaction with education, work, and participation in society of every person (Kravchenko et al., 2022). Digital competence includes communication and collaboration, data and information literacy, digital content creation (including programming), security (including cybersecurity-related competencies), and problem-solving. S. Carretero Gomez, R. Vuorikari, & Y. Punie (2017) consider digital competence as the ability to critically evaluate and understand various aspects of media content and digital media, to use information and computer technologies and digital media, and to communicate effectively in various contexts. S. Prokhorova (2015) emphasizes: "digital competence is a teacher's ability to effectively and efficiently use ICT in his pedagogical activities and for his professional development".

Scientists A. Martin, & J. Grudziecki (2006), including values, abilities, strategies, and human awareness, interpret digital competence as a set of attitudes, skills, and knowledge that are necessary for using digital media and ICT to solve problems, communicating, performing tasks, manage information, creation and distribution of cooperation content.

Digital competence includes the following knowledge:

- Understanding the importance of the potential of digital technologies for innovative activity;
- Interaction of digital technologies and understanding of their general structure;
- For designing the educational process the ability to use programs;
- Basic understanding of the reliability and reliability of the received information.

For this, emphasizing the transition to the development of digital competence and digitalization, it is necessary to improve the education system at all levels of the educational space: to institutions of higher education and from school. Therefore, by digital competence, we mean digital skills that effectively,



confidently, safely, and critically ensure the ability and readiness of an individual to use digital technologies throughout life in all spheres of life. It is becoming increasingly obvious that the digitalization of society entails the most radical changes in general and the educational space in particular, which undoubtedly affect the professional education system (Henseruk & Martyniuk, 2020).

2. Levels of digital competence and tasks at all levels of education reflect the needs of educational activities, particularly scientific and methodological support of education when using modern online resources.

We will define three levels of digital competence of a specialist, by the standards defined by UNESCO (2018):

- Acquisition of knowledge by students of education;
- Deepening of knowledge during life;
- Creation of knowledge in the professional activity of a person.

Each level is considered according to 5 aspects: curriculum and assessment, understanding of ICT in education policy, application of digital skills, pedagogy, management and organization, and professional training of specialists.

Educational sciences face special tasks in digital transformation and informatization of education, which at all levels of education reflect the needs of educational activity, particularly scientific and methodological support of education. Among the main ones, we note:

- To meet the educational needs of those seeking higher education, methodological support, and theoretical justification of various models of the information and educational environment;
- Increasing the speed of information processes;
- The emergence of new innovative conceptual models of higher education, which must be constantly coordinated with the science of the XXI century;
- The synergy of educational activity, particularly scientific and methodological education support (Vasylieva & Kotenko, 2023).

3. Principles of designing a digital educational environment and principles, approaches, functions, and levels of formation of digital competence of the future specialist.

The training of competitive specialists is the main task of a higher education institution. therefore, one of the aspects of solving the problem of quality training of a competitive specialist is the design of a digital educational environment for the development of digital competence of future specialists to form and develop the digital competence of future specialists. Modern online resources play an important role in this process (Polishchuk et al., 2022).

During the creation of a digital educational environment for the development of the digital competence of future specialists, the following principles must be followed when using modern online resources:

- Determination of the future specialist when using modern online resources as an active subject of knowledge;
- Emphasis on the subjective experience of students, learning in the context of future professional
 activity through the use of modern online resources, taking into account the individual characteristics
 of students;
- Focus on self-development, self-improvement, and self-education of future specialists (Henseruk & Martyniuk, 2020).

We will emphasize the basic principles of forming a person's digital competence: self-development, continuity, systematicity, activity, and approaches: activity-based, competence-based, problem-based, and personally-oriented approaches.

These approaches defined a set of principles. Let's consider them:



- The principle of self-development is that in the process of forming digital competence for future specialists, it is necessary to create professional conditions that contribute to supporting a person's desire to understand the impersonal significance of the need to realize his potential, to acquire digital competence, and to strive for continuous professional self-development throughout his life.
- The principle of continuity helps digital competence formed at the highest level, continuous improvement; depends on the connection with the constant improvement of information technologies;
- The principle of systematicity ensures the integral character of the formation of the components of digital competence, the need to simultaneously pay attention to each element of the specialist's digital competence, ensures the interdisciplinary nature of such a process;
- The principle of activity contributes to the formation and manifestation of digital competence in the experience of the specialist's transformative activity.

We will highlight the functions of digital competence based on the role and place of application of online resources in the educational process and professional activity of a specialist:

- The adaptive function of digital competence ensures compliance with the requirements of the social
 order, the requirements of the professional standard, on the labor market the competitiveness of the
 specialist, adaptation to activities and conditions in the modern world;
- The developing function of digital competence contributes to the development of the specialist's professional competence, abilities, intelligence, initiative, independence, etc., that is, the desire for professionalism, harmonious and comprehensive development of the personality;
- The cognitive function of digital competence provides an opportunity to deepen and supplement the
 existing system of skills, abilities, knowledge, experience, and methods of professional activity of a
 specialist;
- The evaluation function of digital competence contributes to the qualitative evaluation and realization
 of a person's potential, prospects, professional abilities, and professional and educational trajectory of
 continuous improvement and success in the modern world personal awareness of the meaning of
 constant self-development.

The digital competence of a future specialist can be formed at three levels:

- General pedagogical level: awareness of the practicality of using online resources in professional
 activities; the ability and willingness to constantly use online resources to interact with colleagues in
 the educational process; use of online resources for learning on distance courses and exchange of
 pedagogical experience;
- General user level: compliance with work rules and use of techniques with ICT tools, troubleshooting, safety techniques, etc.; compliance with legal and ethical norms for the use of online resources; Internet and database search skills; mastery of audio-video-text communication (conference, two-way communication, delayed and instant messages, automated translation and text correction); systematic use of online resources and existing skills in a professional and everyday context;
- Subject-oriented level: the ability to assess the quality of use of online resources, and digital resources about the tasks of their use; experience of virtual laboratories in setting up and conducting an experiment; using computer statistics tools to develop numerical data processing skills; mastering specialized technologies and online resources, knowledge of quality information sources (Hrebenyk, 2019).

We encountered the fact that during the preparation for bachelor's, in the practical activity of using modern online resources, many first-year higher education applicants do not have digital technologies, do not know how to use programs on tablet computers, do not know how to use modern online resources in the educational process resources, but are ready to master the digital toolkit. Therefore, during the training of a contemporary specialist, it is important to form digital competence in students.

Among the digital competencies of future specialists in the modern professional space, we have highlighted the following effective system-forming digital competencies that are important when using modern online resources:

 The ability of students to distinguish digital educational resources, in particular their main types, and to apply them to the tasks and goals of the educational process;

- The ability to create and design interactive tasks using modern online resources;
- The ability to organize the use of modern online resources and conduct group activities in a digital educational environment;
- The ability to organize students' project activities using modern online resources;
- The ability to design educational and professional processes using digital technologies;
- The ability to motivate students to use modern online resources creatively.

In our opinion, it is advisable to use an interactive whiteboard, mobile applications, and tablet computers in an educational and research environment, during the organization of academic and research activities together with circuit modeling systems, which will make it possible to increase the level of digital competence of students through the use of modern online resources. to master information processing, basic research procedures, and natural-scientific methods of cognition.

The experience of using modern online resources changes the specialist's position: expands the scope of knowledge, and deepens professionalism. The specialist becomes the creator of the use of information, the creative process of its processing, and a more active participant in the educational, professional process of acquiring knowledge and skills, the formation of personality, and ceases to be a "source of knowledge".

Students must use modern online resources every day, and this requires the creation of a digital educational environment in institutions of higher education, where, with the help of the involvement of a wide range of online resources, a digital education system is built that is dynamic and takes into account organizational, managerial, infrastructural, content, personnel, educational and methodological positions.

The following aspects are relevant to this process:

- A radical change in the content and systematic components of higher education;
- A new organization of the educational process, which is technological;
- Providing the educational cluster with innovative infrastructure.

When developing the digital competence of future specialists, at the current stage of human life, the use of modern online resources and, as a result, the creation of a digital educational environment that will provide an opportunity to retrain and train personnel for digital education in innovative conditions is relevant (Henseruk & Martyniuk, 2020).

4. The content of online resources that are important in the formation of digital competence skills of specialists.

Let's consider effective online resources that are important in the formation of digital competence skills of specialists.

- *Inspiration* a program that serves as a visualization of the educational process and provides opportunities for the teacher to create diagrams, schemes, and cards in classes together with students;
- Plickers is a mobile application that reads special cards with students' answers in seconds and displays statistics on the teacher's phone screen. To quickly check and understand whether students master key skills, whether they understand concepts using the application;
- Kahoot! the program used in education and consisting of games allows making a series of questions with several options for answers. The number and format of questions depend on the person who creates the question. It is possible to add diagrams, images, videos;
- H5P facilitates the use of HTML5 content and programs, promotes their creation and distribution, and provides such interactive content, which is divided into several categories: multimedia, questions, games, and social networks;
- Poodll a set of tools for developing dynamic courses for language teachers. This is one of the technologies of video shooting, online audio that are available for the educational process;
- TurnItIn is a tool that helps teachers and students themselves to check papers for plagiarism or misquotation. The program contains the most accurate database to evaluate and check texts, in particular, Turnitin allows teachers and students to find out what part of the checked work is not original and indicates the volume of material that coincides with the content of the database, notes sources and highlights textual borrowing in different colors;



- Moodle is an online resource platform for educational activities, which provides a developed set of tools for computerized learning: teachers, administrators, users of educational space, in particular, distance education;
- Open edX a free course management system used for a small educational audience, for hosting open mass online resources, for educational modules;
- PhET a set, for studying the material and comprehensive professional training based on scientific
 research in chemistry, physics, mathematics, and other sciences, interactive computer models of PhET
 simulations, which can always be launched online or downloaded for free from the PhET website;
- Graasp is a platform that enables teachers and students, using open mass online resources, to create virtual research and learning spaces structured according to the phases of the educational process.
 Students can use links to these spaces in groups and individually.

5. The main advantages of online resources.

Online education is a tool for developing the information society and the digital economy. Online resources that are effective and significant in the formation of digital competence skills of specialists.

Among the main advantages of online resources are:

- Flexibility of training;
- The development of online resources to form the digital competencies of specialists is one of the urgent requirements of the modern information society;
- Availability of education for all levels of the population;
- Possibility to use for training at any time;
- The possibility of accessing online resources, taking into account the construction of one's own learning trajectory;
- The possibility of choosing a variety of online resources that meet the interests and needs of a person, which ensures a variety of learning;
- Saving money and time, because compared to traditional education, online education can be less expensive;
- The possibility of interactive dialogue between the participants of the educational process, exchange of messages in real time between the information system and the student;
- Interactivity of training use of modern information technologies, online resources, Internet resources for the organization of online training;
- The possibility of constant acquisition of new skills and professional development with the help of online resources.

In the conditions of the formation of the digital economy, the task of higher education is the development of the future specialist's ability to work in conditions of constant changes and crises, in conditions of uncertainty, to meet the requirements of the modern information society (Vasylieva & Kotenko, 2023).

With the massive spread of online resources – tools for organizing the educational process, new opportunities have opened up (without wasting time traveling to a higher education institution, to get knowledge from anywhere in the world) for students of higher education. In addition, online resources for innovative learning can be used from a personal room without moving to an educational institution. On the plus side, online education is cheaper than traditional education and allows you to attract even more people who want to pursue higher education. (Vasylieva & Kotenko, 2023).

Society's demands for innovative knowledge acquisition in connection with the rapid development of digital technologies require teachers and students to develop digital competencies constantly.

The digital competencies adopted in the European framework and the change in the regulatory legal framework of digital competencies about the standards published by UNESCO, the development of relevant standards in the world, the ability of a specialist to decide for himself, which institutions how and when to improve qualifications, contribute to the definition of new innovative approaches to the construction of personal individual development routes digital competence of specialists (Vorotnykova, 2019).

6. Experimental research.

The presented research results were carried out using empirical methods: surveys (interviews and questionnaires), and observation.

A study was conducted among students in the first year to determine the level of digital competence of higher education students.

A total of 147 respondents took part in the survey. Google Forms software was used to collect the information required for the study.

Data entry and processing were carried out using Microsoft Excel programs.

87% of professionals, who make up the majority, are interested in learning and professional activities related to the use of ICT, particularly online resources, and need skills in assessing their digital competence. Questionnaires of specialists regarding the conditions for the development of digital competence and the needs of the individual made it possible to identify the main conditions for the formation of digital competence in formal and informal education:

- Digitization of education, use of online resources in training, availability of regulatory documents: regarding requirements and standards for the digital competence of a specialist (national, institutional, international); criteria for the development of a specialist's digital competence (questionnaire), sanitary norms regarding the use of digital technologies in the educational process;
- The readiness of higher education to ensure the formation of digital competence among specialists: the
 presence of subjects, and institutions that provide advanced training for the formation of digital
 competence;
- Implementation of international and domestic projects on the use of ICT;
- Educational and methodical, scientific, and professional resources for the formation of digital competence;
- IT infrastructure of higher education; developed IT infrastructure of educational institutions (information and educational environments, digital laboratories, software, hardware, high-speed Internet connection, online resource support, etc.);
- Continuous professional development of a specialist throughout his life to master digital methods and technologies for their use;
- Information culture of higher education students;
- Motivation of the teacher to develop digital competence and student professional development.

We use the experimental research method, which assumes that in the context of the conducted research, it is important and necessary to get the respondents' opinions regarding their personal vision of the ways and levels of the formation of digital competencies.

During the survey, questions were proposed that make it possible to assess respondents' digital skills.

Respondents were offered a rating scale from 1 to 3 points:

1 point – I need constant help in completing tasks, I do not have basic digital skills;

2 points – I can perform the tasks proposed by the teachers, I have an average level of digital skills;

3 points – I can independently create and develop websites, online libraries, programs, use online resources, etc., with the help of information technologies I can satisfy my own requests, I have a high level of digital skills

From the survey, most respondents are knowledge seekers and rate their digital skills at a sufficient level, although there is a high and an initial level.

- 91.1% of respondents positively evaluated distance and mixed learning, because it allows rational redistribution of time according to the scheme: study-work-leisure;
- 12.8% of respondents had a fairly high level of digital competence.
- 78.7% of respondents had an average level of digital competencies.





As a result of filling out the questionnaire, the respondents received the following answers:

1 question: "Evaluate your ability to work with information and communication technologies, skills in using online programs, online resources, and online courses, and set yourself an appropriate score".

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1 point (% of respondents) – 9.6% of respondents;
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- 2 points (% of respondents) 71.2% of respondents;
- 3 points (% of respondents) 19.2% of respondents;

2 question: "At what level do you have digital competence?"

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1 point (% of respondents) – 10.5% of respondents;
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- 2 points (% of respondents) 76.7% of respondents;
- 3 points (% of respondents) -12.8% of respondents.

3 question: "Evaluate the possibilities of using online programs, online resources, online courses, case methods, discussions, webinars, tests, smart methods, and online platforms in the distance learning process in the world process".

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1 point (% of respondents) – 12.6% of respondents;
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- 2 points (% of respondents) 80.9% of respondents;
- 3 points (% of respondents) -6.5% of respondents.

4 question: "Assess your ability to work independently".

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1 point (% of respondents) – 10.8% of respondents;
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- 2 points (% of respondents) 74.4% of respondents;
- 3 points (% of respondents) 14.8% of respondents.

5 question: "Assess your ability to work in a team".

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1 point (% of respondents) -4.3\% of respondents;
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- 2 points (% of respondents) -61.9% of respondents;
- 3 points (% of respondents) -33.8% of respondents.

6 question: "Assess your opportunities for lifelong learning and the development of digital competence acquired in a higher education institution, and do you consider this process necessary".

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1 point (% of respondents) – 22.3% of respondents;
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- 2 points (% of respondents) 52.2% of respondents;
- 3 points (% of respondents) -25.5% of respondents.

7 question: "Assess the importance of using online resources in forming digital competence skills".

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1 point (% of respondents) -3.3\% of respondents;
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- 2 points (% of respondents) -70.2% of respondents;
- 3 points (% of respondents) -26.5% of respondents.

8 question: "At what level do you have the technical level of the new concept of mixed and distance learning education?"

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1 point (% of respondents) -8.9\% of respondents;
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- 2 points (% of respondents) 53.5% of respondents;
- 3 points (% of respondents) -37.6% of respondents.

We believe that for the formation and development of digital competence among young people, it is necessary to improve the competencies of the acquirers – to improve the legal framework, use online resources, conduct training, seminars, and other events in offline and online formats in educational institutions, at the workplace, etc.; implement digital literacy courses and disciplines; develop digital

literacy and program certification by state and business institutions, which will make it possible to avoid low-quality online programs, online resources, and online courses.

Conclusions

The meaning and importance of digital competence of future specialists in educational and professional activities are revealed. DigCompEdu is a science-based database that can be directly adapted to curriculum implementation, and national and regional tools and helps guide policy.

The levels of digital competence and tasks at all levels of education reflect the needs of educational activities, particularly scientific and methodological support of education when using modern online resources, are considered.

Emphasis is placed on the basic, necessary principles of forming a person's digital competence: self-development, continuity, systematicity, activities, and approaches: activity-based, competence-based, problem-based, and personally oriented.

The functions of digital competence are distinguished based on the role and place of application of online resources in the educational process and professional activity of a specialist.

The digital competence of the future specialist can be formed at three levels.

Among the digital competencies of future specialists in the modern professional space, we have highlighted effective system-forming digital competencies that are important when using modern online resources.

The content of online resources, which are important in the formation of digital competence skills of specialists, is disclosed.

The main advantages of online resources are shown.

A study was conducted among students in the first year to determine the level of digital competence of higher education students.

A total of 147 respondents took part in the survey. Google Forms software was used to collect the information required for the study.

Data entry and processing were carried out using Microsoft Excel programs.

Questionnaires of specialists regarding the conditions for the development of digital competence and the needs of the individual made it possible to identify the main conditions for forming digital competence in formal and informal education.

We used the experimental research method, which assumed that in the context of the conducted research, it is important and necessary to get the respondents' opinions regarding their personal vision of the ways and levels of the formation of digital competence.

Ways to create a digital educational environment that will provide an opportunity to retrain and train personnel for digital education in today's innovative conditions will require further research.

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Empowering independent learning: The key role of online platforms

Розширення можливостей незалежного навчання: ключова роль онлайн-платформ

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Abstract

This article highlights the significance of online platforms in both classroom and extracurricular independent learning activities for higher education students, emphasizing the role of the synergistic paradigm of education. It explores independent student work in the context of distance learning, utilizing online platforms and Internet education. The article also delves into the content and periods of independent student work facilitated by online platforms in distance learning scenarios. It presents a classification of online platforms and their role in supporting independent student work within higher education. The study's findings confirm the hypothesis that the purposeful integration of online platforms in the educational process fosters independent learning, contributes to the development of informatics and general cultural foundations, and facilitates a deeper understanding of educational material and professional knowledge among higher education students.

Анотація

У цій статті висвітлюється значення онлайнплатформ як в аудиторній, так і в позааудиторній самостійної навчальної діяльності для студентів вишої освіти, на наголошується ролі синергетичної парадигми освіти. Досліджується самостійна робота студентів в контексті дистанційного навчання, використовуючи онлайн-платформи Інтернет-освіту. У статті також розглядається зміст та періоди самостійної роботи студента за допомогою онлайнплатформ у сценаріях дистанційного навчання. Представлено класифікацію онлайн-платформ та їх роль у підтримці самостійної роботи студентів у вищій освіті. Результати дослідження підтверджують гіпотезу про те, цілеспрямована інтеграція онлайнплатформ у навчальний процес сприяє самостійному навчанню, сприяє розвитку інформатики та загальнокультурних засад, сприяє глибшому розумінню навчального

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Keywords: online platforms, independent study of students, institutions of higher education, independent work, distance learning.

матеріалу та професійних знань студентами вищих навчальних закладів.

Ключові слова: онлайн-платформи, самостійне навчання студентів, заклади вищої освіти, самостійна робота, дистанційного навчання.

Introduction

One of the important modern realities is the digitalization of all spheres of life. The educational sector is no exception. Information and digital technologies create a new reality that constantly affects people. The influence of information and digital technologies created a new digital culture. The emergence of Internet technologies and computerization provided enormous new opportunities for the educational process on a global scale, in particular, the development of distance learning technologies (Kremen, 2023).

Modern education is transformed from a transmitter of social experience into a driver of individual human development and self-realization, which, in the conditions of the unstable 21st century, prepares a person for life thanks to the digitalization of the educational process, the use of ICT tools and, in particular, through the use of online platforms, promotes independent learning of students, because the information and digital environment is becoming a necessary condition for activity in all spheres of social life.

It is online education that has made it possible to have access to quality education for students of all levels of education from all over the world and has become a significant part of the educational process in the world. Thanks to this, the entire educational process takes place at its own pace and allows you to choose courses or materials through the use of online platforms that meet the interests and specific needs of students, regardless of the location of the student of education, his social status, and other circumstances. Online education provides an opportunity to engage in self-education and individualized learning. A key feature of online education is the availability of online platforms thanks to developed technical infrastructure, fast Internet, and access to smartphones and computers (Vasylieva & Kotenko, 2023).

The main purpose of using online platforms is to create conditions for the independent work of the student, ensuring his competitiveness, improving the quality of education and accessibility, and efficiency of the entire educational space (Vasylenko, 2022).

The value of online platforms for both classroom and non-classroom independent educational activities of higher education students is currently a relevant issue of the theory and methodology of learning in the educational process. Based on this, we considered the following questions in the article:

- 1. The importance of online platforms in classroom work and extracurricular independent activities of higher education students and the role of the synergistic paradigm of education in this.
- 2. Independent work of students in the conditions of distance learning through the use of online platforms and Internet education.
- 3. Online communication skills that can be easily acquired through online platforms while working independently.
- 4. Classification of online platforms and the role of online platforms for independent work of students in the educational space of a higher school.
- 5. Basic principles of building a modern innovative information and educational environment.
- 6. Tested experimentally the value of online platforms in educational activities of higher education students.

Literature Review

Scientists from different countries highlight the competitive advantages of students, investigate the qualitative aspects of online education, when studying academic disciplines, describe the features of the introduction of innovative technologies in institutions of higher education, show the role and point out the problems of digitalization in the integration of education, business, and science, which further research of an interdisciplinary and interdisciplinary nature.



Features of the implementation of distance learning and the online education system are highlighted, prospects for the development of online platforms are analyzed, and methodical and theoretical-methodological approaches to solving the problems of online education on a global scale are considered by A. Vasylieva, & S. Kotenko (2023). The economic and social aspects of online education are revealed, thanks to the use of online education tools, the competitive advantages of students using innovativeness in education are described, the prospects and problems of training specialists through the prism of distance learning are described, the marketing aspect of the use of immersive technologies in online education is investigated.

V. Vasylenko (2022) considered the software and telecommunications environment, the information and educational environment of the institution of higher education, which makes it possible for the qualitative organization of education, to define scientific research as the only technological means of education, to ensure the processes of professional counseling of students and their informational support. With the use of distance education platforms, the main features of learning, in particular its personally oriented method, have been determined: accessibility, flexibility, social equality, profitability, coverage, mobility, and technology. The stages of making rational decisions were used to choose the appropriate online platform for distance education, which fully ensures the implementation of the entire set of functions: formulation of restrictions and criteria; diagnosis of the problem; evaluation of alternatives; definition of alternatives; choosing the optimal alternative. An analysis of the most popular distance learning platforms is presented and the main criteria for choosing online platforms in distance education are defined: availability of a demo version; closed or open source software; availability of instructions; availability of quality control of knowledge of higher education students; friendly interface. The principles of building information and educational environments are analyzed: adaptability; integrality; multicomponent; and distribution for distance education, an evaluation of the proposed educational options of the platforms was carried out and the Moodle system was singled out as the most popular and proposed for training.

M. Hebebci et al., (2020) and I. Yakovleva (2022) focused attention on the creation of platformed learning and a unified educational environment, which they consider the main condition for achieving a new quality education. The researchers presented the results of student surveys on the identification of visualization tools and the most popular technologies that they use during distance learning, the use of online platforms, and the selection of priority criteria for educational services.

L. Horodnycha, M. Olkhovyk, & S. Herhul (2020) showed the possibility of distance learning in higher education, which significantly makes the educational process innovative thanks to the distribution of educational online platforms in various languages. The authors reveal the specific features and functional features of educational modern online platforms. During the educational process of future specialists, scientists described the features of using the Very Verified and My English Lab online courses.

N. Hrechanyk, O. Vasiuk, L. Matsenko, N. Folomieieva, O. Koriakin, & S. Vyhovska (2023) devoted their research to the problem of the development of higher education, the development and implementation of innovative methods in the educational process, the requirements of stakeholders for the personality of a specialist, the possibilities of integration into education digital technologies, digitization in the educational process, development of the educational industry, analysis of factors that stimulate the development of higher education.

Scientists focused attention on a unified educational environment, and the creation of platformized learning, which they consider the main condition for achieving a new quality education. The economic and social aspects of online education are revealed, thanks to the use of online education tools, the competitive advantages of students using innovativeness in education are described, the prospects and problems of training specialists through the prism of distance learning are described, the marketing aspect of the use of immersive technologies in online education is investigated.

At the same time, the criteria for choosing optimal online platforms in modern conditions, taking into account the needs of the target audience, which is directly involved in the implementation of the educational process, are not sufficiently defined in the mentioned studies.

The analysis of scientific sources and the study of the practical experience of teachers of higher education institutions made it possible to identify several contradictions regarding the role of online platforms in the educational process, in particular between:

- Public recognition of the importance of digital skills for all members of the digital society and the imperfection of regulatory and legal organizational and pedagogical mechanisms for their formation;
- High official goals regarding the role of online platforms in the education system and increasing the digital competence of future specialists and the obsolescence of the material and technical base of educational institutions;
- The rapid growth in the demand for digital knowledge, abilities, and skills of specialists for all branches
 of the domestic economy, state security, and the non-systematic nature of the digital transformation of
 domestic education and science.

Although there is significant scientific development in the field of research devoted to various aspects of the development of online platforms in the education system in Ukraine, the following remain relevant: generalization of the historical experience of the development of domestic IT education during the times of its independence, scientific analysis of problems, trends, and prospects for the development of this educational field in the conditions restoring the economy and reforming the education system of Ukraine, clarifying its place and role in the market of the global IT industry.

So, the relevance and, at the same time, insufficient theoretical and practical development of the scientific problem of clarifying the trends in the development of online platforms in the education system of Ukraine, as well as the need to resolve the identified and characterized contradictions determined the choice of the topic of the article.

The purpose of the article is to determine the possibilities of use and the main characteristics of online platforms that contribute to the independent learning of students in the modern conditions of the functioning of higher education institutions.

Methodology

To solve the experimental verification and achieve the goal, the research used a set of methods:

- Theoretical methods: method of systematic analysis of psychological, didactic, philosophical, and pedagogical works on the research problem; to substantiate and highlight the principles and features of innovative education in higher education; clarifying the characteristics and essence of basic research concepts;
- Empirical: conducting cross-sections of students' abilities, knowledge, and skills, observing the
 educational process of a higher school; observations, group, and individual conversations, analysis of
 the results of educational activities of higher education applicants to determine the state and prospects
 of the methodology of using online platforms in the educational process of higher education;
- Statistical: qualitative and quantitative analysis of experimental data to confirm the effectiveness of the proposed methodology in the educational process of a higher school, generalization of research results.

The purpose of the study is to clarify the role of online platforms in promoting independent learning of students.

To confirm or refute the effectiveness of the implementation of online platforms in promoting independent learning of higher education students institutions, the results of the study were analyzed at the beginning and after its completion.

At the beginning of the experiment, the first group of samples was considered regarding the quality of students' knowledge regarding the use of online platforms in facilitating their independent learning of the control and experimental groups. The Pearson $\chi 2$ test was used to test the alternative and null hypotheses. Based on the results of statistical processing, it was assumed that the equality of conditions in experimental (EG) groups and control (CG) groups before conducting the formative stage of the experiment and that they received a higher level of awareness in experimental groups (compared to control groups) is explained by the result of the implementation of the proposed method of using online platforms, which contribute to the independent learning of students.

After the formative stage of the experiment, the experimental sample and the control sample have statistically significant differences. This was the reason for accepting the alternative H1 and the reason for rejecting the null hypothesis H0. The results of the experiment in the experimental group showed a



significant increase in the use of online platforms in promoting independent learning of students, and the level of awareness of computer web-oriented systems. We state based on statistical results that the main goal of the study has been achieved, and the effectiveness of the use of online platforms in promoting independent learning of students has been proven.

The analysis of the results of the conducted experiment fully confirmed the hypothesis that the purposeful use of online platforms in the educational process is scientifically based and contributes to the independent learning of students, contributes to the formation of the foundations of informatics and general culture, meaningful and in-depth assimilation of educational material, professional knowledge of higher education students.

When determining the sample of subjects, the general specificity of the subject of the study was taken into account. The total volume of the sample is 62 subjects. When forming the sample, the criteria of meaningfulness, representativeness, and equivalence were taken into account. The sample was formed by random selection using the technical procedure for calculating the selection step.

The experiment was conducted in Pavlo Tychyna Uman State Pedagogical University, Kherson State University, Rivne State University of Humanities, and V. N. Karazin Kharkiv National University. The conduct of the experiment is permitted by the scientific councils of the universities in order not to violate ethical considerations in institutions of higher education.

To assess the homogeneity of experimental and control data, statistical processing was performed using MS Excel and SPSS (Statistical Package for Social Science).

Research relies heavily on the accuracy and reliability of the data. In the framework of research work, the quality of data collection and analysis not only adds weight to the research but also contributes to the formation of sound conclusions, which is the key to academic success.

The following digital data collection tools were useful in the study:

- Google Forms a simple tool for creating surveys that allows you to collect data from respondents, create different types of questions, and collect answers in spreadsheets.
- SurveyMonkey a modern survey tool that offers a wide range of customization options and analytical tools for analyzing the collected data.
- JSTOR, Google Scholar, and other academic search engines provide access to scholarly articles, books,
 and other academic resources that may be useful for literature review and theoretical data collection.
- Zotero or Mendeley bibliography management programs that help organize research materials, store references, and format bibliographies and citations according to different citation styles.
- Microsoft Excel or Google Sheets spreadsheets are useful for organizing and analyzing collected data when working with quantitative data.
- SPSS, R, or Python for more advanced data analysis, statistical analysis, and processing of volumes of data.

Results and Discussion

The importance of online platforms in classroom work and extracurricular independent activities of higher education students and the role of the synergistic paradigm of education in this.

The modern educational industry combines the classical form of education and e-learning, which allows the use of numerous Internet applications, online platforms, and services to improve the process of training competitive specialists. The use of multimedia technologies and Internet technologies increases the interest of higher education students in learning and diversifies the educational process, making it innovative.

Online platforms under the guidance of a teacher (in classroom work) and in extracurricular independent activities of higher education students have unlimited potential. Online platforms create conditions under which higher education students find tasks themselves, apply educational materials in practical activities, and perform them, which contributes to success in mastering professional knowledge. Offline and online resources enable students to activate the necessary material, independently check the correctness of

completed exercises, individualize learning, use reference and encyclopedic resources to search for information, etc. (Karpushyna & Shumylo, 2018).

To understand the educational process as a process of self-organization of the individual, to change the view on the educational process allows taking into account the categories and principles of synergy. The synergetic paradigm claims to reveal the principles of self-organization of the education system and socioeconomic systems. The synergistic paradigm is based on the concepts of open systems, small resonance effects, nonlinearity, self-organization, chaos, understanding the importance of randomness, etc.

The development, taking into account the principles of synergy, modern teaching methods, and technologies of the educational process will make it possible to transfer the externally organized process of online education into a process of self-organization and create such an educational environment in which the personality of the student of higher education, as the subject of education, is in the center of attention.

Conducting online courses in developed countries and using digital technologies in higher education is carried out on a par with traditional teaching methods. Appropriate conditions were created for both types of education. Applicants of higher education are allowed to choose the format of education (Vasylieva & Kotenko, 2023).

Independent work of students in the conditions of distance learning through the use of online platforms and Internet education.

Independent work of students in the conditions of distance learning through the use of online platforms and Internet education has its characteristics.

Independent educational work of students in the innovative environment of higher education is the integration of the activities of students and teachers in the conditions of an informational educational environment, which is one of the forms of active educational and cognitive activity.

Independent work of students under the conditions of distance learning through the use of online platforms and Internet education is considered as:

- Work that, to acquire skills and new knowledge, is carried out according to the task and under the guidance of the teacher, but without his participation;
- A means of activating knowledge, consolidating educational material, and developing cognitive activity;
- A set of educational actions aimed at independent deepening and consolidation of previously acquired skills, abilities, and knowledge, as well as mastering new knowledge, skills, and abilities.

Independent work of students under the guidance of a teacher in the conditions of distance learning through the use of online platforms and Internet education is carried out with the aim of:

- Assistance in preparing for practical classes, seminar classes, and writing scientific student papers;
- Assistance in choosing the necessary information and orientation in information sources and streams, in compiling a bibliography on the research topic chosen by the student, which is being studied or experimented with.

In the basis of training, during the independent individual work of the student, the teacher establishes a virtual connection between him and the teacher, which is determined by the defined tasks for the independent work of various forms of the educational process (correspondence form, full-time form), based on which:

- 1) Study of educational-methodical and educational-research literature, processing of monographs, articles, dictionaries, primary sources, and encyclopedias using Internet-educational platforms and writing based on the reference summaries, abstracts, essays, scientific theses;
- 2) Performance of practical tasks and creative exercises, presentation of diagrams, tables, schemes, and graphs through the use of online platforms, which are the result of generalization, systematization, analysis of scientific and educational information of different content, compilation of questionnaires and interviews for writing essays, articles, conducting sociological research, social programs and social



- projects, analysis of the client's individual case and life situations, development of mediation technologies, training methods, social support, etc.;
- 3) Writing scientific research works using online platforms: tests, essays, term papers, qualifying master's theses, short scientific reviews, articles, reports, etc.

Let's consider the periods of independent work of students using online platforms in the conditions of distance learning:

- 1) Preparatory stage: familiarization with the structure and program of the educational discipline and registration for the educational discipline of the MOODLE educational platform;
- Organizational stage: informational, technical, methodical, ensuring the independent work of the student of higher education through the use of online platforms in the conditions of distance learning;
- Completion by the student of the task proposed by the teacher and placement on the MOODLE platform;
- 4) According to the agreed (teacher-student) system of points assessment by the teacher of the task (Bazylenko et al., 2020).

When organizing independent work in the online platform system, various interactive elements are used. Let's reveal their content:

- Forum between all participants of the educational process serves for information exchange;
- Task the element requires the student of higher education to electronically prepare an answer in any format that allows setting a task and uploading it to the server;
- **Chat** allows higher education students to exchange text messages in real time;
- Personal messages organization of exchange between the teacher and students by text messages;
- Web consultation can be used in Zoom-on-line mode for joint consultations between students and teachers;
- SCORM / AICC an element containing flash animation, graphics, web pages, and programs (Javascript), makes it possible to use training courses developed in third-party programs in the system;
- Tests the element enables the teacher to present himself in the form of matching questions, to formulate answers (multiple choice) in a closed form, to create a set of test questions with a choice of "false" or "true" options, to assume a numerical answer option or a short text answer. At the same time, the questions can later be used again in the same course, because they are stored in the database.

Online communication skills that can be easily acquired through online platforms while working independently.

From the list of necessary skills for a competitive specialist, we will single out effective communication skills in the "online" mode, which can be easily acquired with the help of online platforms in the process of independent work while studying at institutions of higher education:

- 1) Tact a quality that, during the independent work of students under the guidance of a teacher in the conditions of distance learning through the use of online platforms, compliance with the rules of conduct, minimization of possible conflicts, the ability to understand the current situation, and the presence of students in business communication skills. The online format of learning and independent work involves large volumes of communication in work chats, in e-mail, in messengers, and in the format of video communication. Mastering communication skills in the mode of using online platforms during independent work under the guidance of a teacher, students learn tact in video conferences, tactful correspondence, because in "online" there is more time to formulate their thoughts and the online format allows the student to prepare in advance for dialogue;
- 2) **Responsibility** in modern conditions, occupies the first place in the rating of professional qualities of a specialist, is a key skill of a specialist. 80% of all vacancies in 2023, which mention the necessary soft skills possessed by specialists, require them to be responsible. Employers give preference in employment to those people who will perform the assigned tasks within the specified time and will perform them innovatively. To develop responsibility when using online platforms during independent work, it can be argued that all online courses are based on specific deadlines for the completion of any tasks, there is a clear schedule for their completion. The Bologna system of the educational process stimulates students in higher education institutions to take a responsible attitude, and the online format helps in this it provides the necessary target and time limits;

- 3) **Self-organization** this allows the student of higher education to organize his educational activities in such a way that he not only fulfills the tasks but also fully realizes his professional potential. In today's society, potential employees need to organize their work and adapt to the situation in such a way as to perform the assigned tasks with maximum productivity. Online education, with the help of the principles of self-management, and the use of online platforms during the independent work of students, stimulates the development of each professional skill and contributes to its further improvement;
- 4) **Analytical abilities** in our dynamic environment, a person's ability to critically evaluate and analyze the situation is a rather important trait and is necessary today. Online education through the use of online platforms during independent work enables the student to use methodical tools and additional software tools to work with a large amount of data and analyze the obtained data;
- 5) **Multitasking** is one of the important skills for employers. Being a multi-tasking employee is a necessity today, so employers are looking for job candidates who can do several tasks at the same time. In turn, online education and the use of online platforms help a person to obtain several specialties at the same time and to be a multitasking worker.

Among the qualities that are now valued in vacancies by employers are the following: mobility, flexibility, and adaptability. It is through the use of online learning tools that the development of these human characteristics can be accelerated.

However, some skills have been "suffered" by online education and the distance learning system. For example, this is:

- Sociability manifests in a person through openness and easily finding a common language with other people. In the case of remote work and distance learning format, employees and students (potential candidates for professional life) lose this skill, because the lack of live communication makes the employee less socialized and communicative;
- 2) **Teamwork skills** are the key to the successful performance of tasks set by the team. Coordinated work of the team and the presence of good professional relations in the team is a guarantee of the flexibility of all team members and high efficiency of the work done (Vasylieva & Kotenko, 2023).

Classification of online platforms and the role of online platforms for independent work of students in the educational space of a higher school.

In remote conditions, E-learning allows independent work to maximally diversify relevant technologies and forms of mastering professional skills, which can be explored visually, using the example of modern educational online platforms (Correa Cruz et al., 2017).

The choice of online platforms for independent work in the educational space of a higher school should develop professional features of educational basic components and meet certain criteria of innovative modern education, we talk about the importance of strengthening educational motivation; the need for didactic features of education; the development of skills of reflection, self-analysis, and self-education; and stimulation of students' intellectual activity.

We present a universal classification of online platforms necessary for the independent work of students in the educational space of a higher school:

- Training management and content management systems;
- Online courses;
- Applications or "applications";
- Software for video conferences;
- Social media;
- Modern multimedia laboratories (Ikonnikova & Komochkova, 2019).

Let's consider educational online platforms as pedagogical software tools (educational and monitoring). Such innovative modern tools are designed for the acquisition of knowledge by students and their skills, abilities, and knowledge (using distance learning technologies) under the guidance of a teacher or during independent work. These include distance courses posted on teachers' websites – electronic manuals,



computer programs, multimedia training courses, and electronic simulators located on a personal computer or located on the Internet (Kuchai et al., 2017).

Modern educational platforms for independent work in the educational space of a higher school consist of a large number of multidisciplinary online courses and most of them are taught in different languages.

For the process of distance learning, online platforms in the context of learning English become methodically interesting, which provide a wide range of methodical opportunities for distance training and, by the level of language proficiency, offer students innovative training, taking into account various specializations, professional preferences, creative (in line with soft skills) technological findings.

MyEnglishLab online platform – in the English language learning system is a new and interesting step in the education of the new generation. The leading role when working with this technology belongs to the teacher, who creates an optimal environment for language learning and becomes the leader of the student's independent work. The teacher has the opportunity to allow higher education students to supplement and check their knowledge at different levels, and to work with different tasks. In the process of work, the student gets access to all possible auxiliary resources: video materials, audio recordings, etc. The interactive activity of students and the teacher is the main factor of effective work with the MyEnglishLab online platform, which allows you to use and reveal all the student's capabilities. Its use makes it possible to implement all types of feedback: decisive; educational; informative; and effective. Working on the online platform disciplines the student thanks to the system of tests for which you can choose the number of attempts and the duration of execution, the system of deadlines for individual tasks.

Important during the educational process is the self-monitoring function, which allows the student to analyze his own mistakes and instantly see the results in percentages. The platform contains tasks to consolidate the material, which provides an opportunity for the student to repeat the material that was discussed during the classes.

When using the MyEnglishLab online platform, higher education students develop critical thinking, demonstrate creativity, teamwork, the ability to present information concisely orally or in writing, research ability, communication skills, etc. (Rashkevich, 2016). You can link the MyEnglishLab platform to the student's e-mail to receive notifications about new tasks opened by the teacher and about the time of completing tasks. The block of tasks for improving phonetic skills is an important feature of this online platform, which allows you to train pronunciation, and accents, allows the teacher, to add private comments, to correct students' mistakes at the same time.

It is possible to use MyEnglishLab as an additional tool to consolidate the studied material or to use it as an element of student independent work because the online platform is linked to the basic textbook.

Special online courses, which are taught in different languages and which update the professional competencies of the future specialist, are of great importance in promoting the independent learning of students. For example, "developed by the International Research and Exchange Council of IREX in partnership with the online education studio EdEra and is part of the project "Study and Discern Info-Media Literacy", implemented by IREX with the support of the US Embassy and the Embassy of Great Britain" online course Very Verified: media literacy course.

The course is available in several languages, which made it possible to reach a large number of students and use an online platform for media literacy, and critical thinking, for the formation and general competence of future specialists. The Very Verified online course is a component of students' independent work, after successive study of the relevant educational module in English, the student receives points for independent work and a certificate. For distance learning, the Very Verified online course is very convenient, because learning takes place at a time convenient for the student, using modern gadgets (phone, netbook, tablet, computer, etc.), in various educational formats: informative images, short articles, educational videos, interactive tasks, interviews, tests, and additional materials. One of the features of the Very Verified online course is the ability to set up subtitled videos and choose your own comfortable playback pace (Horodnycha et al., 2020).

The Socrative online platform is used in higher education institutions to test the acquired knowledge. The Socrative online platform offers task templates and various tests that must be filled with relevant material.

A ready-made test provides an instant opportunity to remotely check the results of students' performance of tasks. The Socrative online platform automatically sends a test result report to the teacher's e-mail, which significantly reduces the time for evaluating test tasks and checking completed tasks; the teacher has the opportunity to monitor the student's progress, control the time allotted for the test, analyze the mistakes made by the student. The program is available for computers, smartphones, and laptops.

The LiveMocha online platform allows students to communicate with speakers of English culture and language. Learning takes place through the exchange of conversations, texts, and online chats in oral and written form. The LiveMocha online platform provides users with motivational tools, methodical materials, communication tools, and exercises, and provides an opportunity to track the progress of higher education applicants.

The Englishbaby online platform was created for independent learning of a foreign language, it is a social network with developed lesson plans for learning a foreign language by correspondence with other students on forums, correspondence with other network participants in personal messages; solving grammatical puzzles; listening to audio recordings and news, etc. The Englishbaby online platform provides an individual approach to learning and enables the student to independently choose the sequence of exercises (Karpushyna & Shumylo, 2018).

The Prometheus online platform provides access to knowledge, regardless of the wealth of higher education seekers or their place of residence, and includes several courses in various specialties.

The online platform It Labs launched online training based on video conferences, and launched several offline courses with subsequent certification. Among the teachers are employees of the world's largest IT companies.

The online platform "Teleportus" makes the process of involving students in various educational initiatives more convenient and accessible and is aimed at holding conferences and educational events, online broadcasts of lectures, etc.

The Webpromo experts online platform is an internet marketing platform that regularly hosts seminars and webinars, and publishes educational videos on its YouTube channel.

The online platform Coursera is a foreign project of public, widely available, open online distance courses offered by a technology company working in the field of education (winner of the Webby Award in the field of education, the best startup according to the Tech-Crunch website). The Coursera online platform offers its users hundreds of free online courses in various disciplines, where the student receives a course completion certificate upon successful completion. The Coursera online platform cooperates to teach innovative modern online courses with universities from different countries of the world in the following fields: computer science, humanities, engineering, biology, medicine, mathematics, social sciences, business, and others.

The Khan Academy online platform is a non-profit educational organization created to provide high-quality education anywhere and for anyone. Micro-lectures and lectures in the form of YouTube videos have been developed, the web page has methodical materials and practical exercises for teachers. All resources are free and available worldwide for everyone. The lectures are presented in English, but there is a project to translate the lectures into other languages.

Online platform Duolingo, a free crowdsourced translation and language learning platform (English, German, Swedish, French, Spanish); as the classes progress, users help translate articles, websites, and other documents in parallel.

The eFront online platform is available in several versions, implemented by the main functions of LMS / LCMS (Learning Management System / Learning Content Management System), the basis of which is the eFront Core and it is intended to help educators create distance learning and offers tools for creating tests, management tasks, content, formation of an extended reporting system, holding forums, internal exchange of messages, surveys, chats, etc.



Based on a modular dynamic object-oriented learning environment, an online platform called Moodle has found wide application in the world.

Moodle is an open-source e-learning platform. Moodle is a system (open source code and GPL license) of site content management (Content Management System, CMS), specially designed for creating online courses, has free access, flexibility, high performance, functionality, etc. (Snigur, 2022); with the Moodle system contains more than 100 thousand active sites, more than 16 million distance courses, more than 136 million users (Shetelya et al., 2023). "Moodle is an LMS (Learning Management Systems) technology, a software package designed to help educators create quality online courses" (Zongliang et al., 2010). The online distance-learning platform Moodle works as a typical asynchronous e-learning service (Plakhotnik et al., 2023). Moodle is an open-source e-learning platform.

The Moodle online platform, an information space for interactive interaction between the learner and the teacher, scored the highest number of points based on the results of the assessment of the role of online platforms in promoting the independent learning of students and the proposed options of platforms for distance education. The software of the online platform provides an opportunity to place educational materials on the course in any format: text documents, graphics, drawings, video files, audio files, and presentations, as well as create lecture-practical courses equipped with interactive elements and multimedia tools with non-linear navigation (Silenko & Kruk, 2022).

New trends towards the virtualization of education and its democratization are outlined – the online platforms analyzed above, which are freely available and as motivational and educational platforms, can serve as a model for the education of the entire planet (Budnyk et al., 2022).

Online educational content, as well as innovative tools for its creation, are presented in a modern educational environment in such a technological variation that significantly helped us to ensure independent learning of students by implementing the set tasks of distance learning. This is Byju's application with large repositories of educational content for independent work, learning of different levels of learning; Discovery Education, which contains free educational resources about viruses and diseases; Khan Academy contains a wide range of free information, represented by online courses and lessons, suitable for independent work; LabXchange, is educational digital content hosted on an online platform that provides research and educational experiences; Mindspark, an adaptive system for independent work, learning mathematics through online learning; Quizlet (link is external), an online service for independent work, learning through games and educational tools; YouTube, a repository of educational channels and videos; Dingtalk, an online communication platform that allows you to exchange instant messages, conduct video conferences, monitor student attendance, provides independent work; Lark, a set of tools for content creation, collaboration, independent work, cloud storage; Hangouts Meet, an instant messaging and collaboration software from Google; Teams, a platform for chat, collaboration, online meetings, integrated with Microsoft Office software; Skype, a program for voice and video communication; Zoom, a cloud platform for webinars, audio and video conferences (Bazylenko et al., 2020).

With the help of educational online platforms that serve as an innovative tool for student's independent work, we have discovered many different opportunities for the implementation of the educational program. This is also related to the meaningful content of innovative distance learning in language learning, technical capabilities found in the "student-teacher-specialist" coordinate system when skills are formed, and actualization of general competencies demanded by the modern labor market.

One of the characteristic features of the modern educational environment is the ability to communicate at any time, the ability of applicants to work independently at a convenient time, to receive consultations in online or offline modes, the ability to refer to educational and methodical structured materials of the public educational space in any place, to form an individual educational trajectory during the mastering of a specific educational component (Silenko & Kruk, 2022).

The question of choosing a platform for online education is an organizational and economic, multidimensional task, which is solved at the stage of local e-learning or distance learning technology design. The problem covers the assessment of expected costs, medium and long-term consequences, etc. (Snigur, 2022).

As practice proves, for the organization of online training in any company, only 20% of the functions that graduates of higher education institutions receive today are needed, while the remaining 80% they never use in practical activities (Shubalyi et al., 2018).

Basic principles of building a modern innovative information and educational environment.

The analysis of available online learning platforms makes it possible to indicate the main principles of building a modern innovative information and educational environment:

- Adaptability (the possibility of flexible modification of online platforms to promote independent learning of students, the information core of a higher education institution, taking into account the purpose and needs of the target audience);
- Multicomponentity (training systems, various software, a set of educational and methodological materials, information and reference systems, knowledge control systems, etc. during the independent study of students):
- Distribution (taking into account the limitations and requirements of economic efficiency and modern technical means);
- Integrality (taking into account interdisciplinary connections, this is the possibility of providing independent training of students in various fields of science and technology a complex of basic knowledge with access to global resources for various profiles of training future specialists) (Vasylenko, 2022).

So, at the current stage of the global development of society, the problem of determining and analyzing the possibilities of using online platforms for teaching students, taking into account the needs of teachers and students of the educational space and their adaptation to the specifics of providing educational services, is actualized.

Experimental research.

The purpose of the study is to clarify the role of online platforms in promoting independent learning of students.

To confirm or refute the effectiveness of the implementation of online platforms in promoting independent learning of higher education students institutions, the results of the study were analyzed at the beginning and after its completion.

At the beginning of the experiment, the first group of samples was considered regarding the quality of students' knowledge regarding the use of online platforms in facilitating their independent learning of the control and experimental groups. The Pearson $\chi 2$ test was used to test the alternative and null hypotheses. Based on the results of statistical processing, it was assumed that the equality of conditions in experimental (EG) groups and control (CG) groups before conducting the formative stage of the experiment and that they received a higher level of awareness in experimental groups (compared to control groups) is explained by the result of the implementation of the proposed method of using online platforms, which contribute to the independent learning of students.

After the formative stage of the experiment, the experimental sample and the control sample have statistically significant differences. This was the reason for accepting the alternative H1 and the reason for rejecting the null hypothesis H0. The results of the experiment in the experimental group showed a significant increase in the use of online platforms in promoting independent student learning. We state based on statistical results that the main goal of the study has been achieved, and the effectiveness of the use of online platforms in promoting independent learning of students has been proven.

The analysis of the results of the conducted experiment fully confirmed the hypothesis that the purposeful use of online platforms in the educational process is scientifically based and contributes to the independent learning of students, contributes to the formation of the foundations of informatics and general culture, meaningful and in-depth assimilation of educational material, professional knowledge of higher education students.



The survey of students who participated in the experiment concerned the use of online platforms that students use in the educational process and that contribute to students' independent learning.

The experimental group examined the most popular online platforms that were constantly and purposefully used in the educational profession of the students of the experimental group.

Investigating the online platforms that students used during distance learning in the experimental group, we obtained the following progressive results (respondents were allowed to choose several options):

83.2% of respondents used the Moodle online platform;

84.8% of respondents used the Meet online platform for communication and training;

67.8% of respondents used the Zoom online platform for self-study classes;

45.8% of respondents used the MyEnglishLab online platform for self-study classes;

37.2% of respondents used the Socrative online platform for communication and learning;

36.9% of respondents used the LiveMocha online platform;

36.1% of respondents used the Englishbaby online platform for self-study classes;

30.7% of respondents used the Webpromo experts online platform for training;

28.8% of respondents used the Coursera online platform for communication and learning;

27.5% of respondents used the eFront online platform.

The results of the survey indicate that the introduction of new information and communication technologies and the expansion of the use of online digital access platforms for communication and learning are the main trends that will determine the processes of innovative transformations in the educational space in 2024-2028 to train competitive specialists.

We agree with the opinion of T. Vasylieva, & S. Kotenko that "over the next five years, more than 75% of companies plan to introduce cloud technologies, artificial intelligence technologies, 86% of companies plan to introduce digital platforms and applications, more than 75% of companies – e-commerce and digital trade" (Vasylieva & Kotenko, 2023).

As part of the research work, the quality of data collection and analysis not only adds weight to the research but also contributes to the formation of valid conclusions, which is the key to academic success. The following digital tools for data collection were useful in the research: Google Forms, SurveyMonkey, JSTOR, Google Scholar, Zotero or Mendeley, Microsoft Excel or Google Sheets, SPSS, R or Python.

The practical significance of the research results is: in the application of theoretical provisions and conclusions to promising ways of using technological innovations in the process of studying various online platforms; in the implementation of several measures related to the implementation of the organizational and motivational component system, aimed at stimulating the respondents' interest in the formation of students' competencies and in the practical significance of innovative learning technologies; in the implementation of various components that contributed to providing future specialists with a knowledge system and revealed the essence of innovative learning technologies, their types, didactic possibilities, etc. The results can be used in the process of professional training of specialists in higher educational institutions, for the preparation of scientific and methodological support for the use of online platforms by students of various specialties of higher educational institutions, in the self-educational activities of students, and teachers of higher educational institutions

Conclusions

The importance of online platforms in classroom work and extracurricular independent activities of higher education applicants is proven, and the role of the synergistic paradigm of education in this is revealed. The independent work of students is considered in the conditions of distance learning through the use of online platforms and Internet education.

The content of independent work of students in the conditions of distance learning through the use of online platforms and Internet education is disclosed.

Periods of students' independent work through the use of online platforms in the conditions of distance learning are considered.

The classification of online platforms and the role of online platforms for the independent work of students in the educational space of a higher school are shown. The main principles of building a modern innovative informational and educational environment are substantiated.

A study was conducted to clarify the role of online platforms in promoting independent learning of students.

The results of the experiment in the experimental group showed a significant increase in the use of online platforms in promoting students' independent learning.

We state based on statistical results that the main goal of the study has been achieved, and the effectiveness of the use of online platforms in promoting independent learning of students has been proven.

The analysis of the results of the conducted experiment fully confirmed the hypothesis that the purposeful use of online platforms in the educational process is scientifically based and contributes to the independent learning of students, contributes to the formation of the foundations of informatics and general culture, meaningful and in-depth assimilation of educational material, professional knowledge of higher education students.

The obtained results can be the basis for some areas of further research: thorough substantiation of ways of introducing cloud technologies, and artificial intelligence technologies into the educational process, and creation of new educational courses of web-oriented computer systems with more thorough training.

For the effective organization of training of specialists of higher education institutions in the conditions of the educational process, it is worth using the following recommendations.

- 1. The task of the head of the educational institution is to organize the information space to ensure the efficiency and continuity of the educational process. The remote platform should contain all the necessary means for communication, processing, processing, and evaluation of the educational achievements of students. The structure of the platform must be agreed between the head of the institution and the system administrator who is responsible for its operation. The platform must be accessible and secure at the same time.
- 2. To organize distance learning, it is necessary to create a platform for two-way communication between the participants of the educational process (through the official website of the educational institution)
- 3. To identify users, it is necessary to create a single database of accounts, with the help of which all participants of the educational process will be authorized during education.
- 4. To prevent unauthorized entry during online conferences of users who are not members of the group, it is necessary to provide invitation links only to closed communication groups.
- 5. To join the participants of video conferences, and conduct various types of surveys and testing, it is recommended to send links to events by e-mail.
- 6. An educational institution should use one of the online services that will allow you to create an internal environment of an educational institution using such platforms as Google G Suite, Microsoft Office 365, etc.
- 7. When registering on various online resources, participants of distance education should enter the minimum amount of personal data, or indicate inaccurate data. For this purpose, it will not hurt to create a separate e-mail box that can be used during registration.
- 8. You should not use resources that do not support data encryption, for example, through the https protocol.

The proposed recommendations can complement the work and ensure more successful implementation of activities in the conditions of distance and mixed learning. Although outreach has its challenges, it is considered a very effective form of learning that promotes active student engagement and skill development. Therefore, with the right approach and support, the advantages of using online platforms outweigh the positive aspects, and their use can be an important step in developing students' skills and increasing their interest in learning.



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Transforming education for the STEM era

Трансформація освіти для STEM епохи

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Abstract

The article explores the essence of STEM education and the STEM-oriented approach in the modern information and educational environment. It highlights key components and aspects of the STEM education environment, emphasizing effective organizational forms for implementing a STEM-oriented approach. The study provides recommendations for transforming information and educational environment in higher education institutions to ensure the effective implementation of STEM. It analyzes international projects supporting STEM education and reveals key principles for transforming the educational environment. The research also demonstrates the necessity of specialized this transformation. equipment for experimental study was conducted to analyze the readiness of future specialists in natural sciences and mathematics to utilize STEM technologies in their professional activities. The results showed that the experimental group, exposed to a

Анотація

У статті досліджується сутність STEM-освіти та STEM-орієнтованого підходу в сучасному інформаційно-освітньому середовищі. Висвітлено ключові компоненти та аспекти STEM-освітнього середовища, наголошено на ефективних організаційних формах реалізації STEM-орієнтованого підходу. У дослідженні подано рекомендації щодо трансформації інформаційно-освітнього середовища у ВНЗ для забезпечення ефективного впровадження STEM. Стаття аналізує міжнародні проекти підтримки STEM-освіти та розкриває ключові принципи трансформації освітнього середовища. Дослідження також демонструє необхідність спеціалізованого обладнання для трансформації. цієї Проведено експериментальне дослідження метою аналізу готовності майбутніх фахівців природничо-математичного профілю використання STEM-технологій у професійній Результати показали, діяльності.

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transformed educational environment demonstrated significantly improved readiness compared to the control group. The study highlights the importance of transforming the information and educational environment in higher education to facilitate the effective application of STEM technologies in future specialists' professional activities.

Keywords: information and educational environment, STEM-oriented approach, STEM technologies, STEM education, virtual space.

експериментальна група, яка зазнала впливу трансформованого освітнього середовища, продемонструвала значно кращу готовність порівняно з контрольною групою. На завершення дослідження підкреслено важливість трансформації інформаційноосвітнього середовища вищої освіти для ефективного застосування STEM-технологій у професійній діяльності майбутніх спеціалістів.

Ключові інформаційно-освітнє слова: середовище, STEM-орієнтований підхід, STEM технології, STEM-освіта, віртуальний простір.

Introduction

Nowadays, in higher education, we observe changes in priorities, the emergence of new technologies and fields of knowledge (nano- and biotechnology, information and communication technologies), deepening of scientific research, which significantly depends on the rapid development of the information society. The growing demand for specialists in high-tech industries and innovative processes of socio-economic development, who are capable of engineering activities, and scientific complex activities, contribute to the development and formation of pedagogical innovation of the 21st century - the educational direction of STEM (Polikhun et al., 2019). Therefore, in the educational process of a higher school, it becomes important to focus teachers on the development of a sense of entrepreneurship and initiative in students, on a competence approach, on the formation of students of higher education in the ability to turn ideas into life through innovation, creativity, the development of creative thinking, etc.

In this regard, society puts forward requirements for the quality and new content of the training of future specialists, the modern stage of human development conditions the search for ways, ways, and methods of improving the educational process to increase the competitiveness of graduates. It is the STEM education system that is one of the directions of the innovative development of the educational field, which creates a person who carries out labor innovation activities with a high degree of technological and interdisciplinary, i.e., the STEM education system satisfies society's demand for a STEM specialist. Therefore, STEM education becomes the basis of training specialists of a new generation of specialists, formation of the latest competencies of citizens capable of using and developing the latest technologies, assimilation of a large amount of knowledge, and education is on the path of constant innovative development: research is conducted, centers are opened, methodological recommendations are developed, concepts related to STEM education are being developed. However, despite the active discussion in the academic community, the issue of implementing the ideas of integrated learning in the context of STEM education requires more thorough study and is quite complex. The transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach in the professional training of future specialists will contribute to the formation of the ability to carry out labor innovation activities with a high degree of technological and interdisciplinary (Kryvylova & Zhigir, 2022).

Interesting data on updating global trends in STEM education (Hom & Dobrijevic, 2022) talk about its demand in the labor market: the need for 600,000 workers in STEM specialties in the USA; in Great Britain, the need for specialists is 100,000 workers in STEM specialties, in Germany – 210,000 specialists in STEM specialties (Fonariuk, 2021).

Also, as practice shows, future specialists after receiving diplomas are often not ready to implement an information and educational environment in the context of ensuring the effective implementation of a STEM-oriented approach in professional activities and do not have a clear understanding of the technology of STEM education (Tkachuk & Stetsenko, 2022).

All these important positions and the economic investments of countries in the development of STEM education (billions of dollars) speak of the relevance of research into a STEM-oriented approach to education, which requires the scientific exploration of practitioners and scientists, methods and forms of its



implementation to highlight the content and essence of STEM education in informal and formal educational systems.

The pedagogical problem of STEM technologies acquires a new qualitative sound in connection with the challenges of the information society, such as the rapid impact of technologies on all spheres of life of a modern person; increasing the level of society's requirements for the technological awareness of every person, regardless of his profession; demand on the labor market for specialists; changing educational needs of the generation of today's students, which could be solved by integrating STEM technologies into the educational process.

Insufficient theoretical and practical study of the outlined problem, its social importance, as well as the presence of several contradictions in modern higher education led to the choice of the topic of the article. The development of STEM technologies in the quality training of future specialists is currently an urgent issue of theory and teaching methods in the educational process. Based on this, we considered the following questions in the article:

- 1. The essence of STEM education, the STEM-oriented approach in the modern informational and educational environment, and the main components, and key aspects of the STEM education environment
- Recommendations for the transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach in higher education institutions.
- 3. International projects to support and organize STEM education.
- 4. The main principles of transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach.
- 5. Availability of special equipment in the process of transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach.

Literature Review

Scientists have analyzed the content of key concepts fundamental to understanding the essence of the new STEM educational direction. O. Stryzhak, I. Slipukhina, N. Polikhun, & I. Chernetckiy (2017) proved the relevance of the STEM approach in education and showed the significant shortcomings of the education system that do not sufficiently satisfy the requirements of the modern labor market. The scientists grouped the main definitions of STEM education, defined tasks, goals, content, and structure, showed the expected results of the development and implementation of STEM education, and proved its correspondence to the conceptual foundations of the development of the educational paradigm of society.

The starting points for the implementation of the STEM-oriented approach to the teaching of mathematics were revealed by O. Fonariuk (2021), which is defined as the process of forming several personal qualities of future specialists, characterized in the study of mathematics by a combination of practical orientation and interdisciplinarity, which determines the success of a specialist in the labor market (systemic thinking, critical thinking, the ability to work in a team, the ability to learn throughout life, the ability to solve complex problems, etc.).

L. Svitelska (2022) analyzes an innovative approach to the organization of the education process-oriented, with the help of STEM technologies, to the formation of scientific and technical competence. The researcher revealed the advantages of STEM education and showed the essence of STEM education, which consists of a combination of practice-oriented interdisciplinary approaches to the study of modern tools, methods of technical, technological, and scientific research, and individual subjects. STEM technologies are considered a means of developing the creative thinking of the acquirer of educational space, to reveal the creative potential of the student. In the implementation of practice-oriented, holistic teaching of science subjects, ways of implementing STEM education in the modern educational field are proposed, and the possibilities of an integrated interdisciplinary STEM approach are discussed.

N. Polikhun, K. Postova, I. Slipukhina, H. Onopchenko, & O. Onopchenko (2019) outline the features and determine the practical and theoretical aspects of the introduction of STEM education. Models of integration of informal and formal education for gifted students are proposed, which in the future can become the basis of transformational processes for education. The peculiarities of the educational STEM

environment are revealed, emphasis is placed on the use of engineering design and the scientific method in the construction of STEM educational activities, the application of STEM projects is demonstrated on specific examples, and methodical approaches to the organization of STEM projects are proposed. Research is aimed at forming a deep understanding of the latest trends in education, which are designed to prepare the new generation for the requirements of the modern economy.

The research of N. Soroko (2020) is devoted to the problems of using cloud services for the organization of STEM education. With the help of information and communication technologies, foreign experience in solving educational issues regarding the implementation of a STEM-oriented approach at all levels of education is considered; the main problems that arise during this process are highlighted. STEM education is recognized as one of the urgent directions of education reform and its development, which is evidenced by the significant demand for STEM specialists in the global labor market.

- T. Gumennykova, P. Ilchenko, O. Bazyl, A. Ilchenko, & O. Vydrych, (2022) aims to analyze the educational trends of the year 2022 and determine whether they are relevant in the future, whether they are a response to the challenges of the present. Also, attention is paid to the method of SWOT analysis, with the help of which the strengths and vulnerabilities of distance learning are identified. The results analyze the future of distance education, in particular, special attention is paid to the experience of implementing hybrid education as a likely promising direction of further learning.
- Y. Zavalevskyi, O. Khokhlina, S. Gorbenko, O. Fliarkovska, & O. Chupryna, (2023) in their approach encourage students' independent creativity and prepare them for contemporary work environments. STEM education is positioned as a tool to develop key competencies like multicultural understanding, linguistic skills, and adaptability. This innovative educational method emphasizes the real-world application of scientific, mathematical, technical, and engineering knowledge. The research methodology combines theoretical analysis with practical evaluation. Key findings underscore the significance of independent research, interdisciplinary integration, and skill development in a blended learning environment. A notable outcome emphasizes empowering students to craft scalable business models, such as startups, vital for success in today's world.
- O. Marrero-Sánchez, & A. Vergara-Romero, (2023) emphasize that technological evolution demands the development of digital skills that allow us to face problems and situations in this environment. Society has experienced an essential technological revolution in recent decades, generating significant repercussions in the educational field, especially in higher education.

It has been proven that "to ensure the effective implementation of the STEM-oriented approach in the educational process of a comprehensive educational institution at all levels of education, there is the use of information and communication technologies, in particular, cloud services".

The analysis of scientific research makes it possible to conclude that the scientists grouped the main definitions of STEM education, defined tasks, goals, content, structure, showed the expected results of the development and implementation of STEM education, proved its correspondence to the conceptual foundations of the development of the educational paradigm of society, revealed the content of skills and competencies that are most in demand in the 21st century, the role of interdisciplinary and competency-based approaches in shaping the content of STEM education is shown, the role of cognitive technologies in the organization of the student's cognitive activity, the role of problem-oriented learning, the organizational forms of informal learning are considered and analyzed (world cafe, workshop of the future, open space, learning by example), on the basis of communicative methods of informal education, the experience of implementing a STEM-oriented approach to education in institutions of higher education is described, models of integration of informal and formal education are proposed for gifted learners, who in the future can become the basis of transformational education for education processes.

At the same time, the issue of implementing ideas for the transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach remains relevant.

Despite the significant interest of scientists in the use of STEM technologies both theoretically and practically the insufficient researched problem, which manifests itself in the lack of a unified understanding of the essence of this process, to the application of STEM technologies.



The urgency of solving the outlined problem is enhanced by the aggravation of several contradictions that characterize modern higher education, in particular:

- Between social requirements for saturation of the educational process modern technologies and unpreparedness of the education system for quick correction value guidelines of the average teacher for their use:
- Between the fragmentation and separation of the study of individual disciplines in professional training and the integrity and integration of scientific knowledge through the practice of STEM education;
- Between the need to study and take into account the individual characteristics and preferences of education seekers and the traditionally depersonalized methods, forms, and means of their teaching.

The purpose of the research is the theoretical substantiation of the possibility of transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach.

Methodology

The research was conducted using both theoretical and empirical research methods: synthesis and analysis in order to clarify the categories of STEM education and basic concepts; comparative conceptual analysis with the aim of comparing STEM-oriented approaches and traditional approaches, materials of scientific and practical conferences, scientific, psychological, methodological, pedagogical literature on the problem of research, innovative pedagogical experience; highlighting the regularities of the investigated problem and formulating conclusions; systemic and structural synthesis and analysis to draw conclusions and prove the importance of STEM education on a global scale; empirical methods (included observation, direct observation, indirect observation) for researching the activities of STEM education centers, surveys that allowed to systematize and generalize statistical and analytical material; an experiment to identify the real state of readiness of future specialists in the field of natural sciences and mathematics to use STEM technologies in their future professional activities; mathematical: mathematical analysis, data processing; statistical: for statistical processing, summarization of results.

During the study, an analysis of the formation of the readiness of future specialists in the field of natural sciences and mathematics to use STEM technologies in their future professional activities was carried out. Indicators were divided into three main components: cognitive, activity, and value-motivational.

The indicators contained in each of the components were divided into two blocks:

- Indicators related to the formation of pedagogical competencies these are pedagogical indicators;
- Indicators related to the formation of research, engineering, and technical competencies are technological indicators.

When assessing the level of readiness of future specialists to use STEM technologies in their future professional activities, appropriate questionnaires were used for both teachers and students who teach the disciplines of the natural-mathematical cycle.

A group of experts (teachers) was created to evaluate criteria and indicators to find out the level of readiness of future specialists to use STEM technologies in their future professional activities. The results of control measures and the current performance of students were also used.

The results of the diagnostic section and surveys conducted among students indicate the relevance of the research topic, which made it possible to draw the following conclusions:

- Students actively use digital technologies;
- Most students have clearly expressed characteristics of representatives of the Net generation;
- The level of skills and knowledge in the field of technology and project activity is insufficient for training students of higher education in the application of STEM technologies;
- Aspects of the purposeful formation of reflection skills and increase of students' motivation to study require special attention.



Taking into account the general results of the study of the formation of readiness of future specialists to use STEM technologies in their future professional activities, two groups of respondents were distinguished: an experimental group and a control group.

The experimental and control groups were chosen so that the indicators of the formation of the studied components, which were obtained during the preliminary study of the general population, corresponded to the greatest extent to the average indicators.

The obtained statistical data were analyzed for homogeneity using the Pearson test. Research at the ascertainment stage of the experiment allows us to say that at this stage of the experiment, there was no statistically significant difference between the experimental and control groups for any structural component of the readiness of future specialists to use STEM technologies in their future professional activities. At the control stage of checking the readiness of future specialists to use STEM technologies in their professional future activities in the control and experimental groups, we can see statistically significant differences between the levels of readiness of future specialists to use STEM technologies in their professional future activities of the experimental and control groups.

The obtained results of the experimental study proved that the readiness of future specialists to use STEM technologies in their future professional activities was formed more effectively in the experimental group than in the control group. Therefore, we see the importance of the transformation of the information and educational environment into a higher school in the context of ensuring the effective implementation of a STEM-oriented approach for the effective application of STEM technologies in the future professional activities of specialists.

The experiment was conducted at the Institute of Pedagogy of the National Academy of Educational Sciences of Ukraine. The conduct of the experiment is permitted by the scientific councils of the Academy in order not to violate ethical considerations in institutions of higher education.

Results and Discussion

The essence of STEM education, the STEM-oriented approach in the modern informational and educational environment, and the main components, and key aspects of the STEM education environment.

In a broad context, STEM education is a pedagogical technology for the development and formation of creative qualities and mental, and cognitive qualities of students of educational space, the level of which determines the competitiveness of an individual in the modern labor market.

In the organization of the educational process, the STEM approach makes it possible to combine innovative and research activities, creativity, to cover the sphere of creative potential, to create horizontal connections between fields of knowledge, and to connect society with the surrounding world (Polikhun et al., 2019).

The STEM-oriented approach to education is implemented today in educational and higher education institutions, in particular. Based on a STEM-oriented educational environment, STEM technology provides for an innovative organization of the educational process, characterized by an interdisciplinary approach, and integration into the project and educational activities of students. The basis of the ideas of such innovative STEM education is the assertion that it is important to master academic disciplines comprehensively to form a complete picture of the world and in combination and close integration. Current STEAM areas are audio, web, video design, industrial and interior design, architecture, animation, beauty and fashion industry, industrial aesthetics, etc. (Tkachuk & Stetsenko, 2022).

In European countries at all levels of education, for the successful promotion of a STEM-oriented approach within the framework of the European Union (EU) initiative in Genious, the STEM Alliance was created, in which Microsoft is involved to promote the use of ICT (Debry & Gras-Velazquez, 2016). At the same time, considerable attention is focused on the adaptation and creation of cloud services to the needs of STEM education.

Alliance experts Maïté Debry, & Dr. Agueda Gras-Velazquez (2016) believe that the use of ICT will allow:



- Will increase the motivation to study STEM disciplines and increase the interest in STEM education among students of all levels;
- It will allow to attract education seekers to interactive, active, joint learning;
- Will provide an opportunity for education seekers to choose technologies, tools, and resources for team learning, self-learning, self-assessment, and evaluation of educational activities.

For such activities, the most common tools are cloud services, which facilitate the joint work of students and teachers and facilitate the worldwide interaction of subjects of the educational process (Soroko, 2018).

Let's highlight the main components of the STEM education environment. They are:

- Aimed at solving practical real-world tasks, the interdisciplinary principles of education that exist in the conditions of practice-oriented education within and outside the STEM disciplines, lack of academic knowledge;
- Modern educational tools, including construction robots, are important in education (LEGO Mindstorms, LEGO, Cubelets, MakeBlock, LittleBits, etc.), which allow you to familiarize yourself with the basics of electronics, robotics, programming, mechanics in a playful way, create with various sensors for interaction with the environment and navigation complex structures and implement them in practice, put forward your own ideas, microprocessors and programming, digital measuring complexes, remote and network tools of project management and cooperation, which provide for quality education for students of different age groups the principle of equal access;
- Elective courses, integrated training programs that focus on the formation of competencies (representatives of industry and business, educators, etc. should be involved in the creation of creative content);
- Zones of activity in the audience: zones of creativity and research, interaction and development, presentation zone, etc.;
- Emphasis on team, project, and group work of educational space acquirers;
- Cooperation between educational teams, the attraction of resources between external participants:
 academic research institutions, institutions of higher education, enterprises, research laboratories,
 nature centers, museums, public organizations, business structures, etc.;
- The dominant organizational forms are hackathons, integrated classes, projects, cases, quests, festivals
 of engineering projects, excursions, competitions, thematic days, scientific exhibitions, etc.;
- Active interaction with colleagues;
- Systematic monitoring of results.

To ensure the implementation of a STEM-oriented approach and proper educational and methodological support of the student during his studies, the development of elective courses, and appropriate integrated educational programs focused on the formation of the necessary competencies for the further professional determination of a specialist is of particular importance.

Festivals, hackathons, integrated classes, projects, excursions, quests, contests, thematic days, scientific exhibitions, etc. are effective organizational forms of applying the STEM-oriented approach to education. The development of creative content to support the educational process should be carried out not only by specialists in a certain field of knowledge and educators but also by representatives of business and industry (Leleka et al., 2023).

The focus of the STEM-oriented approach to education is a real problem that needs to be solved in the process of interdisciplinary education, the organization of a competency-oriented, integrated educational process, or a practical task. Therefore, classes must necessarily have signs of problem-based learning, and then it is possible to apply a STEM-oriented approach to learning, which is based on the setting of tasks with real practical content, the solution of which involves the predominant use of inductive research methods, interdisciplinary interaction, team activities, etc. The productivity of education increases significantly under the condition of coherence and systematic interaction of students and teachers who jointly implement a STEM-oriented approach in education.

The STEM-oriented approach assumes a spatial and subject component of the modern educational environment, its completely different essence. A modern educational environment is a physical-spatial environment, a social, material-technological environment that is innovative, accessible, open, business-

oriented, inclusive, developmental, value-oriented, and motivating, which includes in its content intelligent design, innovative technologies, programs, and means of training that contribute to the lifelong acquisition of professional education competencies by future specialists.

In the process of education, the transition to the systematic introduction of ICT is ensured with the implementation of a STEM-oriented approach in all types of educational activities, the use of electronic textbooks, the creation of online platforms with methodical and educational materials for students and teachers, smart complexes, content libraries, new IT technologies, social professional networks, multimedia learning tools.

Let's name the key aspects of the educational process of the STEM approach:

- Building the educational process on real technical and technological, socially significant, and economic problems;
- Construction of educational programs and curricula on an interdisciplinary basis;
- Integration into a single paradigm of natural sciences methodology and content, modern technologies (engineering design, information technologies, mathematical tools, etc.);
- Application of social technologies, cognitive technologies, and knowledge transfer;
- By certain topics, and not individual disciplines of the application of integrated education;
- Emphasis on the comprehensive formation of the student's engineering and scientific thinking.
- Formation using the STEM approach of "soft" skills defined in Framework P21;
- Aspects of STEM, as processes of external influence on the individual social (preparation for further employment and lifelong learning by the requirements of the 21st century) and personal (acquiring practical authentic experience of innovative activity) (Polikhun et al., 2019).

Recommendations for the transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach in higher education institutions.

We will consider the recommended strategies for the transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach in higher education institutions (Leleka et al., 2023):

- Start with an explanation of the goal, the transformation of the information and educational
 environment in the context of ensuring the effective implementation of the STEM-oriented approach
 in higher education institutions should be based on objectivity;
- Demonstration of graphs at the beginning of solving problems, tasks, etc. by students of higher education, since it is the visualization that contributes more than the read text to the quick perception of the material; presentation of data using charts and graphs using presentations and graphic editors;
- The use of ICT to ensure the interactivity of the educational process of the higher school for the use and creation of virtual laboratories, search and presentation of educational resources; creation of educational electronic games, blogs, software, etc.;
- Providing students with an educational space of abstract and concrete concepts after explaining the purpose, which is carried out by using examples from real life to understand the connections with abstract concepts;
- Training of future professionals to use and evaluate technologies, in particular, ICT for self-learning and training;
- Involvement of students in interactive educational work during study and in professional work;
- Focusing not on group work during higher education, but on teamwork;
- Training in business etiquette that meets the needs of entrepreneurship and business;
- Focusing on a student-centric rather than a teacher-centric approach;
- Promoting the development of the educational environment of the higher school, in which the main values are independent and creative thinking;
- Involve students in educational projects, mega brain, and technical support to develop their leadership abilities.

The selected recommendations are important for the implementation and organization of STEM education in educational institutions and indicate the important role of ICT and cloud services in education.



International projects to support and organize STEM education.

To use cloud services to support and organize STEM education, it is necessary to establish international projects. Let's single out the main ones:

- Global Learning and Observations to Benefit the Environment, GLOBE; official website: https://www.globe.gov/;
- Group-Based Cloud Computing for STEM Education Project, GbCC; official website: https://www.gbccstem.com/;
- School on the Cloud; official site: http://www.schoolonthecloud.net/ and others.

Thus, the GLOBE project is an international scientific and educational program that provides students of the public all over the world with the opportunity to participate in the educational and scientific process, data collection, and contribute to the understanding of the system of the global environment and the Earth within the framework of natural and mathematical disciplines. The project cloud provides data exchange between registered participants and is an infrastructure that enables collaborative work on scientific research of students from different countries, which is offered within educational institutions of higher education, etc.

Three levels make up the operational structure of the GLOBE program:

- Primary Activities;
- Support Infrastructure;
- Underpinning Operations.

The main operations supporting the GLOBE project include management systems, the task of which is to provide adequate overview, evaluation of services, monitoring, maximizing the effectiveness of all activities, and ensuring continuous improvement.

The GbCC project is aimed at the use of cloud services and is aimed at implementing a research approach to the creation and study of materials and technologies that support learning within STEM education and generative learning. consider the goals that GbCC sites have:

- Observation in the educational field of experimental sites to support the organization of STEM education with the effective use of cloud services;
- Dissemination of approaches for teacher certification for the preparation of STEM education;
- Motivational training within STEM fields/professions;
- Raising the level of students' awareness of STEM content;
- Development of disciplinary skills, practices, and skills;
- Formation of young people in the framework of the STEM fields of Computational thinking to improve
 the generalization and analysis of the material that is presented on the project site, which is understood
 as the processing of data with the help of ICT;
- Promoting the formation of communication skills, and critical thinking, necessary for entering the STEM environment.

Within the framework of the GbCC project, the following necessary tasks are being researched:

- Based on geo-information technologies and systems of modeling and processing of geospatial data, which are analyzed and substantiated by students in educational projects;
- Distribution of research materials of quantitative and qualitative data, results of technological measures on the nature and intensity of use of innovative technologies.
- Through the expansion and integration of leading computing tools, the development of a groupoptimized device-independent architecture, including a modeling language based on NetLogo web agents, using NSF-funded cloud services, is carried out.

School on the Cloud project (Koutsopoulos, 2015), exists within the framework of the lifelong learning program, financed with the support of the European Commission. The project network will unite 18



European countries; 57 partners; national authorities, schools, universities, non-governmental organizations, research centers, associations, companies, and adult education providers.

Cloud services of Apple, Google, Microsoft, SAM Labs, etc. are offered within the project.

In all the described projects, a special role is played by Cloud-based Distributed Network Simulation Environment and Cloud-based Simulations for students to conduct scientific research in STEM fields, such as NetLogo, Google Maps, HubNet, etc.

Cloud services help the reporting industry to solve problems related to the balance between practice and the content of the curriculum, between student interests and student attendance, between the effective use of ICT in the educational process and their rapid development, etc. (Soroko, 2018).

The main principles of transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach.

Let's highlight the main principles of transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach:

- Integrability the unification of topics, programs, training courses, and tasks for versatile research of
 objects and phenomena; giving priority to teaching methods and organizational forms built on joint
 activity, communication, and student activity;
- Connection with life designing and modeling the tasks set by the educational process based on the
 awareness of resources, real cases, and the experience of the students of the educational process
 regarding the methods and content of solving educational tasks;
- Systematicity a systematic combination of technologies, science;
- Technology the use of information and communication technologies, computer programs, and specialized tools for finding ways to solve the educational situation and its analysis;
- Adaptability attention to the development of adaptive abilities of students by changes in society and social demands; the change to the information society of the educational paradigm of the industrial society requires a reorientation of the educational material given the expected educational competencies of the students;
- Informality determines in the learning process the need to create an informal educational environment
 that takes into account the interests and actual needs of the student, attention to the individual, the
 peculiarities of his communication and thinking; to solve educational tasks, providing the opportunity
 to stimulate creativity, teamwork, independent choice of learning method, personal responsibility for
 learning results (Fonariuk, 2021);
- Constant updating of the content of education, taking into account the development of technologies, scientific achievements, and the requirements of the labor market;
- Taking into account the individual and age characteristics of the students, their abilities and interests,
 and special educational needs, which plays a significant role in the integrative approach to the
 implementation of STEM education, ensures thorough, consistent, high-quality teaching;
- Productive motivation of education seekers to the invention, project activity, and implementation of scientific and research activity;
- Encouraging the development and formation of "flexible skills" among students (presentations, communication, group work); use of problem-based and developmental learning technologies.
- Interdisciplinary principle provides practice-oriented training to the scientific and educational system
 and an interdisciplinary approach in STEM education to eliminate the gap between the practical
 implementation of skills and theoretical knowledge of a person.

To solve practical problems in the education and practical activity of a specialist, the use of a transdisciplinary approach to education is based on the practical application of technical, scientific, mathematical, and engineering knowledge with the aim of further use of skills and knowledge in professional activities (Kuchai et al., 2017).

So, the leading idea of the STEM-oriented approach is to provide the educational process with the principle of interdisciplinarity to learning with the ability to construct innovative content of courses according to the interdisciplinary principle, disciplines, educational subjects, thanks to which there is a combination of



technology, scientific method, and design.

Availability of special equipment in the process of transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach

A STEM-oriented approach to education requires the availability of special equipment, and not only the introduction of new methodological approaches. To implement professional tasks at various stages of training, it is necessary to use educational robot designers: LEGO Mindstorms EV3, LEGO, LittleBits, Cubelets, Makeblock, etc., which in a game form allows you to get acquainted with the basics of programming, mechanics, electronics, robotics, implement on put forward their own ideas in practice, creating complex designs with various sensors, for example, for interaction with the environment and navigation, etc.

When implementing a STEM-oriented approach, educational and practical STEM centers, and high-tech STEM laboratories are created, and simulation centers, start-ups, and educational-production clusters are established as coalitions in the educational process.

In the process of educational and methodical interdisciplinary activities and a comprehensive scientific education system, a STEM-oriented approach to education is implemented through a network of STEM centers and STEM laboratories.

STEM centers and high-tech STEM laboratories are successfully operating in the educational space of almost all countries of the world.

Educational and practical STEM centers and high-tech STEM laboratories, coalitions are an integral part of STEM education; the defining goal of such educational organizations is to contribute to the development of the global workforce in the 21st century. They are created based on scientific laboratories, institutions of general education, higher education, extracurricular educational institutions, specially organized educational spaces with training programs, appropriate material and technical base, scientists, representatives of business structures, specialists, teachers, consultants, etc.).

The competencies of educational and practical STEM centers and high-tech STEM laboratories and coalitions include:

- Establishment of cooperation and dynamic partnership relations between schools, universities, and other institutions of higher education and representatives of industry and business for the implementation of modern initiatives in STEM education;
- Coordination of the activities of symposia, conferences, international schools in the field of STEM education and round tables, the latest learning technologies to discuss important new events in state policy and the impact of global innovative STEM educational programs with the participation of practitioners and leaders of world education in these events, conducting thematic discussions, etc;
- Management and initiation of the activities of educational pilot programs that allow working in different cultural environments and learning to solve problems of global importance, gaining authentic experience in the field of science, technology, and engineering (for example, in mastering 3D-printing, in astronomical observations, in international geographical expeditions to create artifacts of the future, etc.):
- Systematic training, preparation for the relevant activities of teachers, management, consultations, and support for the implementation of STEM programs.

Virtual centers of STEM education deserve special attention, their goal is knowledge transfer and design with the involvement of social and cognitive technologies. Educators of all levels can join international research projects, and participate in virtual and real educational research with the help of such network resources, including ICE Cubes Service, BioTalent, Edu-Arctic, etc. (Polikhun et al., 2019).

STEM laboratories can be equipped with institutions of general secondary education, and higher education, as well as institutions of professional (vocational-technical) and professional higher education to provide a person with a full education to engage in research-experimental, educational-research, design, search, and invention activities applicants of higher education by educational programs, educational standards with the use of design technologies in the educational process.

The implementation of a STEM-oriented approach in educational institutions of all levels of education requires the use of special laboratory, technological, and educational equipment. These are 3D visualization tools, 3D printers and scanners, augmented reality tools, and other things that can make the educational process higher quality and provide future specialists with the necessary equipment. Education seekers, focusing on practical abilities, can master teamwork skills, and develop creative potential, willpower, and flexibility (Kryvylova & Zhigir, 2022).

To ensure the effective implementation of a STEM-oriented approach, STEM centers, and high-tech STEM laboratories in the educational space at all levels of education use ICT, in particular cloud services.

Let's consider the main problems that arise during this process:

- Development of information and communication competence of teachers to ensure continuous improvement of the STEM education environment with the help of cloud services and the use of ICT;
- Creation of informal and formal online courses in the field of STEM with the help of ICT and the involvement of students, specialists, and teachers in them;
- For the organization of the educational process of STEM education selection of the necessary ICT, etc.

The solution to the problems is:

- Participation in educational projects of educational institutions, to promote the development of the skills and abilities of teachers to use ICT, in particular cloud services, in their professional activities, by the world's priority areas of the education industry.
- The organization and creation of open mass online courses for teachers, which provide an opportunity for all those who wish to develop their skills and abilities, and acquire certain knowledge, regardless of their teaching experience and qualifications, when teaching a subject with the help of ICT (Hura et al., 2023).

Let's emphasize the importance of the hardware and software module with software, which is the most important condition for creating a STEM environment.

In today's educational process, modern technological devices (iPhone, iPad, etc.) are increasingly used, which provide remote work with online resources through the use of applications using wireless technology (Epson, Android, Projection, etc.). These devices enable the organization of the educational process to conveniently and easily obtain all the advantages of using modern technologies (seminars, video conferences, presentations, remote classes, control of learning results, etc.). The advantage is the computer-mediated way of interaction, which has become popular with the emergence of such social networks as Facebook, media sites Flickr, MySpace, YouTube, and commercial sites eBay. Such Internet projects, which are widely known, have common characteristics: service-oriented design, open APIs, and the possibility of remote hosting of media files and data.

Recently, devices with support for virtual and augmented reality (VR/AR) have become important and popular in education, which, by creating an environment with the effect of involvement, enable the acquisition of new knowledge, and simulation of comfortable conditions, which allows the student to perceive educational processes through the senses (with support for VR/AR mobile applications, virtual helmets with software, etc.).

A hardware and software module with software is the most important condition for creating a STEM environment. It consists of:

- Information resources of an educational institution (document storage, educational and methodical data banks, unified databases, multimedia educational developments, websites, etc.).
- Software to automate the activities of various services (personnel accounting, library automation, accounting of information environment subjects, performance analysis, etc.);
- General purpose software (spreadsheets, graphic and text editors, etc.);
- Software and methodological support (electronic guides, educational and educational computer programs, multimedia encyclopedias, etc.) (Zabalza Navarro, & González Torres, 2023).



For the successful development of STEM education, thanks to its expanded functionality and for the interaction of the participants of the educational space, the local social networks of the educational institution are quite capable of creating pedagogically favorable conditions for the graduation of a highly qualified specialist. A special virtual space is created by virtual classes, where an innovative educational process is formed, which uses the Internet as an information channel. Virtual classrooms can provide access to scientific libraries, modern databases, and high-quality educational materials. This provides an opportunity not only to choose the optimal pace of learning the program, and to choose a convenient time for classes but also to communicate with curators and teachers using e-mail, web conferences, ISQ, Skype, etc., which makes training one of the most effective forms of working with students education in a virtual environment where access to electronic libraries is provided (Shetelya et al., 2023).

The creative space for the formation of a person's worldview provides a STEM-oriented approach to education, in which a person fully realizes his needs, and not only prepares for adult life. The entire transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach is built in such a way as to contribute to the formation of the individual as a designer and creator of his own life, humanization and harmonization of relations between students, teachers, family and educational institution, based on the idea of choosing a conscious personal life path of a person.

The introduction of the STEM education model into the educational process will provide an opportunity to form such STEM competencies in students as:

- The ability to pose a problem;
- Ability to apply acquired knowledge in different situations;
- The ability to formulate and determine ways to solve a research task;
- The ability to understand the possibility of other points of view on solving problems;
- The ability to apply high-level thinking skills;
- The ability to solve problems in an original way (Balyk & Shmyger, 2017).

Experiment

During the study, an analysis of the formation of the readiness of future specialists in the field of natural sciences and mathematics to use STEM technologies in their future professional activities was carried out. Indicators were divided into three main components: cognitive, activity, and value-motivational.

The indicators contained in each of the components were divided into two blocks:

- Indicators related to the formation of pedagogical competencies these are pedagogical indicators;
- Indicators related to the formation of research, engineering, and technical competencies are technological indicators.

When assessing the level of readiness of future specialists to use STEM technologies in their future professional activities, appropriate questionnaires were used for both teachers and students who teach the disciplines of the natural-mathematical cycle.

A group of experts (teachers) was created to evaluate criteria and indicators to find out the level of readiness of future specialists to use STEM technologies in their future professional activities. The results of control measures and the current performance of students were also used.

The analysis results were evaluated on a three-level ordinal scale: (100-point scale):

- High level of assessment range from 90 to 100 points;
- The average level of assessment the range from 74 to 89 points;
- The initial level of assessment the range from 60 to 73 points.

The results of the diagnostic section and surveys conducted among students indicate the relevance of the research topic, which made it possible to draw the following conclusions:



- Students actively use digital technologies;
- Most students have clearly expressed characteristics of representatives of the Net generation;
- The level of skills and knowledge in the field of technology and project activity is insufficient for training students of higher education in the application of STEM technologies;
- Aspects of the purposeful formation of reflection skills and increase of students' motivation to study require special attention.

The study showed the results that

- 12% of respondents have a high level of formation of components (knowledge, activity, value-motivational). These respondents have approximately the same level of assimilation of the components.
- 20% of respondents have an average level of formation of components (knowledge, activity, value-motivational). The smallest percentage among the components has a knowledge component.

If we take as a criterion of the effectiveness of the developed system the readiness of future specialists to use STEM technologies in their professional future activities and the achievement by future specialists of an average level or high level of readiness to use STEM technologies in their professional future activities, then 33% of the respondents of the general population satisfy this criterion. Given the urgent need for the use of the information and educational environment in education and professional activity in the context of ensuring the effective implementation of the STEM-oriented approach and given the modern requirements for the educational process in higher education institutions, this is a low indicator.

Taking into account the general results of the study of the readiness of future specialists to use STEM technologies in their future professional activities, two groups were distinguished among the respondents:

- Experimental Group 102 people;
- Control Group 108 people.

The experimental and control groups were chosen so that the indicators of the formation of the studied components, which were obtained during the preliminary study of the general population, corresponded to the greatest extent to the average indicators.

We observe close values of the composition of the components of the experimental and control groups at all levels of assessment. We say that both experimental and control groups are in the same conditions.

In the research in the experimental group, we used the most important organizational forms in the transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach in higher education for the effective use of STEM technologies in the future professional activities of specialists: hackathons, quests, excursions, projects, thematic days, integrated classes, competitions, festivals, scientific exhibitions, etc.

The experimental group used local and global information networks with specialized expert systems and various databases along with traditional sources of knowledge acquisition.

To conduct a scientific experiment, analyze and study phenomena, modeling, etc., and create an innovative environment of educational space using ICT, they created a virtual STEM laboratory, a science museum, etc.; singled out modern innovative forms of training organization, which allow to implement the STEM-oriented approach to training in the educational process for effective application in the future professional activity of STEM technology specialists.

To the forms of transformation of the informational and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach for the effective application of STEM technologies in the future professional activity of specialists, we in the experimental group include learning by example, open space, world cafe, workshop of the future. The use of network tools of interaction gave us the opportunity to participate in open specialized network communities and the opportunity to join international scientific and educational projects (Pakhomova, 2020).

To ensure the transformation of the information and educational environment in the context of ensuring the



effective implementation of the STEM-oriented approach for the effective application of STEM technologies in the future professional activities of specialists, the development of appropriate optional courses and integrated curricula aimed at the formation of the necessary for further professional determination was of particular importance in the experimental group competencies.

The transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach for the effective use of STEM technologies in the future professional activities of specialists requires the introduction of special equipment, and not only new methodological approaches. At the stages of the research, the experimental group carried out the implementation of the specified tasks to promote the use of educational robots-designers (LEGO Mindstorms EV3, LEGO, LittleBits, Cubelets, Makeblock, etc.), which in a game form allow you to get acquainted with the basics of electronics, robotics, programming, mechanics, put forward your own ideas and implement them in practice, creating complex structures with various sensors, etc.

To transform the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach for the effective application of STEM technologies in the future professional activities of STEM specialists, the STEM center and the STEM laboratory were created to help establish dynamic partnership relations and cooperation in the implementation and development of the STEM-oriented approach between all interested in popularizing such innovative training. The STEM laboratory and the STEM center organized and initiated the coordination of innovative educational projects that enable students in the future to solve problems of general importance, work in various innovative environments, gain experience in the field of science, technology, and engineering, hold symposia, training, consultations, conferences, round tables, thematic discussions in the field of STEM education, developing individual educational STEM trajectories, designing an interdisciplinary plan, forming skills for a successful life in the 21st century, mastering methods of the invention, online cooperation with colleagues, using telecommunication technologies, etc. (Kuchai et al., 2022)

During the experiment, the level of formation of indicators of readiness of future specialists to use STEM technologies in their future professional activities was checked, both in the experimental and control groups. In the control group, the degree of formation of the components compared to the ascertainment experiment increased by 6%, from 33% to 39%.

In the experimental group, the degree of formation of the components increased by 30%, from 33% to 62%. These data testify to the effectiveness of the developed system in forming the readiness of future specialists to use STEM technologies in their future professional activities.

Statistical hypothesis testing criteria were used to establish the probability of the obtained results:

- About the significance of the differences (alternative hypothesis) of the characteristics of the experimental and control groups;
- About the absence of differences (null hypothesis).

The obtained statistical data were analyzed for homogeneity using the Pearson test. Research at the ascertainment stage of the experiment allows us to say that at this stage of the experiment, there was no statistically significant difference between the experimental and control groups for any structural component of the readiness of future specialists to use STEM technologies in their future professional activities. At the control stage of checking the readiness of future specialists to use STEM technologies in their professional future activities in the control and experimental groups, we can see statistically significant differences between the levels of readiness of future specialists to use STEM technologies in their professional future activities of the experimental and control groups.

The obtained results of the experimental study proved that the readiness of future specialists to use STEM technologies in their future professional activities was formed more effectively in the experimental group than in the control group. Therefore, we see the importance of the transformation of the information and educational environment into a higher school in the context of ensuring the effective implementation of a STEM-oriented approach for the effective application of STEM technologies in the future professional activities of specialists.

The conducted research provided an opportunity to ascertain the fulfillment of the assigned tasks. The obtained results made it possible to outline some directions for further research:

- Determination of ways of learning STEM technologies in the conditions of mixed and distance learning;
- Determining the effectiveness of STEM technologies using non-formal education;
- Determining the possibilities of using the components of the developed methodical system of preparation for teaching STEM technologies for future specialists and trainees of the system of professional development of pedagogical personnel.

Conclusions

The essence of STEM education, the STEM-oriented approach in the modern informational and educational environment, and the main components, and key aspects of the STEM education environment are considered. Effective organizational forms of applying the STEM-oriented approach to education are emphasized. The key aspects in the educational process of the STEM approach are named.

Recommendations for the transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach in higher education institutions are provided.

International projects to support and organize STEM education are analyzed.

The main principles of the transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach are revealed.

The need for special equipment in the process of transformation of the information and educational environment in the context of ensuring the effective implementation of the STEM-oriented approach is proven. The importance of the hardware and software module with software is emphasized, which is the most important condition for creating a STEM environment and a special virtual space created by virtual classes, where an innovative educational process is formed.

The STEM competencies of students, which will make it possible to shape the implementation of the STEM education model in the education process, are considered.

During the study, an analysis of the formation of the readiness of future specialists in the field of natural sciences and mathematics to use STEM technologies in their future professional activities was carried out.

The obtained results of the experimental study proved that the readiness of future specialists to use STEM technologies in their future professional activities was formed more effectively in the experimental group than in the control group. Therefore, we see the importance of the transformation of the information and educational environment into a higher school in the context of ensuring the effective implementation of a STEM-oriented approach for the effective application of STEM technologies in the future professional activities of specialists.

We consider the use of cloud services for the organization of STEM education in higher education and the creation of a cloud-oriented STEM education environment as perspectives for the research.

The results of the research can be used for the development of flexible and variable work curricula and programs of disciplines, lecture courses, seminar classes and workshops, elective courses, and special courses in institutions of higher education, which prepare future specialists and can supplement the content of academic disciplines. The main points, results, and conclusions of the article can be used to develop provisions and standards for teaching STEM disciplines. It is advisable to use the research materials in the training of teachers at various educational and qualification levels and in the postgraduate education system.



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Effectiveness of cultural diplomacy in promoting common EU values

Ефективність культурної дипломатії у популяризації спільних цінностей ЄС

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Abstract

This study investigates the effectiveness of the European Union's (EU) cultural diplomacy in promoting its shared values. The research analyzes the mechanisms of the cultural sector in EU foreign policy, utilizing methods such as documentary research, induction and deduction, analysis and synthesis, and abstract-logical processes. The findings demonstrate that EU cultural diplomacy is an integral part of promoting shared EU values, employing both direct and indirect public diplomacy tools. The study concludes that a unified approach, including Ukraine's involvement, is crucial for enhancing the effectiveness of promoting EU values. Further research should focus on analyzing the shared values of the EU and Ukraine to develop a standardized model for their promotion.

Keywords: cultural diplomacy, foreign policy, European integration, shared values, soft power, cultural programmes, European community.

Анотація

Ця робота вивчає ефективність культурної дипломатії Європейського Союзу (ЄС) у просуванні спільних цінностей. Дослідження аналізує механізми культурного сектору у зовнішній політиці ЄС, використовуючи такі методи, як документальне дослідження, індукція та дедукція, аналіз та синтез, а також абстрактно-логічні процеси. Результати демонструють, що культурна дипломатія ЄС є невід'ємною частиною просування спільних цінностей ЄС і використовує як прямі, так і непрямі інструменти публічної дипломатії. Дослідження робить висновок, що єдиний підхід, включно із залученням України, має вирішальне значення для підвищення ефективності просування цінностей €C. Подальші дослідження мають бути зосереджені на аналізі спільних цінностей ЄС та України для розробки стандартизованої моделі їх просування.

Ключові слова: культурна дипломатія, зовнішня політика, європейська інтеграція, спільні цінності, м'яка сила, культурні програми, європейська спільнота.

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Introduction

The European Union (EU) is a supranational political and economic association of nearly thirty countries with their cultures, values, and traditions. Thus, 27 EU countries have united for common aspirations and comprehensive development. In particular, the European community is a fascinating historical phenomenon, as it is a formal association with its governing bodies, including the Parliament. In addition, at the stage of its creation, the EU was seen as an association of countries for the sake of shared economic interests. Today, the EU means economic cooperation with shared customs and trade policy and political and cultural cooperation. The EU also has a common currency with the European, a joint legal and regulatory framework, and the freedom of citizens of EU member states within the territory of the Union. Notably, members of the European community play a significant role in global policy processes through their international activities, showcasing the EU's impact on the world stage (Pegiou et al., 2021; Stan & Cojocaru, 2022).

The European community has foreign policy associations and a foreign policy course in addition to implementing its internal policy, which covers the EU member states. As part of its foreign policy, the EU uses various types of diplomacy, such as cultural, economic, sports, cyber diplomacy, etc. The EU member states also use international policy to create a positive image of their country and brand an individual country in the European Community (Günek, 2018).

It is well known that the EU is a union of countries with standard policies and regulations. At the same time, the European community comprises almost three dozen countries with their heritage, history, culture, traditions, and language diversity (Zhylin et al., 2023). This diversity of nationalities and cultures among the EU member states has created the right preconditions for establishing and developing such a direction of EU diplomacy as cultural diplomacy. An association such as the EU needs a cultural vector of foreign policy to deepen the study of other countries' cultures. It is also essential for exchanging experience in the cultural sphere and developing cooperation, including in the political, scientific, sports, youth policy, etc. spheres (Mancoš & Gura, 2022). Thus, international cultural cooperation helps the EU build a global collaboration model while having a powerful mechanism of cultural diplomacy operating within the Union itself. In turn, the EU's foreign policy cultural vector is aimed at advocating the shared values of the European Union in the world, and the internal policy vector is aimed at the development and interaction of cultures of the EU member states.

It is worth noting that in addition to the fact that the EU's cultural diplomacy contributes to the development of bilateral and multilateral international relations, the EU faces many challenges. One of these challenges is the need for productive implementation of the cultural diplomacy mechanism in the EU. At the same time, the cultural vector must be implemented while preserving the cultural identity of each member state. Also, it is advisable to consider promoting the EU's shared values in the international arena (Lytvynova, 2020; Popovska & Darcq, 2019).

It is known that the EU uses particular mechanisms and algorithms of cultural diplomacy to achieve its foreign policy goals. The cultural vector of the EU's international activities is a topical issue that requires further study (Ryniejska-Kiełdanowicz, 2021). The scientific novelty of the study lies in the intention to investigate for the first time the functioning of the EU's cultural diplomacy in terms of the formation of common European values.

In particular, cultural diplomacy programs are used to build the common heritage of the European community. To implement such programs, participants from EU member states and non-EU residents are united by common goals and values (Clopot, 2022; Lupu, 2023).

The study aims to analyze the effectiveness of implementing the cultural dimension in EU diplomacy and its impact on promoting EU values.

For effective research, it is necessary to implement empirical tasks:

- Explore the latest approaches and models for shaping the EU's common values;
- To analyze the EU's cultural programs and international initiatives;
- Identify the development of such new phenomena as sports diplomacy and the use of soft power;
- To analyze Ukraine's influence on the promotion of common EU values.



The article is organized into several sections. The first section offers a comprehensive review of the literature, emphasizing key theoretical perspectives and existing studies on cultural diplomacy within the European Union (EU). The second section outlines the methodological approach, detailing both qualitative and quantitative methods employed to evaluate the impact of specific cultural initiatives. The results section presents an analysis of case studies from various EU member states, assessing how cultural diplomacy initiatives align with and promote shared values. Finally, the discussion section contextualizes these findings within the broader framework of EU foreign policy, providing recommendations for enhancing the effectiveness of cultural diplomacy in achieving strategic objectives.

This study enhances discussions in international relations and European studies by elaborating on the theoretical and practical impacts of the research. It emphasizes how cultural diplomacy can effectively strengthen European values and offers practical recommendations for developing more effective cultural policies within the EU going forward.

Literature Review

Many scholars have paid attention to the development of cultural diplomacy and its impact on the successful implementation of the EU's foreign policy in general.

The Concept and Role of Cultural Diplomacy in the EU

In particular, the work of Ryniejska-Kiełdanowicz (2021) deals with the EU's use of cultural diplomacy mechanisms and algorithms to achieve its international goals effectively. The author also points out the lack of research on cultural diplomacy, noting that studying the role of cultural diplomacy is highly relevant to the implementation of foreign policy. The study reveals the interpretation of the term 'cultural diplomacy' in the context of the EU's cultural diplomacy programs, which are implemented not only in the EU but also abroad. The author emphasizes the importance of culture in international relations, while also pointing out the difficulties in aligning various national interests within a cohesive EU framework.

In a related study, Popovska & Darcq (2019) describe the "EU Aid Volunteers" programs. The authors express their vision of possible joint work on actualizing the EU's collective values in the humanitarian and development spheres in the minds of EU citizens through the institution's programs mentioned above. It is noted that in this way, an organization based in the EU can contribute to the development of international cooperation in the cultural and humanitarian spheres for the effective implementation of the programs of this global project. The research highlights the challenges of maintaining a uniform narrative across various geopolitical settings, which could weaken the intended cultural message.

Cultural Diplomacy through Specific Initiatives: Sport, Heritage, and Capitals of Culture

Mancoš and Gura (2022) investigated the modern world phenomenon of 'sports diplomacy' and its impact on the likely formation of associations to promote common EU values. In particular, the paper examines the areas of the Erasmus program that are implemented as student exchanges for both EU and non-EU students. The authors emphasize the appropriateness and relevance of sports diplomacy, as it impacts the social, cultural, and political spheres of life in the EU and non-EU countries. Although there is potential, the research highlights irregularities in policy execution and raises concerns about the long-term viability of sports diplomacy as an effective approach.

Clopot (2022) discusses the development of a common European heritage in her work. The author examines one of the programs for developing cultural heritage in the European dimension - the European Capital of Culture. According to the author, this program contributes to forming a common heritage for the representatives of the European community. Thus, the author emphasizes the results of her research on many variations in foreign policy development. In particular, the researcher discusses the possibility of applying the results within the cultural diplomacy framework provided for this initiative's implementation. The author addresses the conflicts that emerge when local identities are compared with larger European narratives, resulting in conversations about cultural uniformity versus diversity. In addition, the author focuses on the ECHOES (European Colonial Heritage Modalities in Entangled Cities) project (European Commission, 2021) and emphasizes the need to consider the possibility of further consequences for promoting European values and implementing cultural diplomacy in general.

The EU's External Cultural Diplomacy: Strategic Synergies and Challenges

Simić (2020) outlines the main features of the EU's cultural strategy, focusing on the current context in the political and social spheres. The author studies this topic by examining the EU's intercultural strategy and the EU National Institutes for Culture activities. In doing so, she aims to analyze the feasibility of implementing the EU's cultural synergy and its image in the international arena. The research highlights institutional and political challenges that hinder the effectiveness of these synergies, especially in areas where European values are viewed as foreign or not in alignment with local customs.

Similarly, Tamás (2017) presents a study on developing the EU's international cultural relations, considering the realities of global public diplomacy. The researcher notes that EU member states can influence global trends in foreign policy through cooperation and coordination of activities using the instrument of soft power. It is also noted that support for the core values of the European vector is necessary in the context of the constantly changing modern world environment. The research indicates that although cultural diplomacy has potential, its success depends on the EU's capability to adjust its strategies to various cultural and political contexts.

Pavlovsky (2019) examines Austria's foreign policy activities, referring to its ability to position itself as a reliable partner and member of the European family. Moreover, according to the author, in this case, the country demonstrates that it cares about European values in the international arena. The article also analyses the use of cultural policy in the global context as one of the tools to achieve the above goal. This article illustrates the larger issue of reconciling national identities with overarching cultural stories, a recurring topic in the literature.

Günek (2018) describes the relationship between soft power and creating the country's image. The author emphasizes the importance of productive cooperation with the international community for forming a positive image in implementing foreign policy. In particular, the author believes that soft power as a modern tool is one of the components of the country's branding. The researcher also compares the methods of using this tool by other actors in the international arena. This includes forming a positive image of a country with its cultural traditions, which should contribute to developing tourism and economic partnerships. The research highlights how branding influences the perception of European values internationally, while also expressing worries about the potential oversimplification of intricate cultural identities in pursuit of effective communication strategies.

Controversies and Debates in Promoting Common Values

Boyko (2023) reveals the historical aspects of the founding and development of European integration and focuses on the stages of the EU's creation. In particular, the researcher introduces the topic of European unity through common values in different historical periods. In turn, such cooperation is aimed at the productive implementation of joint development for the benefit of all EU member states. The author also points out the importance of Ukraine's European integration in joining the European family. Kitsak & Lylyk (2023) examine the peculiarities of institutional support for intercultural communication in Ukraine as part of Ukraine's European integration path. The researchers focus on analyzing the consequences of interaction between states using cultural diplomacy. In addition, the article emphasizes that the cultural heritage of one country can affect all international actors involved in the dialogue format. Both studies emphasize the varying degrees of success of intercultural initiatives, illustrating the entrenched historical and political schisms that hinder the advancement of shared European values in post-Soviet regions.

The impact of institutional support on intercultural communication is also being challenged by Fichtnerova et al. (2022) present a study on the interaction of researchers with academic institutions in the EU. In particular, the authors focus on differences in national policies, languages, traditions, and cultures in educational institutions in different EU countries. The authors also emphasize the relevance of scientists' adaptation to the working, scientific, and social environment. Their study on academic expatriation and cultural interactions in European universities indicates that although there are institutional frameworks in place, they frequently fail to promote true intercultural exchange because of bureaucratic and administrative obstacles.



New Challenges and the Shift to Digital Solutions

Siliutina et al. (2024) examine how cultural preservation and digital heritage are becoming important aspects of cultural diplomacy within the framework of digital transformation. The researchers highlight the potential benefits and obstacles of leveraging digital platforms to advance EU values, especially given the fast-paced technological changes that allow for information manipulation. The authors advocate for stronger strategies that can evolve with the digital landscape while upholding the fundamental ideals of cultural diplomacy.

Academics present different viewpoints on the optimal ways to engage in cultural diplomacy, with persistent discussions around achieving a balance between unity and diversity, tailoring strategies for specific regions, and maneuvering through the digital environment. These conversations highlight the intricate and dynamic aspects of cultural diplomacy within the EU context. Future studies should concentrate on developing creative solutions to these challenges while maintaining the fundamental goals of encouraging intercultural communication and advocating for common values.

Methodology

The Research Procedure

This research paper examines the model of forming common EU values, considering the implementation of the European community's foreign policy in the context of cultural diplomacy. This was done using the examples of individual EU member states and within the framework of implementing EU cultural diplomacy programs in general. The empirical research was conducted in several stages.

The first stage considers the programs, directions, and latest approaches for developing EU cultural diplomacy. These approaches include using soft power and sports diplomacy in foreign policy activities to build cooperation and support the association's shared values.

The second stage involved analyzing the values of EU countries in the context of the European Union's cultural programs and international initiatives. These activity formats promote the European community's shared values within the EU and beyond. In particular, the mechanisms of such programs as Erasmus, the European Capital of Culture, and others were studied, considering their impact on the development of EU values.

The third stage of this study summarises the results of the research stages mentioned above to determine the impact of cultural diplomacy on relations between EU countries and partner countries. The authors emphasizes the novelty of the results of this study as a formulation of the need to create joint cultural diplomacy programs. These international programs should involve members of the European community and Ukraine. This is necessary to increase the productivity of promoting the shared values of the EU.

This study focuses on the inseparability of the development of cultural diplomacy of the EU member states and the formation of a model for promoting common EU values. At the same time, the processes mentioned above should take place both within and outside the EU.

Sampling

The authors analyzed the Decision of the Verkhovna Rada of Ukraine's "On the Key Directions of the Foreign Policy of Ukraine", which expired on 20.07.2010 (Resolution 3360-XII, 1993) and the Law of Ukraine's "On the Principles of Domestic and Foreign Policy" (Law of Ukraine No. 2411-VI, 2023) and Constitution of Ukraine. (Verkhovna Rada of Ukraine, 2020). The booklet of the Office of the European Union "EU and Me. What is the European Union?" (Office of the European Union, 2023) was used to define European values. In addition, we analyzed the regulatory and legal references of the Ministry of Foreign Affairs of Ukraine (2021, 2022) in the framework of bilateral relations with Ukraine (Table 1).

Table 1. *Regulatory and legal documents used for the study*

№	Regulatory and legal references of the Ministry of Foreign Affairs of Ukraine	Reports of the European Commission
1	Reference of the Ministry of Foreign Affairs on bilateral relations between Ukraine and Poland (2021);	The European Commission's analysis of the results of the second call for applications (2021-2027) for participation in the Erasmus Mundus project of the Erasmus+ programme;
2	Reference of the Ministry of Foreign Affairs on bilateral relations between Ukraine and France (2022);	Final report of the European Commission 'Evaluation of the "EU Aid Volunteers" Initiative (2014-2020);
3	Reference of the Ministry of Foreign Affairs on bilateral relations between Ukraine and Germany (2022).	This is a periodic report for the second period of the ECHOES (European Colonial Heritage Modalities in Entangled Cities) programme, 2019-2021.

Source: developed by the author based on data from the Ministry of Foreign Affairs of Ukraine (2021, 2022) and the European Commission (European Commission, 2021; European Commission, Directorate-General for European Civil Protection and Humanitarian Aid Operations (ECHO), 2021; European Commission, European Education and Culture Executive Agency, 2023).

Criteria for Document Selection:

- Relevance: documents and publications are chosen for their direct connection to EU cultural diplomacy, value promotion, and public diplomacy. Priority is given to sources that focus on how culture helps uphold EU values in both member states and partner countries.
- Time Frame: to maintain its contemporary relevance, the research examines documents released from 2010 to 2023, a timeframe characterized by notable changes in EU cultural diplomacy strategies and overarching geopolitical changes that have impacted value promotion initiatives.
- Authority and Credibility: accept sources from reputable and established institutions, including the European Commission, EU cultural organizations, UNESCO, and peer-reviewed academic journals.
 This standard aims to reduce the likelihood of incorporating biased or untrustworthy information.
- Geographical Coverage: considering the EU's rich cultural diversity, documents are chosen from various member states to reflect a range of viewpoints and approaches in cultural diplomacy.

The EU countries Poland, France, and Germany were chosen to analyze bilateral relations with Ukraine due to their historical roots dating back to Kyivan Rus and the amount of assistance provided by these countries after the full-scale invasion of the Russian Federation in 2022. In addition, reports from the European Commission were used to analyze the EU's cultural programs and international initiatives, EU foreign policy, EU cultural diplomacy, and the formation and promotion of common EU values. In addition, an analysis was carried out on the effectiveness of EU cultural diplomacy programs and the cooperation issues between EU member states in promoting shared values in the international arena, as well as the directions of foreign policy activities of EU member states. In addition, this study is based on the analysis of works from 2018 to 2024, including the most relevant analytical materials and facts. The research data was selected based on its relevance to the research topic. Analytical materials' content on forming the EU's common values was considered. In addition, the sample was focused on the EU's cultural diplomacy and the implementation of the EU's foreign policy, given the importance of promoting its shared values.

Methods

The research is based on several methods, including documentary research, to study the different types of sources used for the sample. Induction and deduction methods were also used to study EU cultural diplomacy and its elements separately, as well as the methods of analysis and synthesis, to explore the integrity of the problem with many components and their interconnections. Thus, the functioning of the EU's foreign policy and cultural diplomacy vector was studied. In addition, the elements of the cultural sector of the EU's international activities and the tools for its implementation were analyzed. The study identified indicators of the effectiveness of the application of these models of EU cultural diplomacy. Also, using the abstract and logical method, the author generalizes and formulates the main strategic vectors of cultural diplomacy implementation.



Methodological Limitations

The research recognizes various methodological constraints:

- Document Availability: although the analysis incorporates a diverse array of sources, some internal
 or less publicly accessible documents might be unavailable, which could restrict the breadth of the
 data
- 2. **Selection Bias**: while the selection criteria are strict, they rely on subjective assessments of relevance and authority, which can lead to potential bias.
- 3. **Interview Scope**: the number of interviews is restricted because of limited resources, and although the criteria for selection strive for balance, the sample may not entirely represent all viewpoints within the EU's cultural diplomacy framework.
- 4. **Geographical Representation**: while there are attempts to incorporate materials and viewpoints from throughout the EU, an emphasis on significant cultural diplomacy initiatives might lead to the neglect of smaller or lesser-known programs that also play a role in promoting values.

Results

Let us consider the latest approaches to developing the EU's cultural diplomacy. Foreign policy tools, such as implementing international cultural programs, projects, volunteer initiatives, etc., are often used to effectively position the EU's heritage, culture, traditions, and customs. Such activities in the global space can contribute to developing cultural heritage in the European dimension. For example, the European Capital of Culture program is based on uniting citizens of different EU countries with a shared colonial heritage. In turn, the Erasmus program, which aims to exchange experiences within student communities, realizes this goal through the tool of unity but in a different context. In particular, the participants of this program are united through joint studies and research offline, staying together in the host country's location. Thus, such programs have one thing in common - they bring together representatives of EU member states of different age groups to achieve a common goal. The necessary groundwork is created in advance. Then, as part of implementing these programs, mechanisms are used to unite and promote the shared values of the European community, of which the participants in such programs are representatives. Table 2 shows the most common EU programs that promote the EU's shared values and the tools used for this purpose.

Table 2.The most common EU programs promoting common European values and the tools used to advocate for common EU values

№	Name of the programme	A tool for promoting EU values
1	Erasmus Mundus project of the Erasmus+ programme;	Student exchanges, sports diplomacy, soft power;
2	"The EU Aid Volunteers";	Uniting the volunteer community, soft power, and scientific activities;
3	ECHOES (European Colonial Heritage Modalities in Entangled Cities).	Uniting vulnerable groups, soft power.

Source: author's development.

It is important to emphasize that implementing the above programs has resulted in new models of advocacy of European values internationally. Such new phenomena today are sports diplomacy and soft power in international relations, both at the level of bilateral relations between countries and multilateral cooperation. The EU's foreign policy instruments are used to build productive collaboration to support the EU's shared values. Thus, these models are an integral part of cultural diplomacy. Foreign policy and diplomacy in general, and cultural diplomacy in particular, are constantly evolving. Therefore, humanity is currently witnessing the emergence of new opportunities to address critical issues, including in this area. For example, the "EU Aid Volunteers" programs are based on cultural and humanitarian cooperation beyond the EU. They can serve as a tool for spreading the values of the European community outside the EU. In addition, the institution, as mentioned above, can facilitate effective dialogue in the cultural and humanitarian sphere between countries. At the same time, this organization will also perform an informational function, spreading European values and representing the EU. In turn, the Erasmus program, known for its thematic experience exchange projects, uses such a new method of unity as 'sports diplomacy' by introducing a sports component to its projects. In particular, sport has historically been a sustainable tool for unity and communication between citizens from different countries and representatives of other cultures.

The presence of a sports component within student exchange programs is a practical resource for learning about the cultures of representatives of the European community. This tool also helps to promote the European values that united the participants in this program. Implementing these two programs uses the mechanism of soft power by indirectly promoting common EU values.

Here is an example of efficiency calculations within the framework of analyzing the results of the second stage of applications (2021-2027) for participation in the Erasmus Mundus project of the Erasmus+ program published by the European Commission (European Commission, European Education and Culture Executive Agency, 2023). Thus, let us consider the functioning of the Erasmus Mundus Design Measures (EMDM) project. EMDM is a project implemented at the level of Master's programs. The main goal of EMDM is to promote the development of new, innovative, integrated transnational high-level study programs. Both representatives of EU member states and non-residents participate in the training programs as country representatives and program coordinators. The EMDM project has been operating in this format since 2021. At the same time, in 2014-2020, the format of the Erasmus Mundus Joint Masters (EMJM) project was in operation. EMJM is also a master's degree program that operates with the help of an international consortium of HEIs worldwide. Educational programs were implemented whenever possible with educational or non-educational partners with a narrow specialization - the project programs aimed to promote integration and internationalization. The following statistics are based on the European Commission's analysis of the results of the second round of applications (2021-2027) for participation in the Erasmus Mundus project of the Erasmus+ program (European Commission, European Education and Culture Executive Agency, 2023), (Table 3).

Table 3.Dynamics of participation of EU member states or non-EU countries in the Erasmus+ program as coordinators (2021-2022) or partners/coordinators (2014-2020)

Country	2014-2020	2021	2022
Spain	+	+	+
France	+	+	+
Italy	+	+	+
Germany	+	+	+
Portugal	+	+	+
Turkey	+	+	+
Poland	+	+	+
Latvia	+	+	+
Hungary	+	-	+
Austria	+	+	+
Ireland	+	+	+
Belgium	+	+	+
Cyprus	+	+	+
Finland	+	-	+
Malta	+	-	+
Romania	+	-	+
Norway	+	-	+
Slovenia	+	-	+
Netherlands	+	-	+
Czech Republic	+	-	+
Croatia	+	+	-
Bulgaria	+	+	-
Sweden	+	+	-
Greece	+	+	_

Source: author's development.

In 2022, 55 out of 62 selected participants from EU and non-EU countries coordinated training programs for the year, while in 2021, 38 out of 40 countries coordinated study programs for the year. Thus, the program promotes the exchange of experience between cultures through cultural diplomacy every year.

Given the active communication between the project participants, there is an exchange of experience and intercultural cooperation. At the same time, the effectiveness of the cultural interaction is due to the diversity of the participating countries and the joint work on their projects.



"The EU Aid Volunteers" is an EU project that operates beyond its borders (Acted, 2019). Moreover, this project is a vivid example of the use of the cultural diplomacy tool. The European Commission's final report, "Evaluation of the "EU Aid Volunteers" (2014-2020), provides the program's performance indicators (Table 4).

Table 4.Assessment of the effectiveness of the "EU Aid Volunteers"

№	The added value of the program was achieved in several ways:	The initiative benefits from the following tools:
1	By promoting the centralisation and standardisation of systems and processes that are more difficult to accomplish by individual EU Member States;	The European Commission promoted quality and training standards, given the centralised approach and availability of know-how. This was widely seen as an added value of the Initiative compared to other volunteering programs in the EU.
2	By encouraging transnational partnerships that extend beyond the Initiative's network;	The emphasis on organisational capacity building was considered an added value of the EU project compared to other volunteer projects focusing exclusively on implementation. This contributes to the experience of implementing volunteer projects and building local communities.
3	This is an opportunity to engage volunteers from all over Europe and deepen their joint learning. At the same time, volunteers emphasise that it has strengthened their sense of European identity and led to the development of a "corps spirit."	The absence of age restrictions for becoming a volunteer in the program adds to the initiative's effectiveness compared to other volunteer projects in the EU.

Source: author's development.

Thus, implementing the abovementioned program effectively builds European values through cultural cooperation with different nations in the EU and beyond. This initiative is centralized and transnational, given the possibility of mobilizing resources and innovation in training by volunteers from non-EU countries.

In particular, the European Commission (2021) has published a periodic report for the second period of the ECHOES (European Colonial Heritage in Tangled Cities) program (2019-2021). This report describes cooperation with thousands of humanities and social scientists through conferences, seminars, online publications, and scientific publications. The report identified a vital marker that emphasizes the program's role in opening new opportunities for interaction with historically disadvantaged groups in the EU (European Commission, 2021). At the same time, it is proposed that such intercultural interaction be used to build relations between the EU and its partners. Thus, programs based on intercultural communication, the exchange of experience between cultures of many nations, help develop cultures and care for the EU's heritage (European Commission, 2021).

Nonetheless, the analysis reveals various limitations. A significant drawback is the data collection method, which depended largely on self-reported measures and surveys from the member states. This approach can introduce biases, as respondents might give socially acceptable responses, resulting in an inflated perception of the effectiveness of cultural diplomacy efforts. Furthermore, the study's cross-sectional design restricts its capacity to assess long-term effects, and its emphasis on EU-centric programs may overlook external geopolitical factors that affect cultural diplomacy results.

The results have important implications for both theory and practice. From a theoretical standpoint, the research emphasizes the significance of soft power and public diplomacy theories in comprehending how cultural diplomacy contributes to promoting values. On a practical level, the findings indicate that forthcoming cultural diplomacy efforts should be tailored to specific contexts, acknowledging regional differences and varying degrees of cultural openness among EU citizens. Specific recommendations include increasing cultural initiatives in areas with less alignment with EU values and strengthening digital cultural diplomacy to engage younger, tech-oriented audiences.

Future studies should tackle these limitations by using longitudinal designs to evaluate the long-term effects of cultural diplomacy and adopting mixed methods to combine qualitative insights with quantitative data.

By enhancing data collection techniques and expanding the analysis, policymakers can more effectively customize cultural diplomacy initiatives to promote EU values across various sociopolitical environments.

This study analyses the impact of using such a cultural diplomacy tool, which effectively influences the development of relations between EU and non-EU countries. This is done through student exchanges, associations of vulnerable groups, soft power, scientific activities, and sports diplomacy. At the same time, cultural diplomacy through the implementation of cultural programs helps to promote common European values. Thus, all of these programs are built on the principles of democracy, equality, respect for human dignity, the rule of law, and respect for human rights. These values are realized through transcultural cooperation, including communication, collaboration, and various activities involving different nations from EU member states and EU partner countries. In particular, by promoting EU values and developing bilateral and multilateral international relations, EU countries can also shape their positive image internationally. Thus, using such cultural diplomacy tools as student exchanges, research activities, associations of vulnerable groups, etc., can positively influence the country's branding. Given the above, we can conclude that EU cultural diplomacy programs effectively promote EU values, build international cooperation, and promote positive country branding.

Discussion

This study analyses the impact of using such a cultural diplomacy tool as the implementation of EU cultural programs. This tool has a practical effect on building relations between EU and non-EU countries. This is done through student exchanges, associations of vulnerable groups, soft power, scientific activities, and sports diplomacy. At the same time, cultural diplomacy through the implementation of cultural programs helps to promote common European values. Thus, all of these programs are based on the principles of democracy, equality, respect for human dignity, the rule of law, and respect for human rights. These values are implemented through transcultural cooperation, including communication, collaboration, and various activities involving different nations from EU member states and EU partner countries. In particular, by promoting EU values and developing bilateral and multilateral international relations, EU countries can also build their positive image internationally. Using such cultural diplomacy tools as student exchanges, scientific activities, associations of vulnerable groups, etc., can positively impact the country's branding. Given the above, we can conclude that EU cultural diplomacy programs effectively promote EU values and build international cooperation and positive country branding. At the same time, further research on cultural diplomacy mechanisms in foreign policy remains an urgent issue for developing EU international relations (Halili, 2021; Ryniejska-Kieldanowicz, 2021). It is also important to note that the EU has implemented an intercultural strategy and launched the EU National Institutes for Culture to develop the cultural dimension of its foreign policy vector. These instruments establish intercultural cooperation and unite representatives of different cultures for common EU values (Rus et al., 2020; Simić, 2020).

In particular, within the EU's international cultural relations framework, member states can influence foreign policy trends by implementing joint programs. Thus, the members of the European family can use "soft power" to promote the shared values of the EU. This tool is indirect diplomacy to realize the EU state's goals and promote the European community's shared values (Tamás, 2017). This tool can also be an integral part of the country's branding, presenting a positive image of an EU member state with its own culture and heritage. Thus, an EU member state can simultaneously work on preserving its heritage and advocate for common European values (Ghezelsofla & Sayady, 2020; Günek, 2018). It is important to note that in the modern world, cultural policy in the international context is used as one of the tools to position a country as a reliable partner (Alshammari & Alshammari, 2023). In addition, by applying the vector of cultural diplomacy in foreign policy, a country can popularise European values in the international arena (Grincheva, 2023; Pavlovsky, 2019).

In particular, the "EU Aid Volunteers" activities actualize the EU's collective values in the citizens' minds. The programs of this organization are implemented to develop international cooperation in the cultural and humanitarian spheres. This program also promotes intercultural interaction with the spread of common EU values (Popovska & Darcq, 2019). It should be emphasized that the European Capital of Culture program has been introduced in the EU to develop cultural heritage in the European dimension. The program serves to unite citizens with a shared colonial heritage and promotes the popularisation of European values and the implementation of cultural diplomacy in general. Thus, it brings together representatives of vulnerable groups with a common historical heritage while promoting the shared values of the EU (Clopot, 2022).



In addition, the EU is implementing Erasmus programs in the format of student exchanges for both representatives of EU member states and students from outside the European family. This program aims to form associations to promote common EU values while using a new tool of cultural diplomacy, "sports diplomacy." In addition, the number of participating countries among EU and non-EU countries is increasing yearly, emphasizing the development of EU transcultural cooperation (Gathmyr, 2021; Mancoš & Gura, 2022).

Given the differences in national policies, languages, traditions, and cultures in EU educational institutions, the issue of adaptation of researchers to the working, scientific, and social environment remains relevant. Given the diversity of cultures among scientists from EU member states and the need to preserve each of the cultures of the EU representatives, it is worth emphasizing the importance of this issue. The issue also concerns promoting common EU values (Fichtnerova et al., 2022).

Throughout its history, the EU has been united by shared values. In its turn, Ukraine continues its Euro-Atlantic path, implementing European values in all spheres of the state's functioning. Even though Ukraine is currently experiencing full-scale aggression on its territory, it continues to unite the world through European values. Also, based on the results of this work, it is proposed to introduce an information tool within the framework of the joint cultural program of Ukraine and the EU and to implement it by disseminating messages to the countries of the democratic world about the inadmissibility of the aggression of the Russian Federation (Bennet, 2019; Bennet, 2020). It is important to emphasize that the cultural heritage of one country can influence all international vectors involved in intercultural communication. Thus, as part of developing its European integration vector, Ukraine is working to implement European values in our country. In addition, the results of this study suggest the creation of a joint program with the participation of Ukraine and the EU to promote EU values. At the same time, the issue of reviving and preserving our cultural heritage remains relevant for our country (Kitsak & Lylyk, 2023).

In contrast to the research by Siliutina et al. (2024), which centers on cultural preservation and digital heritage, this study emphasizes the effectiveness of cultural diplomacy in not only safeguarding cultural heritage but also promoting shared EU values. While Siliutina et al. (2024) discuss the challenges and opportunities of digital cultural preservation, our research indicates that cultural diplomacy initiatives yield more concrete results within the EU. The comparative analysis demonstrates that cultural diplomacy efforts are more successful than digital preservation in engaging diverse populations and actively advocating for EU principles. Nevertheless, Siliutina's et al. (2024) findings regarding the challenges of digital heritage offer important perspectives on the limitations of cultural diplomacy, especially regarding technological access and integration. Our findings suggest that a more cohesive strategy that combines traditional cultural diplomacy with digital innovations could improve the promotion of common EU values.

Given the completed empirical tasks, the study's results indicate that the research objective has been achieved. This study's practical implementation involves introducing new models of cultural cooperation in the EU's foreign policy with Ukraine's involvement. In particular, it is proposed that a joint cultural diplomacy tool be created with the EU as a joint program to promote EU values and unite to counter the aggression of the Russian Federation.

Conclusions

The study's relevance today is due to the development of cultural diplomacy and the unification of the European community, given the aggression of the Russian Federation. The shared values and heritage of the EU serve as a unifying factor for the EU countries, along with Ukraine, which actively implements and promotes European values. Based on the results of the above study, we can conclude that cultural diplomacy is effective. We also believe it is necessary to emphasize the importance of cultural diplomacy as a foreign policy in the EU's activities.

As part of the study's novelty aspect, we propose using the cultural sector in the EU's foreign policy to enable joint counteraction to Russian aggression. For example, it is known that Ukraine's diplomatic relations with EU countries such as Poland, France, and Germany date back to Kyivan Rus. Then, after Ukraine declared its independence, these states recognized Ukraine's independence and established diplomatic relations. After that, Ukraine developed political, economic, cultural, etc. relations with these countries. At the same time, Ukraine began its European integration path, taking into account the implementation of European values in all spheres of state functioning. In other words, Ukraine has gone

from exchanging experiences with other nations to finding common cultural values and traditions with the EU and implementing them today. After identifying common values with EU member states and promoting EU values in Ukraine, an effective mechanism of cooperation with EU member states was developed. The effectiveness of this mechanism is demonstrated by the assistance received from EU countries after the beginning of the full-scale invasion of Ukraine by the Russian Federation. According to official reports, Ukraine has received almost \$9 billion from Poland (as of April 2024), more than €3.8 billion from France (as of December 2023), and nearly €24 billion from Germany (as of November 2023).

Cultural diplomacy has emerged as a crucial instrument for promoting mutual understanding and reinforcing shared EU values among member states and beyond. The research emphasizes that cultural diplomacy advances the EU's foundational principles of democracy, human rights, and the rule of law, while also helping to bridge cultural and political divides within the Union. Successful examples show how cultural initiatives can facilitate dialogue, improve collaboration, and foster a sense of shared identity among diverse groups.

However, the impact of cultural diplomacy varies depending on the context. The study indicates that while some initiatives effectively promote EU values, others encounter obstacles due to differences in engagement levels, resource distribution, and political backing. These variations highlight the necessity for a more customized approach to cultural diplomacy that takes into account the specific needs and circumstances of different member states and regions.

Hence, this work's practical value is finding ways to develop the EU's cultural diplomacy further, increasing its productivity. As a novelty, we propose creating an EU program with the participation of Ukraine to implement a single European centralized mechanism for promoting EU values. Establishing a joint working group with representatives of the EU and Ukrainian governing institutions is advisable to establish such a program. Such a working group will be used to develop a standard model of the proposed program, regulatory mechanisms, and a format for further implementation. We also consider it necessary to build a joint EU instrument with Ukraine to disseminate information messages to counter the aggression of the Russian Federation. We see the development of this information tool as one of the sectors of the working group's work on establishing a joint cultural program between Ukraine and the EU. These tools are necessary to advocate for common EU values, considering the preservation of the cultures of the European countries. In addition, we believe it is necessary to use the EU's cultural diplomacy to disseminate messages of appeal to the democratic world. Among them should be the inadmissibility of aggression and the preservation of shared cultural heritage, considering Ukraine's European integration path. In addition, we propose to continue researching the interconnection between the historical background of cultural diplomacy and the security of the democratic world. This is necessary to create and implement the abovementioned mechanism for advocating common EU values. We see the possibility of applying the study's results in the EU's foreign policy and further enshrining the joint program with Ukraine in EU directives. In particular, we propose to continue researching the specific topics related to the EU's joint cultural programs with Ukraine, including project areas, legal regulation, international organizations involved, information messages, etc.

Recommendations for Policymakers

To improve the impact of cultural diplomacy in advancing EU values, policymakers ought to take into account the following suggestions:

- 1. **Create Strategic Frameworks:** to develop clear strategic frameworks for cultural diplomacy that are in line with the EU's overall goals. This involves defining measurable objectives, pinpointing key target audiences, and efficiently allocating resources to enhance effectiveness.
- 2. **Encourage Inclusivity and Diversity**: to make sure that cultural diplomacy initiatives represent the varied cultures of the EU's member states. By including a broad spectrum of cultural expressions and viewpoints, the EU can create a more inclusive atmosphere that appeals to a wide array of audiences.
- 3. **Improve Collaboration and Coordination**: to foster stronger collaboration among EU institutions, member states, and cultural organizations. This can be accomplished by implementing coordinated programs, pooling resources, and creating joint initiatives that utilize the strengths of different stakeholders.



4. **Assess and Adjust**: consistent assessment of cultural diplomacy efforts is essential for grasping their effects and pinpointing opportunities for enhancement. Policymakers need to establish strong monitoring and evaluation systems to measure effectiveness and modify strategies when necessary.

Suggestions for Practitioners in Cultural Diplomacy

The following suggestions are offered for professionals working in the area of cultural diplomacy:

- 1. **Involve Local Communities**: practitioners need to focus on including local communities in cultural diplomacy initiatives. Collaborating with grassroots organizations and local stakeholders can help garner wider support and create a more significant impact.
- 2. **Utilize Digital Platforms:** employing digital platforms and social media can improve the visibility and accessibility of cultural diplomacy efforts. Practitioners should take advantage of these resources to connect with audiences, disseminate cultural material, and promote intercultural discussions.
- 3. **Emphasize Long-Term Benefits:** cultural diplomacy needs to be regarded with a long-term viewpoint. Professionals should strive to establish enduring initiatives that foster lasting connections and support the continuous advancement of EU values.

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Improving children's communication: the impact of multidisciplinary support on children with speech disorders

Поліпшення дитячого спілкування: вплив мультидисциплінарної підтримки на дітей із порушеннями мовлення

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Abstract

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In recent years, the number of young children with speech disorders has been increasing. One of the approaches to solving this problem is the use of multidisciplinary support, with the involvement of specialized professionals in coordination with parents. The purpose of the study was to examine the effectiveness of multidisciplinary support for young children with speech disorders. Methods of the study. The study examined 70 children with speech disorders of early age (from 1 to 4 years), including 28 girls (40%) and 42 boys (60%). Diagnostics of speech disorders was carried out by examining articulatory motor skills, sound pronunciation, speech, vocabulary, phonemic system of grammatical and coherent speech, fine motor skills, etc. It was found that young children had the

Анотація

В останні роки зростає кількость дітей раннього віку з мовленєвими порушеннями. Одним із підходів до вирішенням цієї проблеми ϵ застосування мультидисциплінарого супроводу, з залученням профільних фахівців в координації батьками. Вивчити ефективність мультидисциплінарного супроводу дитини раннього віку з мовленєвими порушеннями було метою дослідження. Методи дослідження. Обстежено 70 дітей з мовленєвими порушеннями раннього віку (від 1 до 4 років), із яких було 28 дівчинки (40%) та 42 хлопчиків (60%). мовленнєвого порушення Діагностування проводили шляхом обстеження артикуляційної моторики, звуковимови, фонематичної системи мовлення, словникового запасу, граматичного та

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following speech disorders: rhinolalia - 10%, generalized underdevelopment of speech of the second degree - 20%, generalized underdevelopment of speech of the third degree - 10%; dyslalie 30%; dysarthria 20%; allia 10%. The children received qualification support and support in the form of a certain number of correctional classes with specialized specialists, and the rate of hours of correctional component was 100%. 7 children (10%) had level IV support and received 6 hours of correctional sessions with a speech therapist, psychologist and defectologist. 7 children (10%) were under the supervision of a teacher's assistant, 14 children (20%) had level II support and received 2 hours of lessons with a speech therapist per week, according to the current protocols. The effectiveness of multidisciplinary support for children with speech disorders, which depends on consistent, regular and well-organized coordinated work between narrow specialists and parents, has been shown.

Keywords: children, young age, diagnostics, correction, speech disorders.

зв'язного мовлення, дрібної моторики та інше. Встановлено, що у дітей раннього віку мали місце такі мовленнєві порушення: ринолалія – 10 %, загальний недорозвиток мовлення II ступеня – 20 %, загальний недорозвиток мовлення ІІІ ступеня − 10%; дислалія 30 %; дизартрія 20 %; алалія 10%. Діти отримували кваліфікаційний супровід та підтримку у вигляді певної кількісті корекційних занять з профільними спеціалістами, показник забезпеченості годинами корекційної складової становив - 100%. 7 дітей (10%) мали IV рівень підтримки та отримувала 6 годин корекційних занять з логопедом, психологом та дефектологом. 7 дітей (10%) знаходилася під наглядом асистента вчителя, 14 дітей (20%) мали II рівень підтримки та отримували 2 години занять з логопедом на тиждень, відповідно до діючих протоколів. Показана ефективність застосування мультидисциплінарного супроводу дітей з мовленєвими порушеннями, яка залежить від послідовної, регулярної та чітко організованої скоординованої роботи між вузькими спеціалістами та батьками.

Ключові слова: діти, ранній вік, діагностика, корекція, мовленєві порушення.

Introduction

This article examines the effectiveness of multidisciplinary support for 70 children with speech disorders. With the help of a comprehensive psychological and pedagogical assessment, the types of speech disorders in young children were identified. Diagnostics of the child's speech development included such examinations as articulatory motor skills; phonemic speech system (phonemic); sound pronunciation; vocabulary; grammatical structure of speech, etc. The number of hours for correctional and developmental classes with a speech therapist, psychologist and defectologist was established. The study showed almost 100% effectiveness of multidisciplinary support with a personalized approach to the child.

Recent observations of the researchers confirm an increase in the number of young children with speech disorders (Lyons et al., 2022). It is possible to reduce the number of children with speech disorders with the use of early diagnostics in the early stages, which is a relevant and complex issue, demanding timely detection and elimination. Teachers and parents should pay special attention to such a child to eliminate delay in speech development in the early stages. If speech disorders are detected in early stages, it is necessary to immediately begin correction and work with a child. Parent's inability to notice such speech disorder in the early stages or failure to recognize it as a problem results in the failure to conduct early diagnostics and timely taking correction measures.

Young children with speech disorders find it difficult to learn reading and writing, their development is delayed, which is further observed in communication with peers and further studying. Therefore, it is important to pay attention to any change in the speech behaviour of a child in time and immediately refer parents to specialists, emphasising possible complications in the child's development. There is no sufficient information on early diagnostics methods of young children with speech disorders, specific correction schemes or types of individual approaches in different disorders. The attention is mainly paid to the methods of work of speech therapists, but in the late stages of speech disorders detection. In such situations, correction requires a special approach to a child, as well as a higher number and length of activities. Correction is especially difficult for children with congenital defects or any accompanying disease, such as those of the nervous system. It is critical to detect deviations in speech at an early age, and analyse external and internal factors influencing it to further exclude mental, motor and sensory disorders in a young child (Sakash et al., 2023; Matuszkiewicz & Gałkowski, 2021).



Nowadays, many researchers study this area and analyse the experience of foreign and domestic specialists. Many authors emphasise both the necessity of early diagnostics of severe disorders and their timely detection, as well as psychological and pedagogical support to children of the risk group (Krueger & Storkel, 2023; Jin, 2024).

However, follow-up of young children with speech disorders in children polyclinics is an unfavourable factor, as in most situations there are no narrow specialists as psychologists and speech therapists, as well as correctional aid. The percentage of children born with perinatal encephalopathy, which further leads to speech disorders, increases.

Therefore, nowadays, the development and implementation of coherent multidisciplinary team support, new methods of examination, diagnostics, and correction of diagnosed speech disorders in young children is definitely one of the relevant issues.

Literature Review

Language and communication are essential in early psycho-social development, for example learning to control emotions, express feelings, and establish and maintain relations (Law et al., 2017), thus, children with speech disorders have difficulties in academic, social and emotional spheres (Hobson et al., 2022).

Children with externalising behaviour problems, in particular attention deficit hyperactivity disorder, approximately are about five times more likely to have language delays than their peers with normal development, moreover, up to 90% of children with speech disorders also have hyperactivity (Lyons et al., 2022; Gregg et al., 2021). Although efforts of early interventions were originally directed at solving these problems separately, it is obvious that the scale of these issues requires a multidisciplinary approach.

Speech disorders are communication disorders, which prevent communication, including expressive and receptive language, which can lead to achievement reduction and/or functional deficits in the further academic environment (Kovalenko et al., 2021; Kostenko et al., 2022).

From the perspective of social functioning, children with speech disorders experience social deficits, including limited interaction with peers. Furthermore, children with speech disorders, as a rule, poorly perform tasks related to executive function, and children with better speech skills perform such tasks better. Children who have early speech difficulties, as a rule, demonstrate lower results on all parameters of preparedness for school at preschool age. Still, the way language skills determine differences in reacting to interventions in different spheres remains unclear. Conducted longitudinal studies, which revealed long-lasting results of children with severe speech disorders showed that children who overcame speech disorders before the age of 5.5, had positive behaviour and social results (Gregg et al., 2021). Still, children who had speech difficulties during their school years had an increased risk of developing problems with attention, behaviour, and social functioning. There is evidence that without necessary correction, the problem, young children face persists in early school age and has further long-lasting negative influence on academic achievements in disciplines like reading (Gregg et al., 2021).

Multidisciplinary team support shall be conducted by two or more different members of the multidisciplinary team. This means that every person makes their contribution to the support, having different spheres of knowledge, for example, multidisciplinary work with children may be conducted by a speech therapist and psychologist, physiotherapist, occupational therapist or nutritionist, depending on the state of the child and their need.

Potentially, all specialists will not conduct therapy at the same time. Still, they will tightly cooperate and contact each other, to ensure the best result for the child. Multidisciplinary team support is commonly the most appropriate for children with complex needs or many difficulties, which should be considered in totality.

A high percentage of children with mental disorders have poor language skills, but there is not enough evidence of how mental health support is provided to children with language needs. Content analysis of the survey responses, received from parents of children with speech and communication needs, demonstrated three main factors, important for parents' experience: relational aspects of care, organisational aspects of care and professional supervision. Thematic analysis of the interview of parents of children with speech

development delay showed 5 themes: the influence of language problems on distress overcoming, the role of the school environment, the role of key specialists, standard approaches to mental health maintenance can be irrelevant, and the role and influence on parents. Parents of children with speech and communication needs face barriers to access to mental health support for their children, including a lack of professional knowledge on the speech needs of their children. Parents confirmed that speech and communication needs can significantly influence the effectiveness and efficiency of psychological therapy and intervention. Systematic research is needed to understand ways of successful service adaptation and making them accessible to children with speech needs (Hobson et al., 2022).

Children with speech disorders, more often than those who do not have such disorders, experience mental health and well-being problems (Hobson et al., 2022; Hancock et al., 2023). Approximately 80% of children having emotional behaviour problems were found to have poor language skills (Hollo et al., 2014; Mahr & Hustad, 2023).

Understanding of cause-and-effect mechanisms which explain the relation of speech problems with mental health problems enables understanding of the risk factors and protective factors of mental health of children and youth with speech problems. Accurate cause-and-effect mechanisms remain unclear, but there are several possible explanations for the relationship between language needs and mental health. One of the explanations is that speech and mental health problems are related because of the shared genetic effects (Newbury et al., 2019; Toseeb et al., 2022). Speech problems are explicitly affecting mental health through explicit factors (Hobson et al., 2022).

Besides the study of cause-and-effect mechanisms which explain the relation of speech problems with mental health problems, we should understand the types of support children with speech need to receive for their mental health, as well as the level of accessibility and efficiency of such support. In their meta-analysis, Hollo et al. (2014) studied the prevalence and severity of undiagnosed language disorders in children with emotional behavioural disorders. Conclusions in the group of 1171 children aged less than five, who had a formal diagnosis of emotional behavioural disorder, showed that 4 of 5 children had at least mild speech disorders, and 47% of children had medium or severe speech problems which were underdiagnosed. The high prevalence of speech needs among children with emotional and behavioural problems indicates that interventions for mental health children should probably consider the simultaneous development of emotional and speech needs to be maximally effective.

Multidisciplinary team support has been recommended for many years as the means using which the needs of children with speech disorders can be satisfied before school. The presented literature review indicates the absence of a common understanding of multidisciplinary team support of young children between speech therapists, teachers, parents, and children (Shirokova et al., 2023; Vermeij et al., 2023), as well as psychiatrists (Gallagher et al., 2019; McGregor, 2020).

Purpose of the study

To study the efficiency of multidisciplinary team support of a young child with speech disorder.

The tasks of the study:

- To determine types of speech disorders in young children with the use of complex psychological and pedagogical education.
- Determine the number of hours for correction-developmental work with a speech therapist, psychologist and defectologist.
- To determine the efficiency of multidisciplinary team support of a young child with speech disorders.

Methodology

The study involved the observation of 70 young children with speech disorders (from 1 to 4 years old) including 28 girls (40%) and 42 boys (60%), who received multidisciplinary team support.

Inclusion criteria - the study involved young children with diagnosed speech disorders. Exclusion criteria - children of school age and older children.



Variations in specific features of young children's language functions are associated with different nature of the defect and different clinical manifestations. In such empirical studies, it is quite difficult to form a comparison (control) group, due to the fact that over time, a smaller percentage of children are found to have no signs of speech impairment.

Multidisciplinary team support for children with speech disorders involved: elementary level of complex psychological and pedagogical evaluation of a child with the determination of the level of support and recommendations, organisation of correctional activities; determination of the number of hours of support with narrow specialists per week, consulting and teaching parents, providing them with psychological aid; multidisciplinary interaction of specialists.

The work was conducted according to "Ethical Principles for Medical Research Involving Human Subjects", "Universal Declaration on Bioethics and Human Rights", and principles of the Declaration of Helsinki (1964) (World Medical Association, 2022), and approved by the local commission. Before the beginning of the study, parents of all children provided informed consent on observation and examination of their children (Artal & Rubenfeld, 2017).

Diagnostics of speech development of children with speech disorders involved the following examination stages: articulatory motor skills, sound pronunciation, phonemic speech system, vocabulary, grammatical and coherent speech, fine motor skills, etc.

Results

A significant percentage of children attended preschool educational institutions. By the results of psychological, pedagogical and speech diagnostics of the development of young children, conducted by profile therapists, the following speech disorders were found: rhinolalia - 10% (7 children), general speech underdevelopment of II stage - 20% (14 children), general speech underdevelopment of III stage - 10% (7 children), dyslalia - 30% (21 children), dysarthria - 20% (14 children) - speech impairment with insufficient innervation of the speech apparatus, alalia - 10% (7 children) - speech impairment caused by damage to the language zones of the cerebral cortex.

Young children with speech disorders received qualified team support, according to which a certain number of correction activity hours with specialists was provided, an indicator of ensuring the hours of correctional component amounted to 100% (Table 1).

Table 1.Characteristics of children and parents with speech disorders

Parameter	Number, n (%)
Age of the child	
1 year	7 (10.0)
2 years	21 (30.0)
3 years	21 (30.0)
4 years	21 (30.0)
Sex	
Boys	42 (60.0)
Girls	28 (40.0)
Speech disorders	
Rhinolalia	7 (10.0)
Dyslalia	21 (30.0)
Dysarthria	14 (20.0)
Alalia	7 (10.0)
General speech underdevelopment of II stage	14 (20.0)
General speech underdevelopment of III stage	7 (10.0)
Relationship to a child	
Mother	63 (90.0)
Father	7 (10.0)
Parents' education	
Higher	21 (30.0)
Secondary	49 (70.0)

Note: general speech underdevelopment (GSU)



7 children (10%) had IV-level support and received 6 hours of correctional activities with a speech therapist, psychologist and defectologist. 7 children (10%) were under the supervision of a teacher's assistant and 14 children (20%) had II-level support and received 2 hours of correctional activities with a speech therapist per week, according to applicable protocols.

According to the data of control observations, positive dynamics in children with speech disorders were observed due to multidisciplinary team support. However, analysis of the efficiency of the measures of multidisciplinary team support found that teachers need additional assistance in selecting the scheme of detected disorders correction.

Speech therapy in dysarthria management was conducted systematically in combination with medication therapy and rehabilitation (massage, therapeutic baths, physiotherapy, mechanotherapy, acupuncture, etc.) assigned by a neurologist. Due to the development of fine motor skills, motor skills of the speech apparatus, and breathing exercises of every child, methods, and content of speech therapy were varied based on the type and severity of dysarthria, as well as the level of speech development. In case of impairments of phonemic processes and lexical-grammatical structure, the work on their development was conducted. Hence, it is possible to state that the most positive effect was further observed in these children after the use of the above-mentioned methods of work.

Children with speech impairments are characterized by underdevelopment of all structural components of an arbitrary behavioral act: memorization and understanding of instructions, planning and reproduction of actions, and self-control (Table 2).

Table 2.Factors influencing the effectiveness of multidisciplinary support for children with speech disorders

Factors	Reduced efficiency
Speech disorders	Late detection of the disorder
Age of the child	> 3 age
Speech disorders Presence of dyslexia, general speech underdevelopment of stage III	
The level of responsibility of	Underestimation of the problem and reduced level of responsibility of both parents
parents	

It has been shown above that some of the factors that can influence the effectiveness of multidisciplinary support are the severity of speech disorders, the age of the child, and the level of responsibility of both parents. In most cases, parents turn to a specialist when they begin to notice that their child is delayed in development and lags behind their peers in many functions.

Another important and negative factor is the underestimation of the problem by specialists and parents; most often, negative signs are noticed in children over 3 years old, but at this age, speech disorders or underdevelopment are much more difficult to correct by specialists, and early observation of children at risk is essential, primarily by pediatricians and speech therapists.

The analysis of the conducted multidisciplinary team support indicated explanatory support of parents and teachers while working with children with speech disorders (Figure 1).



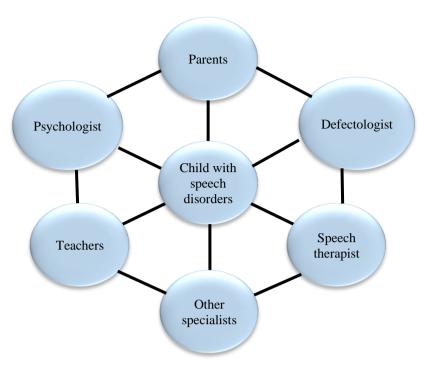


Figure 1. Coordinated interrelations of multidisciplinary team support while working with young children with speech disorders.

Herewith, parents were shown to have difficulties in supporting children with speech disorders, so they require professional support for their families. 70 families, engaged in multidisciplinary team support, participated in the survey. The survey results showed that in most situations parents for the first time learned about such multidisciplinary team support and form of correction of the diagnosed disorders, which indicates a low level of awareness of multidisciplinary team support, they also did not pay sufficient attention to the problem of speech disorder and require constant professional support. Analysis of the results after professional support found that mothers (90) pay more attention to mentoring support and work with children than fathers, but the education of both parents did not have a significant influence on the responsibilities related to the work with children, both parents with higher and secondary education treated recommendations of specialists responsibly.

Such multidisciplinary team support involves education, consultations, and methodological materials for advancing the competencies of narrow specialists. It is necessary to note that most children with inclusive forms of studying in educational institutions have speech disorders, therefore, it is important that qualified narrow specialists pay more attention to this work.

The efficiency of multidisciplinary team support of a young child with speech disorders as well as the analysed approach to a child in the process of implementation of psychological, pedagogical and speech therapy support in the early stages of child development were demonstrated. The efficiency of the use of multidisciplinary team support of children with speech disorders definitely depends on consistent, regular and clearly organised and coordinated work between narrow specialists and parents.

Discussion

Children with speech disorders often fail to receive appropriate qualified assistance (McGregor, 2020; Thordardottir et al., 2021). This may be the result of insufficient awareness of these disorders, their hidden nature, outdated policies and dissonance, which develops when speech therapists diagnose speech disorders. Therefore, there is a need for extended approaches to the support of young children with speech disorders. It is possible to provide them only due to clearer communication between families and narrow specialists.

Children with speech disorders have difficulties with speech understanding, and producing words and sentences. Signs and symptoms of speech impairments are different in different children depending on the language zone damage, problem severity, age of the child and the stage of speech development. Speech disorder may be related to intellectual disability or autism spectrum disorder, but its main reason remains unknown in many situations (Brumbaugh & Gibson, 2021). This is the most common type of child development problem. Although children with speech disorders are involved in different aetiological and clinical classifications, the common is that their limited speech abilities intervene in their communication with parents, peers and other people. Language and communication are essential for the cognitive, social and emotional development and well-being of a child, while speech disorders can significantly affect the development of a child (Toseeb et al., 2020; Vermeij et al., 2023). Parents value the development of speech and communicative skills of their children as they feel they are necessary for fostering independence, acceptance and engagement, as well as achieving academic success. Parents, speech therapists, teachers, and other specialists working with children with speech disorders, consider successful communication in everyday life to be the final objective of interventions for such children. Traditionally, speech therapeutic work was directed at impairments of speech form (phonology, syntax, and morphology), content (semantics) and language use. Clinicians, acting within the framework of the traditional biomedical perspective, assume that communication problems are in children with speech disorders, and thus, the work of speech therapists lies in changing patients' knowledge of linguistic and pragmatic language rules. However, functional benefits should not be assumed if the aim of the intervention is improving body function. After years, it became clear that knowledge of language structures and rules does not automatically lead to better communication results for children in everyday life (Toseeb & St Clair, 2020).

In recent years, clinicians' approach to the treatment of young children with speech disorders has somewhat changed from exclusive orientation to language knowledge and skills of children to improvement of children's actual participation in communication activity in real life, and thus, improvement of communication in everyday life became the final objective of speech therapy (Singer et al., 2020; Wiefferink et al., 2020).

Active transition to a distance form of education is planned in future, thus, specialists work on adaptation of the form of work and determination of the forms of communication (Toseeb et al., 2020). Parents will be able to get familiarised with notifications and recommendations on professional social pages concerning a child's speech disorders, and interesting articles on peculiarities of correctional work at home. Parents will be able to share their experiences and consult with specialists in mobile applications, providing multidisciplinary team support. Parents will also be able to discuss themes of seminars, training workshops, classes, and consultations.

Conclusions

The paper demonstrated that the efficiency of multidisciplinary team support of children with speech disorders is directly dependent on coordinated work between specialists and parents, their professional training and the level of support implementation. The practical use of reconsiderations will enable organising an effective system of coordination measures between specialists and parents. With the help of multidisciplinary support, applied in the early stages of development of speech disorders in a child, it will be possible to get rid of the identified defects with greater efficiency within a short period of time. Therefore, it is promising to continue research in this area, including longitudinal studies to assess the long-term impact of multidisciplinary support for children with speech disorders.

Study limitations

In our study older children, young children with speech disorders, who had congenital defects, and diseases of the central nervous system, for whom conducting correction of speech disorders without additional medication and other therapy would be difficult, were excluded.

Further studies perspectives

The development of practical recommendations of subject matter specialists with parents' engagement concerning multidisciplinary team support of children with speech disorders, which were found in late stages or are accompanied by diseases of the central nervous system with the purpose of improving indicators of speech disorders in children as well as increasing efficiency of multidisciplinary team. For



each child, it is necessary to apply a personalized approach to determining the number and duration of sessions with specialists and to provide professional support to parents to increase the effectiveness of multidisciplinary support and its efficiency.

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Mediation and the right to a fair trial: legal heritage or anomaly of the legal sphere

Video Oyunlarında Grafik Tasarım Sanatı: Görselliğin Ötesinde

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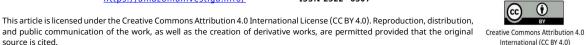
Abstract

The research explores the relationship between mediation and the right to a fair trial, examining whether mediation is a legal heritage or an anomaly within the legal sphere. The study analyzes the legal framework of mediation in Ukraine and other countries, along with international standards. It investigates the impact of mediation on the right to a fair trial and its role in Ukraine's European integration process. The methodology includes policy analysis, empirical research, and comparative methods. The findings suggest that mediation is a valuable addition to the legal system, promoting efficient dispute resolution and reducing the burden on courts. upholding clear standards However. principles is crucial to ensure the protection of participants' rights and maintain the right to a fair trial. The research concludes that mediation can coexist harmoniously with traditional judicial

Анотація

Дослідження вивчає зв'язок між медіацією та правом на справедливий суд, досліджуючи, чи є медіація правовою спадщиною чи аномалією в правовій сфері. У дослідженні аналізуються правові рамки медіації в Україні та інших країнах, а також міжнародні стандарти. Воно досліджує вплив медіації на право на справедливий суд та її роль у процесі європейської інтеграції України. Методологія включа€ аналіз політики, емпіричні дослідження та порівняльні методи. Результати показують, що медіація є цінним доповненням до правової системи, сприяючи ефективному вирішенню спорів та зменшуючи навантаження на суди. Однак дотримання чітких стандартів і принципів має вирішальне значення для забезпечення захисту прав учасників і підтримки права на справедливий Дослідження робить висновок, що медіація може гармонійно співіснувати з

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processes, contributing to a more effective and just legal system.

Keywords: mediation, right to a fair trial, alternative dispute resolution, legal system, legal heritage.

традиційними судовими процесами, сприяючи створенню більш ефективної та справедливої правової системи.

Ключові слова: медіація, право на справедливий суд, альтернативне вирішення спорів, правова система, правова спадщина.

Introduction

Today, the full implementation of mediation in Ukraine is an extremely relevant topic. This is due to the potential for resolving disputes out of court and the need to reduce the burden on courts amidst an excessive volume of cases in their proceedings. The existence of the mediation institution is one of Ukraine's steps towards European integration.

The study of the relationship between mediation and the right to a fair trial raises several important issues and questions, such as:

- Can mediation be considered a legal heritage with deep historical and cultural roots, or is it a novelty that contradicts the traditional legal system?
- How recognized and legitimate is mediation in modern legal systems, particularly in Ukraine?
- Does mediation comply with the guarantees of the right to a fair trial, especially the right to access justice and equality before the law?
- How can it be ensured that participation in mediation is genuinely voluntary and not the result of pressure or manipulation?
- How can it be ensured that the mediation process is fair to all participants, especially in cases where one party has a significant advantage?

These problems require detailed analysis and research to form a clear understanding of the role of mediation in the modern legal system and its impact on ensuring the right to a fair trial.

The purpose of the research is to comprehensively study mediation as an alternative dispute resolution method and its relationship with the right to a fair trial.

Research objectives:

- To study the legislative basis for mediation in Ukraine and other countries, as well as international standards and recommendations on mediation.
- To investigate how mediation affects the realization of the right to a fair trial, particularly assessing the effectiveness of mediation compared to traditional court proceedings.
- To explore the role of mediation in Ukraine's European integration process and determine how mediation contributes to achieving European standards in the field of justice.

The subject of the research is the legal institution of mediation and its impact on ensuring the right to a fair trial, as well as the opportunities and limitations associated with integrating mediation into national legal systems, particularly in Ukraine.

The object of the research is the legal relationships arising from the application of mediation for dispute resolution and their impact on the realization of the right to a fair trial in the context of the modern legal system of Ukraine and international experience.

These objectives, subjects, and objects of research are aimed at a detailed study of mediation as a legal institution, its impact on the judicial system, and the possibilities for harmonious coexistence with traditional judicial processes.

The research consists of the following sections:

Abstract and Relevance



Introduction

Methodology

Literature Review

Main Text:

Analysis of the legislative basis for mediation in Ukraine and other countries, as well as international standards and recommendations on mediation.

Analysis of the impact of mediation on the realization of the right to a fair trial.

Analysis of the role of mediation in Ukraine's European integration process.

Conclusions

References

Theoretical Framework or Literature Review

Hren (2017) explored the implementation of the right to a fair trial through compulsory mediation. The study analyzed the right to a fair trial as an inherent and crucial element for the protection and restoration of violated rights and freedoms. The author examined its structure, identifying key components such as unobstructed access to court, public hearings, fair judicial procedures, judicial independence, and reasonable trial time. The study also highlighted mediation as a means of achieving justice by facilitating conflict resolution through helping parties identify their real interests and reach a mutually beneficial agreement.

Additionally, Denysova (2018) examined the national-historical aspect of the mediation institute in Ukraine, noting various moral-ethical, psychological, economic, and legislative obstacles. The study agreed with the researcher's analysis of the Ukrainian society's psychological profile in historical and modern contexts, concluding that mediation has the potential to integrate organically into contemporary life and help overcome remnants of Soviet heritage.

Kivalov (2018) analyzed the resolution of public law disputes involving judges, emphasizing the importance of no restrictions or conditions on the application of mediation to any public law disputes. This approach would help identify difficulties in reaching agreements and assess the negative impact on the level of conflict in public administration.

Besides, Kozakevych (2020) investigated the role of mediation in ensuring access to justice in a modern transitional society. The researcher highlighted that mediation is a technology of alternative dispute resolution where a neutral third party – the mediator – helps conflicting parties reach an agreement. The study underscored the numerous advantages of court-ordered mediation over traditional litigation.

Korolenko (2024) researched the application of mediation during court proceedings, especially regarding the timeliness of civil case resolution. The study concluded that courts indirectly affect the timely resolution of civil cases through ensuring their timely consideration. When suspending proceedings for mediation, courts should ascertain the voluntary expression of both parties for this suspension.

What is more, Kostenko, and Shuvalova (2024) examined the mediation institute in resolving public law disputes. Moreover, Kurakin, and Romanov (2015) explored the relationship between the rule of law and the law itself in the context of the sociological concept of legal understanding.

Mishina (2024) studied the specifics of mediation in disputes involving local government bodies. The researcher suggested that including mediation provisions in the Law of Ukraine "On Local Self-Government in Ukraine" would be a significant step towards improving dispute and conflict resolution at the local government level.

Reznik, Bondarenko, Utkina, Yanishevska, & Ilchenko (2022) aim to characterize the essence of mediation in case of a minor committing a criminal offense or a felony for the first time. The authors conclude that it is essential and urgent to use the mediation procedure more widely in criminal proceedings as an alternative to litigation.

Teremetskyi, Tokarieva, Myronenko, Mishchuk, & Melnychuk (2023) study the foreign and Ukrainian experience in the development of the institution of mediation in administrative and legal disputes. It has been emphasized that mediation helps to reduce the burden on the judicial system, ensures a faster and more efficient resolution of administrative cases, and helps preserve the relationship between the parties, building trust between the state and the citizen.

Tokaryeva (2021) researched the genesis of scientific approaches to mediation, focusing on its dual sociolegal nature and its significance in resolving legal conflicts. The dissertation included proposals for forming a mediator's ethical code and considered the effectiveness of mediation from the perspective of proper administrative and legal regulation.

Sussman (2018) analyzed the significance and impact of the Singapore Convention on Mediation on international dispute resolution, highlighting the convention's role in increasing confidence in mediation processes and facilitating the recognition and enforcement of international mediation agreements.

Glover and Elliott (2015) discussed the circumstances under which it may be reasonable to decline a request to mediate, noting that refusal to mediate is a right of conflict participants and can be justified in certain situations, such as when parties do not believe a constructive resolution can be achieved through mediation or when the issues are too complex for mediation.

The interplay between mediation and the right to a fair trial is a pressing issue in contemporary legal scholarship, warranting thorough scientific investigation. Key aspects of the research include the right to a fair trial, mediation as an alternative to court proceedings, the interaction between mediation and judicial procedures, and the legal heritage of mediation. Current scholarly discussions focus on the effectiveness of mediation, its impact on reducing judicial overload, increasing access to justice, and facilitating the resolution of complex conflicts. Various models of mediation and their adaptation to different legal systems are examined. Hence, mediation and the right to a fair trial in modern legal science are studied as a complex interaction of alternative and traditional dispute resolution methods, requiring a deep understanding of their legal, ethical, and practical aspects.

Thus in the context of the literature on mediation and its relationship to the right to a fair trial, there are several potential controversies and debates that scholars have explored. One key area of debate concerns the impact of mediation on access to justice, particularly for the most vulnerable parties. Critics argue that while mediation can offer a more efficient and less adversarial alternative to traditional litigation, it may also inadvertently restrict access to justice for some individuals. One of the primary criticisms of mediation is that it may undermine access to justice by favoring parties with more power or resources. This is particularly relevant in cases where there is a significant imbalance of power between the parties, such as disputes involving large corporations versus individuals, or cases where one party has significantly more legal knowledge or financial resources. In such situations, the less powerful party may feel pressured to settle, potentially resulting in outcomes that are not just or equitable. This critique highlights concerns about whether mediation truly serves the needs of all parties or merely expedites the resolution process in favor of the more powerful party. Another controversy revolves around the protection of the rights of vulnerable parties within mediation. Unlike formal court proceedings, which have established rules of evidence and procedure designed to protect participants' rights, mediation is less formal and relies heavily on the skills and neutrality of the mediator. Critics like Glover & Elliott (2015) emphasize that mediation may not be suitable in cases where there is a risk of coercion or where complex legal rights are at stake, as it lacks the procedural safeguards that courts provide. This can be particularly problematic in disputes involving domestic violence, where the safety and psychological well-being of the parties could be compromised by the process of mediation itself. Further debates arise when considering the application of mediation to complex disputes, such as those involving public law or administrative decisions, as noted by Kivalov (2018). The question here is whether mediation is appropriate for all types of disputes, particularly those that involve broader public interests or intricate legal questions. Some argue that certain disputes are too complex for mediation and require the authoritative decision-making power of a judge to ensure that all legal issues are adequately addressed. Additionally, there is an ongoing debate about the role of mediation



as an alternative to formal legal proceedings. While Kozakevych (2020) and others highlight the benefits of mediation, such as reduced court caseloads and faster dispute resolution, there is concern that an overreliance on mediation could undermine the right to a fair trial. If mediation becomes a compulsory or overly encouraged step before accessing the courts, it could potentially limit individuals' ability to seek a formal judicial determination of their rights, thus impinging on their right to a fair trial as highlighted by Hren (2017). Lastly, ethical and legal considerations around mediation are also a topic of debate. The development of a mediator's ethical code, as suggested by Tokaryeva (2021), underscores the need for clear guidelines to ensure fairness, impartiality, and the protection of all parties' rights during mediation. However, the creation and enforcement of such guidelines raise questions about how they would be standardized and implemented across different jurisdictions and cultural contexts. Overall, while mediation offers numerous benefits as an alternative dispute resolution method, its implementation raises significant questions about access to justice and the protection of vulnerable parties' rights. These controversies underscore the need for careful consideration and regulation of mediation practices to ensure they complement rather than compromise the right to a fair trial.

Methodology

In the study of mediation and the right to a fair trial, several methods were employed: policy analysis, empirical research, and comparative methods.

Policy Analysis

During the research on mediation and the right to a fair trial, the policy analysis method was instrumental in determining how mediation can influence the realization of the right to a fair trial and what policy changes are necessary for its effective implementation. This method was used to formulate the primary research question: "How does mediation affect the realization of the right to a fair trial?" Additionally, this method was utilized to collect data (legislation, regulatory documents, scientific articles, monographs, reports from international organizations related to mediation and the right to a fair trial) and to assess the national legislation on mediation and its compliance with international standards. The analysis examined how mediation impacts access to justice, equality of parties, and other aspects of a fair trial process, and explored the pros and cons of using mediation compared to traditional litigation. Conclusions were drawn about the need to improve mediation legislation to ensure its alignment with international standards and effective integration into the national legal system. It was summarized that mediation can positively influence the right to a fair trial, provided that voluntary participation, equality of parties, and all constitutional guarantees are upheld.

Empirical Research

Empirical research allowed for the collection and analysis of actual data to study the real impact of mediation on the right to a fair trial. The aim of the research was to determine whether mediation is an effective tool for ensuring the right to a fair trial. A case study method was selected for data collection, and a representative sample was chosen for data gathering, processing, and interpretation of the results. Through these processes, the impact of mediation on the right to a fair trial was evaluated, and the advantages and disadvantages of mediation in the context of Ukraine's legal system were identified. Empirical research provided a comprehensive understanding of mediation as a justice tool, its impact on the legal system, and the opportunities for improving mediation practices in Ukraine.

Comparative Method

The comparative method enabled the examination of mediation and the right to a fair trial by analyzing and comparing different legal systems, practices, and experiences. This helped to understand how mediation affects justice in different jurisdictions and what can be borrowed to improve the system in Ukraine. This method was used to evaluate the effectiveness of mediation in various legal systems, identify best practices that could be applied in Ukraine, and highlight commonalities and differences in the use of mediation in different countries. As a result, it was concluded that successful examples of mediation in developed legal systems show that mediation can significantly reduce the burden on courts and facilitate quick dispute resolution. In most of the countries studied, mediation ensures access to justice and protects the rights of parties while maintaining the fundamental principles of a fair trial. The comparative research method

allowed for a deeper understanding of how mediation can be integrated into the Ukrainian legal system, ensuring the right to a fair trial and contributing to the efficiency of justice.

Results and Discussion

1. Analysis of the Legislative Framework of Mediation in Ukraine and Other Countries, as well as International Standards and Recommendations Regarding Mediation

Mediation originated during the Great Depression in the United States, which took place in the 1930s. At that time, mediation was used to resolve conflicts in family and labor relations, as well as to help end mass disturbances in society. Subsequently, mediation spread to European countries such as Germany, France, Italy, and others. Etymologically, the term "mediation" is synonymous with acting as an intermediary between certain parties. The effectiveness of mediation is recognized by the European community, and most Council of Europe documents and EU directives recommend the implementation of mediation as a primary method of alternative dispute resolution (LB.UA, 2023).

The current stage of state management development in the judicial system is characterized by a transition from a confrontational to a discursive-adversarial form of justice, with reconciliation as its main goal. Reconciliation is applied in civil, commercial, and administrative disputes before or during court proceedings, as well as at the enforcement stage; in resolving issues of reconciliation between the victim and the suspect (accused) in criminal legal relations; and during the resolution of collective labor disputes.

In Ukraine, the development of mediation began with independence and has continued for over 30 years. However, it was only in the fall of 2021 that the main aspects of mediation, its principles and procedures, and the status of a mediator were officially enshrined in the Law of Ukraine "On Mediation" (Law 1875-IX, 2021). According to the relevant law, mediation is defined as an extrajudicial voluntary process involving confidential and structured negotiations between parties with the participation of one or more mediators. The purpose of mediation is to prevent or resolve conflicts. The voluntary nature of the procedure means that the parties have the right to enter into and terminate the mediation process at their discretion and cannot be forced to participate. Mediation is also a confidential process, unlike judicial proceedings where the principle of publicity is key. Information obtained during mediation is confidential and protected from disclosure. Mediation, like any process, has a specific internal structure consisting of stages characterized by features such as logicality, consistency, procedural unity, orderliness, standardization, autonomy, and purposeful intent.

The normative consolidation of mediation is also present in codified acts such as:

The Civil Procedure Code of Ukraine. During the preparatory meeting, the court clarifies whether the parties wish to conclude a settlement agreement or conduct an extrajudicial dispute resolution through mediation (Art. 197). If the parties express such a desire, the court is obliged to suspend the proceedings at the request of the parties (Law 1618-IV, 2004).

The Economic Procedure Code of Ukraine. During the preparatory proceedings, the court clarifies whether the parties wish to conduct an extrajudicial dispute resolution through mediation (Art. 182) (Law 798-XII, 1991).

The Code of Administrative Procedure of Ukraine. The parties may reach reconciliation, including through mediation, at any stage of the judicial process, which is grounds for closing the proceedings in an administrative case (Art. 47). The court clarifies whether the parties wish to resolve the dispute through reconciliation or conduct an extrajudicial dispute resolution through mediation (Art. 180, 181) (Law 2747-IV, 2005).

Some special laws also regulate issues related to mediation. For example, Article 7 of the Law of Ukraine No. 3674 "On Court Fees" dated 08.07.2011 provides that if an agreement is reached to settle the dispute through mediation, the court considers the issue of refunding 60% of the court fee paid by the plaintiff when filing the lawsuit. This provision creates a financial incentive for the parties to reconcile through mediation (Law 3674-VI, 2011).



Thus, today in Ukraine, the concept and procedure of mediation are legally enshrined. International standards and legislative acts create a legal basis for the development of mediation, providing parties with the opportunity to choose and effectively resolve disputes through this method.

2. Analysis of the Impact of Mediation on the Implementation of the Right to a Fair Trial

According to statistical data for 2022, almost 3.5 million cases were pending in Ukrainian courts, a significant portion of which remained unresolved for various reasons. Excessive duration of court proceedings violates the fundamental right of individuals to access justice. The implementation of mediation can help reduce the burden on the judicial system and accelerate case resolution (European Court of Human Rights, 2023).

The right to a fair trial is one of the fundamental human rights guaranteed by many international and national legal acts. The main aspects of this right include:

Accessibility and availability of the court: Every person has the right to access the court to protect their rights and interests. The judicial system must be accessible, non-discriminatory, and efficient.

Independence and impartiality of the court: Courts must act independently of the authorities and the influence of any parties or other bodies. Judges must make decisions based solely on facts and law, without any influence or pressure.

Right to a fair process: This includes the right to have one's case heard by an adequate, fair, and public judicial body. Judges must ensure a fair process for participants, exercising control over the provision of procedural guarantees.

Right to defense: All participants in the judicial process have the right to defend their rights and interests, including the right to legal assistance and representation.

Enforcement of court decisions: Court decisions must be executed without delay and unconditionally, ensuring the restoration of violated rights and the resolution of disputes (Verkhovna Rada of Ukraine, 1950).

The European Court of Human Rights has repeatedly ruled against Ukraine in cases related to violations of Article 6 of the Convention for the Protection of Human Rights and Fundamental Freedoms, namely the right to a fair trial in the context of excessive length of court proceedings (Verkhovna Rada of Ukraine, 1950).

In such circumstances, improving the situation and ensuring access to justice while "unloading" the courts can be achieved through the broad application of alternative dispute resolution practices, particularly mediation (Kostenko, & Shuvalova, 2024).

In general, the mediation procedure is entirely focused on the parties to the dispute. They have the opportunity to choose a convenient format, schedule of meetings, duration, topics for discussion, meeting place, and specific mediator who will assist in the dispute resolution process. The main advantage of mediation is that the parties are directly involved in finding a mutually beneficial solution, increasing the likelihood of its implementation. After mediation, the parties enter into an agreement that records their arrangements. If an agreement is not reached or is improperly implemented, the parties may turn to the court. At the preparatory meeting, the court also determines whether the parties wish to conclude a settlement agreement or conduct an extrajudicial dispute resolution through mediation. If the parties express such a desire, the court suspends the proceedings at their request. According to procedural legislation, the parties can conclude a settlement agreement, including through mediation, at any stage of the judicial process.

The advantages of mediation compared to other methods of conflict resolution can be summarized as follows:

- Voluntariness: Participation in the mediation process is voluntary for both parties.

- Mediator participation: A mediator, as an independent third party with special skills, organizes the negotiations, directing them towards clarifying and analyzing the parties' interests.
- Conflict resolution from an interest-based perspective: Mediation promotes conflict resolution by finding a mutually acceptable solution between the parties.
- Speed: The mediation process can be significantly faster than court proceedings.
- Flexibility and informality of the procedure: Mediation allows the parties to independently determine the conditions of the process.
- Cost-effectiveness: The costs of mediation are often significantly lower than those of court proceedings.
- Higher likelihood of agreement implementation: An agreement reached through mediation has a higher chance of being implemented by the parties.
- Confidentiality: Information obtained during mediation usually remains confidential.
- Involvement of experts: Mediation may include the involvement of experts to help resolve disputed issues.

In summary, mediation has the following advantages compared to court proceedings:

- 1. Ouick conflict resolution.
- 2. Preservation of confidentiality.
- 3. Time and cost savings.
- 4. Improvement of relationships and prevention of emotional burnout.

Mediation in courts can take various forms, from voluntary to mandatory models. Voluntary models imply that mediation occurs only with the consent of both parties. In such cases, the parties are given the opportunity to suspend court procedures for mediation. Conversely, mandatory models imply that the parties must undergo mediation, regardless of their initial desire, but they retain the right not to reach a final resolution of the dispute.

Regarding the introduction of mediation as a mandatory pre-trial procedure for certain categories of disputes, particularly in cases concerning the place of residence of the child and the establishment of the way of participation in their upbringing.

As Denysova notes, it is appropriate to support measures such as:

- Implementing legal education and training for the population to enhance the level of legal culture.
- Increasing trust in mediation services by informing the public about their advantages and success compared to other dispute resolution methods.
- Active information policy that includes continuous and targeted activities by state authorities and individuals involved in mediation.
- Expanding the objectives of international projects on the implementation of mediation in Ukraine, involving both state and public organizations of mediators who have already demonstrated their effectiveness in practice.
- Introducing state funding for mediation programs.

Disseminating knowledge and practical skills in mediation among lawyers, creating a network of training centers for mediators, adopting relevant legislation regarding the status of professional mediators and the procedure for their formation, and promoting activities and cooperation with public organizations involved in the preparation of mediators.

Adopting a special law on mediation that will define the scope of cases where mediation can be applied, the principles, requirements for mediators, procedures for their selection, the main principles and forms of mediation, providing guarantees to the parties, and resolving other important issues (Denysova, 2018).

Thus, the use of mediation as an alternative to judicial dispute resolution is a worthy choice. Mediation focuses on finding the optimal solution that maximally considers the interests of all parties through a series of negotiations, exchange of views, and proposals. The involvement of a mediator, an independent and impartial person, helps maintain and develop cultural relations between the parties, achieve a positive outcome, and mutual understanding in the arising conflict. Due to the advantages of mediation, such as



time savings, mutually acceptable solutions, voluntariness, flexibility of the procedure, and others, conflicts in society can be resolved quickly and effectively.

3. Analysis of the Role of Mediation in the Process of Ukraine's European Integration

In Recommendation Rec (2002) 10 of the Committee of Ministers of the Council of Europe to member states on mediation in civil matters, adopted by the Committee of Ministers of the Council of Europe at the 808th meeting of the Ministers' Deputies on 18 September 2002, the term "mediation" is equated with a dispute resolution process within which the parties, with the help of one or more mediators, conduct negotiations to reach an agreement on the disputed issues (Committee of Ministers of the Council of Europe, 2002).

Mediation is also reflected in Directive 2008/52/EC of the European Parliament and of the Council on certain aspects of mediation in civil and commercial matters of 21 May 2008. Paragraph 6 of this act states that mediation can provide a rapid resolution of disputes at minimal cost through processes specially tailored to the needs of the parties. Agreements reached as a result of mediation are more likely to be voluntarily executed, and friendly and lasting relationships between the parties are maintained. These benefits become even more apparent in cases of an international nature (European Union, 2008). Furthermore, according to paragraph 13 of this document, mediation should be a voluntary process in which the parties themselves are responsible for its course, have the right to organize it at their discretion, and can terminate it at any time. However, national legislations should provide that courts can set time limits for the mediation process. Additionally, courts should be able to draw the parties' attention to the possibility of mediation whenever appropriate. Considering the provisions of the Mediation Directive, it can be concluded that the mediation process is based on the principles of equality and voluntariness, although courts can influence mediation by setting temporary restrictions (deadlines).

Directive 2013/11/EC of the European Parliament and of the Council, commonly known as the Directive on Alternative Dispute Resolution for Consumer Disputes (ADR), aims to ensure the availability of mechanisms for alternative resolution of consumer disputes throughout the European Union. The Directive applies to disputes between consumers and traders regarding contractual obligations arising from sales or service contracts. It covers both online and offline purchases made by consumers. The main goal of the Directive is to provide consumers with access to effective dispute resolution mechanisms with traders without the need to go to court. The Directive encourages the use of impartial, transparent, effective, and accessible ADR entities (European Union, 2013).

In the context of Ukraine's integration into the European Union, the legislator will be obliged to implement Directive 2008/52/EC on certain aspects of mediation in civil and commercial matters and Directive 2013/11/EU on alternative dispute resolution for consumer disputes.

Limitations of the Study

While this study provides a comprehensive analysis of the legislative framework and impact of mediation in Ukraine, it is important to note several limitations. Firstly, the geographic scope of this study is limited to Ukraine, which may not fully capture the broader applications and variations of mediation practices observed in different international contexts. The findings and recommendations are therefore primarily applicable to Ukraine's specific legal, cultural, and socio-political environment.

Secondly, there is a lack of empirical data on the long-term impact of mediation in Ukraine. As the formal legal framework for mediation in Ukraine was only established in 2021, there is insufficient data to evaluate its effectiveness over a longer period. This limitation restricts the ability to draw comprehensive conclusions about the sustained outcomes of mediation practices in the country. Further empirical research is needed to assess the long-term impacts and potential challenges of mediation in Ukraine, as well as to compare its effectiveness with other forms of dispute resolution used both domestically and internationally.

Conclusion

The research on the legislative basis of mediation in Ukraine and other countries, as well as international standards and recommendations on mediation, has established that in Ukraine, mediation as an institution of out-of-court dispute resolution was legislatively enshrined by the Law of Ukraine dated 16.11.2021 No.

1875-IX "On Mediation." This law defines the legal principles, principles of mediation, the status of the mediator, requirements for their training, and other aspects of conducting mediation. In the Recommendation Rec (2002) 10 of the Committee of Ministers of the Council of Europe on mediation in civil matters, mediation is defined as a process of dispute resolution with the help of one or more mediators, which facilitates reaching an agreement between the parties. Directive 2008/52/EC of the European Parliament and of the Council on certain aspects of mediation in civil and commercial matters emphasizes the speed, cost-effectiveness, and efficiency of mediation, especially in international disputes. The Directive also emphasizes the principles of voluntariness and the responsibility of the parties for the mediation process, although courts can set time limits. Mediation norms are integrated into the Civil Procedure Code, the Economic Procedure Code, and the Code of Administrative Procedure of Ukraine, allowing the use of mediation as a means of dispute resolution in various branches of law. The legislatively enshrined "financial incentive" for parties choosing mediation is provided in the Law of Ukraine "On Court Fees."

Research on the impact of mediation on the realization of the right to a fair trial has shown that mediation as an alternative method of dispute resolution significantly reduces the number of cases that go to court. This allows judges to focus on more complex and important cases, which in turn contributes to a faster consideration of these cases. Mediation procedures are usually faster and less formal compared to court proceedings. This helps conflict parties reach an agreement in a shorter period, contributing to time and court cost savings. The application of mediation promotes the expansion of access to justice, especially for those who cannot afford long and costly court processes. Mediation provides an opportunity to resolve conflicts with minimal costs. Mediation is a voluntary procedure that gives the parties the opportunity to independently decide how they want to resolve their dispute. This ensures the flexibility of the process and the possibility of taking into account the individual needs and circumstances of each party.

Research on the role of mediation in the process of Ukraine's European integration has led to the following conclusions: the implementation of mediation in Ukraine promotes the harmonization of national legislation with European standards and recommendations, which meets the requirements of the Council of Europe and the European Union directives related to alternative dispute resolution; mediation as an institution contributes to the strengthening of the principles of the rule of law, ensuring more effective and fair conflict resolution; mediation reduces the burden on courts, allowing for faster case consideration and providing more prompt access to justice, which is especially important in the context of judicial reform in Ukraine; the popularization of mediation promotes the development of a culture of peaceful conflict resolution in society. Thus, mediation is an important tool in the process of Ukraine's European integration, contributing to the harmonization of the legal system with European standards, improving access to justice, and developing a culture of peaceful conflict resolution.

Mediation and the right to a fair trial constitute a complex legal and ethical problem that requires careful study and analysis. The main aspects of this topic include not only the issues of interaction between mediation and judicial procedures but also their impact on the guaranteed right to a fair trial. Today, despite the existence of legislation on mediation, there is a need for further development of the regulatory framework, particularly in defining categories of disputes for which mediation may be mandatory, and in creating a system for the training and certification of mediators.

During the research, the following problems and solutions were identified:

Mediation does not always have the same level of transparency and guarantees as judicial procedures. This can raise questions about the insufficient protection of parties' rights and compliance with fairness principles. Therefore, it is important to develop mediation standards that ensure process transparency, adherence to ethical norms, and protection of participants' rights. This may include the development of codes of conduct for mediators and means of control over their implementation.

Mediation may be less accessible to certain population groups due to financial or other constraints. Moreover, its effectiveness may vary depending on cultural, social, and legal conditions. Initiatives to increase the accessibility of mediation should be developed, including funding programs, training mediators, and popularizing its advantages among the public.

Therefore, mediation and the right to a fair trial can and should complement each other to ensure effective dispute resolution and preserve fundamental human rights and freedoms. The development of mediation



requires a careful approach to addressing its issues through a comprehensive approach and cooperation among different sectors of society. Additionally, mediation offers numerous advantages compared to traditional judicial proceedings. This service is confidential, saves time and costs for the parties, promotes the preservation of their relationships, and does not impose restrictions on the ability to achieve mutually beneficial outcomes, etc.

The development of pre-trial mediation in Ukraine is a logical consequence of the evolution of procedural legislation and the integration of mediation procedures into the country's legal system.

Regarding further academic research, it is necessary to consider conceptual approaches to mediation in different legal systems, as well as analyze legislative acts regulating mediation in various countries in order to identify effective legal models.

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The role of digital technologies in building an inclusive and transparent society: an analysis of the legal mechanisms of democratic governance

РОЛЬ ЦИФРОВИХ ТЕХНОЛОГІЙ У ПОБУДОВІ ІНКЛЮЗИВНОГО ТА ПРОЗОРОГО СУСПІЛЬСТВА: АНАЛІЗ ПРАВОВИХ МЕХАНІЗМІВ ДЕМОКРАТИЧНОГО ВРЯДУВАННЯ

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Abstract

The preservation of democracy in the digital age is an increasingly pressing issue, requiring the development of new legal mechanisms to ensure inclusivity and transparency in governance. The rapid advancement of information technologies and data dissemination has accentuated the differences between state regimes, highlighting the need for improved democratic control mechanisms. This study analyzes the impact of digital tools on democratic governance and the formation of an inclusive and transparent society. Key concepts such as democratic, electronic, and digital governance are explored, defining them as forms of public administration organization. The study emphasizes the role of digital technologies

Анотація

Збереження демократії в епоху цифрових технологій дедалі актуальнішим питанням, яке потребує розробки нових механізмів забезпечення правових ДЛЯ інклюзивності та прозорості управління. Швидкий розвиток інформаційних технологій розповсюдження загострили даних режимами, відмінності між державними підкреслюючи потребу У вдосконаленні механізмів демократичного контролю. Це дослідження аналізує вплив цифрових інструментів на демократичне врядування та формування інклюзивного та прозорого суспільства. Досліджуються такі ключові поняття, як демократичне, електронне та

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in enhancing accessibility and transparency in governance, and their influence on the inclusion of diverse social groups in decision-making processes. Current trends and innovations in digital governance are examined, along with their potential to improve the quality of democracy and public participation. The methodology employed includes historical, legal hermeneutics, systemic, analytical, modeling, comparative, and statistical methods. The conclusions stress the critical importance of understanding and effectively utilizing digital technologies to ensure openness, transparency, and participation in public processes, which are fundamental for creating a modern, democratic, and inclusive society.

Keywords: digital technologies, democracy, people's sovereignty, people's rule, state regime.

цифрове врядування, які визначаються як форми організації державного управління. У дослідженні підкреслюється роль цифрових технологій у підвищенні доступності та прозорості управління, а також їхній вплив на залучення різноманітних соціальних груп до процесів прийняття рішень. Розглядаються сучасні тенденції та інновації в цифровому управлінні, а також їхній потенціал для покращення якості демократії та участі громадськості. Використовувана методологія включає історичний метод, метод правової герменевтики, системний, аналітичний, моделювання, порівняльний та статистичний методи. У висновках підкреслюється критична важливість розуміння та ефективного використання цифрових технологій забезпечення відкритості, прозорості та участі громадських процесах, фундаментальними для створення сучасного, демократичного та інклюзивного суспільства.

Ключові слова: цифрові технології, демократія, народний суверенітет, народовладдя, державний режим.

Introduction

The future of democracy in the age of digital technologies is a subject of ongoing debate. Despite a decline in trust in traditional representative institutions and political players, public participation in the digital sphere remains robust. Digital tools have created new avenues for civic engagement, including virtual discussions, consultations, and various online platforms. This digital revolution in state management is driven by political leaders' desire to improve service quality while ensuring economic efficiency. However, this transformation also faces significant challenges. Effective change requires attention to the needs of end-users, support through initiatives such as training programs for civil servants and increasing workforce diversity.

The growing use of artificial intelligence (AI) and automated government management systems raises concerns about accountability, transparency, and discrimination risks. Without adequate security measures, technology can negatively impact citizens' rights and freedoms, including personal information protection and preventing discrimination. Addressing these challenges is essential to maximizing the positive impact of digital transformation on human rights, democracy, and the rule of law. Effective accountability requires governments to clearly define AI's role in decision-making processes and ensure accountability for such decisions.

The rapid digitalization of the public sector, accelerated by the COVID-19 pandemic, has contributed to the sustainability of public action, ensuring the continuity of democratic institutions and public services. However, it also exposes democracy to new risks from state actors and public structures. The blurring lines between the physical world, digital technologies, and biological processes due to digital innovation are transforming how we live, work, and communicate. This is particularly evident in public administration, where it is increasingly challenging to distinguish between government activity and e-governance.

The relevance and scientific novelty of this study lie in recognizing digital technologies as essential tools for ensuring democracy and the rule of law. The information society offers new opportunities for citizen participation in management and decision-making processes. However, it also brings challenges related to data security, privacy protection, and ensuring access to information for all societal layers. In the context of ongoing technological changes and the dynamic digital space, studying legal mechanisms to protect citizens' rights, regulate digital processes, and foster balanced digital economy development is crucial.



Purpose of the Study:

The purpose of this scientific study is to analyze the impact of digital technologies on the mechanisms of democratic governance and explore their potential for creating an inclusive and transparent society.

To achieve the general objective of analyzing the impact of digital technologies on democratic governance and exploring their potential for creating an inclusive and transparent society, the study can be broken down into specific objectives and research questions as follows:

Specific Objectives:

- 1. Examine the Legal and Regulatory Frameworks.
- 2. Analyze the current legal and regulatory frameworks governing the use of digital technologies in democratic governance.
- 3. Identify how these frameworks impact citizen participation in decision-making processes.
- 4. Assess the Challenges and Barriers.
- 5. Identify the main challenges and barriers to implementing digital technologies in governance.
- 6. Examine the implications of these challenges for democratic processes and institutions.
- 7. Evaluate the Role of Digital Tools in Enhancing Governance.
- 8. Investigate how digital tools can enhance accessibility, transparency, and inclusivity in governance.
- 9. Analyze the effectiveness of various digital platforms and tools in fostering civic engagement and participation.
- 10. Analyze the Impact of Artificial Intelligence and Automated Systems.
- 11. Explore the role of AI and automated systems in government decision-making processes.
- 12. Assess the implications of AI for accountability, transparency, and democratic governance.
- 13. Propose Solutions for Inclusive and Transparent Digital Governance.
- 14. Develop strategies and recommendations for overcoming barriers to digital governance.
- 15. Propose ways to enhance inclusivity and transparency through digital technologies.

Research Questions:

I. Legal and Regulatory Frameworks

- 1. What are the current legal and regulatory frameworks that govern the use of digital technologies in democratic governance?
- 2. How do these frameworks affect citizen participation in democratic decision-making processes?
- 3. Are there gaps in the existing legal frameworks that need to be addressed to facilitate more effective digital governance?

II. Challenges and Barriers

- 1. What are the main challenges and barriers to the implementation of digital technologies in governance?
- 2. How do these challenges vary across different political and cultural contexts?
- 3. What are the potential risks associated with the widespread adoption of digital technologies in governance, particularly regarding privacy, security, and discrimination?

Role of Digital Tools in Enhancing Governance

- 1. How do digital tools enhance or hinder accessibility, transparency, and inclusivity in governance?
- 2. What types of digital platforms and tools are most effective in promoting civic engagement and participation?
- 3. How do different demographic groups perceive and use digital tools in the context of democratic governance?

Impact of AI and Automated Systems

1. How are AI and automated systems currently being utilized in government decision-making processes?



- 2. What are the implications of AI and automation for accountability and transparency in governance?
- 3. How can governments ensure that the use of AI in decision-making processes aligns with democratic principles and values?

Solutions for Inclusive and Transparent Digital Governance

- 1. What strategies can be developed to overcome the barriers to effective digital governance?
- 2. How can digital technologies be designed and implemented to promote inclusivity and transparency?
- 3. What role do training programs for civil servants and efforts to increase workforce diversity play in achieving these goals?

By breaking down the general objective into these specific objectives and research questions, the study aims to provide a comprehensive analysis of the impact of digital technologies on democratic governance and offer actionable insights for creating a more inclusive and transparent society.

Tasks of the Study:

Examine the Legal Framework: Study the modern legal framework regulating the use of digital tools in governance and their impact on citizen participation in decision-making.

Identify Challenges: Identify obstacles and challenges that may arise during the implementation of digital innovations in governance.

Propose Solutions: Propose concrete ways to overcome these obstacles to achieve a more inclusive and transparent society.

Assess Digital Tools: Evaluate the role of digital technologies in enhancing accessibility, transparency, and inclusivity in governance.

Analyze AI Impact: Investigate the implications of AI and automated systems on accountability and transparency in government decision-making processes.

This study seeks to fill several critical gaps identified in the existing literature on digital technologies and democratic governance:

Quality of Digital Engagement: While there is ample research on the increased quantity of civic engagement through digital tools, there is a lack of focus on the quality and effectiveness of this engagement. This study aims to explore how digital technologies can enhance meaningful democratic participation, rather than just increasing the number of participants.

Trust and Digital Governance: Existing research has highlighted concerns about trust in digital governance, but there is a limited understanding of how trust is built or lost in digital environments, particularly in diverse political and cultural contexts. This study will investigate the factors that influence trust in digital governance and how these can be managed to strengthen democratic processes.

Impact of AI on Accountability: While the potential risks of AI in governance have been identified, there is a need for more in-depth research on how AI affects democratic accountability and transparency. This study will analyze the legal and regulatory frameworks needed to ensure that AI and automated systems do not undermine democratic values.

Digital Divide and Inclusivity: There is a significant gap in understanding how digital tools can be made more inclusive, particularly for marginalized groups who are often excluded from digital governance processes. This research will focus on strategies to enhance inclusivity and ensure that digital transformations in governance benefit all citizens, regardless of their background or access to technology.

Blurring of Digital and Physical Governance: The fusion of digital and physical governance environments presents new challenges for democracy that have not been fully explored in the literature. This study will



examine how this blurring of lines affects the nature of democratic accountability, transparency, and citizen engagement.

By addressing these gaps, this study aims to contribute to a more nuanced understanding of the relationship between digital technologies and democratic governance, providing insights into how digital tools can be harnessed to enhance democracy while mitigating potential risks.

This article is structured to guide the reader through a comprehensive analysis of the impact of digital technologies on democratic governance. The introduction provides an overview of the study's relevance and the importance of digital technologies in modern governance. The literature review follows, highlighting key studies in the field and identifying existing knowledge gaps that this study aims to address. The methodology section outlines the research design, data collection methods, and analytical approaches used to achieve the study's objectives. The results and discussion section presents the results of the research, detailing the impact of digital technologies on democratic processes, including their potential to enhance or hinder governance and offers an in-depth interpretation of the findings, examining their implications for policy and practice. Finally, the conclusion summarizes the key insights from the study, provides recommendations for future research, and suggests practical steps for policymakers to foster more inclusive and transparent digital governance.

Theoretical Framework or Literature Review

Democratic governance, a key institution of law, is tightly interwoven with the global processes of globalization and technological progress. It is essential to consider it as a modern legal mechanism crucial for constitutional modernization. O.V. Bondarenko (2019), in his book "Constitutional Modernization: Ontological Understanding, Axiological Significance, Comparative Value," asserts that constitutional modernization reflects functional characteristics aimed at ensuring constitutional reform. The goal is to create an optimal constitution model that meets the needs of the national legal system, the state, and society, ensuring their proper functioning and adaptation to future changes.

In his work "Electronic Governance in Executive Bodies: Administrative and Legal Foundations," V.V. Marchenko (2016) explores various aspects of digital management. Though his focus is on the executive branch, he provides general insights on the potential consequences and prospects of governance digitization. These include enhancing the country's strategic potential and competitive advantages, modernizing state administration at various levels, improving administrative services through electronic channels, reducing administrative costs, and fostering effective interaction between the state, citizens, and businesses.

Similarly, O.O. Zolotar (2018), in "Human Information Security: Theory and Practice," discusses human rights and freedoms in the information society, information security threats, and the development of legal support in this area.

Moreover, T.Yu. Tkachuk (2019) underscores the importance of protecting human information rights within the European integration process.

M.S. Mikhrovska (2020), exploring electronic and digital governance, notes that digital governance aims to integrate digital technologies to modernize the public sector rather than merely support governmental processes. This approach requires adapting public sector capacity, workflows, business processes, operations, and methods to current trends and relationships among stakeholders already active in the digital environment. Thus, the main difference between digital and electronic governance lies in using technology to achieve results in public administration, necessitating consistent and strategic planning of digital technology policies across all management areas and levels.

The debate about e-democracy has intensified, particularly online. Proponents of the digital revolution argue that digital platforms and forums can enhance government trust, citizen engagement, and the quality of democratic decision-making. The past decade has seen a proliferation of digital tools in democratic governance worldwide. For example, citizens in France and Brazil participated in large-scale online discussions about national issues (Landemore, 2020).

In Iceland and Spain, political parties like Iceland's Pirate Party and Spain's Podemos have used digital tools for policy crowdsourcing, setting legislative priorities, and allocating municipal budgets. Political scientists have studied how these tools improve democratic processes and expand citizen rights and opportunities (Gastil, 2021).

Yatsyna, Y., & Kudinov (2023) made a research devoted to conceptual analysis of the problem of innovative analytical and statistical technologies implementations as a corruption prevention tool.

Pyroha, I., Tokarchuk, L., Perezhniak, B., Nikitenko, L., & Berch, V. (2022) tried to conduct a legal analysis of the concept of "electronic democracy", including problematic issues of implementation of this mechanism, in order to understand whether this mechanism is an urgent need, or is a tribute to fashion and trends in the world practice.

The reviewed literature highlights several important themes and insights that are directly relevant to the study objectives, particularly in understanding the evolving nature of constitutionalism, governance, and human rights in the context of Ukraine's post-war recovery and its integration into the European framework. Constitutional Modernization and Democratic Governance:

O.V. Bondarenko (2019) emphasizes the role of constitutional modernization as a key mechanism in adapting and reforming national legal systems to meet the needs of a rapidly changing society. Bondarenko argues that an optimal constitution should ensure the state's proper functioning while adapting to future changes, which aligns closely with the study's objective of analyzing the necessity and possible directions for constitutional changes in Ukraine post-war. This underscores the need for constitutional frameworks that are both resilient and adaptable, capable of supporting democratic governance amid new challenges. Digital and Electronic Governance:

V.V. Marchenko (2016) and M.S. Mikhrovska (2020) provide insights into the transformative potential of digital governance in modernizing public administration. Marchenko discusses the benefits of digitization, such as reduced costs and improved administrative services, which are crucial for the post-war reconstruction phase in Ukraine. Mikhrovska further differentiates digital governance from electronic governance by emphasizing the need for comprehensive integration of digital technologies across public sector operations. This supports the study's focus on innovative directions for the development of Ukrainian constitutionalism, particularly how digital tools can enhance governance efficiency and transparency in the post-war context.

Human Rights and Information Security:

O.O. Zolotar (2018) and T.Yu. Tkachuk (2019) highlight the importance of safeguarding human rights in the information age, particularly regarding information security and the protection of human information rights. Their work underscores the necessity of legal frameworks that protect citizens in an increasingly digital society, a consideration that is critical for Ukraine as it navigates post-war recovery and European integration. These insights directly connect to the study's objective of examining the impact of the war on Ukraine's constitutional guidelines and identifying new challenges, such as digital privacy and data protection.

E-Democracy and Public Participation:

Landemore (2020) and Gastil (2021) explore the impact of digital tools on democratic processes, demonstrating that platforms like online forums and policy crowdsourcing can enhance citizen engagement and improve democratic decision-making. These findings are particularly relevant to the study's exploration of constitutional changes needed for democratic institution restoration and strengthening in Ukraine. The use of digital tools in countries like France, Brazil, Iceland, and Spain serves as a valuable reference for how Ukraine might leverage similar technologies to bolster democratic participation and trust in governance during its recovery period.

Corruption Prevention and Innovative Technologies:

Yatsyna and Kudinov (2023) focus on the use of innovative analytical and statistical technologies as tools for corruption prevention, which aligns with the study's goal of enhancing the effectiveness and



transparency of Ukrainian state institutions. This is particularly pertinent in the post-war context, where rebuilding trust in government and ensuring accountability are essential for sustainable development.

Conceptual Analysis of Electronic Democracy:

Pyroha et al. (2022) delve into the concept of electronic democracy, analyzing its implementation challenges and relevance in modern governance. Their work helps frame the study's investigation into the substantive guidelines of Ukrainian constitutionalism, particularly in understanding the practical applications and potential limitations of electronic democratic mechanisms in a post-war, transitioning society.

Connection to Study Objectives

The literature reviewed provides a robust foundation for understanding the evolving landscape of Ukrainian constitutionalism in the post-war period. By synthesizing these findings, the study can effectively address its objectives:

Analyzing Fundamental Values: The insights from Bondarenko, Zolotar, and Tkachuk on constitutional modernization and human rights provide a basis for identifying and analyzing the core values enshrined in Ukraine's Constitution that remain relevant in the post-war period.

Assessing the Impact of War: The discussions on digital governance and information security highlight new challenges posed by the war, such as the need for robust digital infrastructure and legal protections in a rapidly evolving information environment.

Proposing Constitutional Changes: The examples of digital and electronic governance, e-democracy, and corruption prevention technologies offer concrete ideas for potential constitutional reforms aimed at enhancing democratic institutions, governance efficiency, and citizen engagement in Ukraine's post-war recovery.

By integrating these key findings, the study aims to provide actionable recommendations for legal and institutional development, aligning with Ukraine's broader goals of democratic renewal, transparency, and effective governance in the aftermath of conflict.

Methodology

This study was conducted using several methods of scientific knowledge. Using the historical method, the birth and development of the concept of e-government in Ukraine and the world was clarified and analyzed. The method of legal hermeneutics, in turn, helped to reveal the development of the legal framework regulating "electronic governance" and the principles that are the basis for building such governance, etc.

The systemic method in this study also allows us to consider digital technologies and legal mechanisms of democratic governance as parts of a complex, interconnected system. Thanks to this method, all levels of interaction between various elements of the control system and digital tools are covered. The systemic method helps to reveal the interrelationships between the components, which contributes to a deeper understanding of their impact on the overall effectiveness of the legal system. Using this method allows you to develop holistic approaches to the implementation of digital innovations that take into account all aspects of management and interaction, providing a more comprehensive analysis and forecasting of consequences.

The analytical method within the framework of this study helped to better understand and evaluate the impact of digital technologies on democratic governance, inclusiveness and transparency of society. The synthesis made it possible to combine all the important characteristics and elements of democratic governance to highlight the prospects for development and improvement of the relevant structure.

The modeling method within the framework of this study is used to create digital governance models that simulate real processes in the judicial system and public administration. Modeling allows you to predict the consequences of the introduction of new digital tools and technologies, to determine the optimal strategies

for their implementation, taking into account potential risks and opportunities. This method helps to better understand complex processes and develop effective strategies for their implementation.

It is also worth highlighting the comparative method, which allows analyzing and comparing different systems and approaches used in different countries or regions. In this study, this method is used to compare the effectiveness of various digital technologies and legal mechanisms in the field of democratic governance. Thanks to the comparison of successful examples of the implementation of digital technologies in different areas and countries, it is possible to determine the best practices and models that can be adapted for use in Ukraine. This contributes to the study of successes and failures of other countries, with the aim of improving national approaches.

Also quite important was the statistical method used to collect and analyze statistical data on the implementation and effectiveness of digital technologies in the judicial system and public administration. The statistical method allows measuring the impact of digital tools on indicators of accessibility, transparency and inclusiveness of public services. Analyzing quantitative data helps to draw informed conclusions and recommendations, which contributes to more effective planning and implementation of digital innovations in the legal system.

Results and Discussion

The concept of "democratic governance" has been explored by various scholars, each offering unique interpretations that emphasize different facets of governance processes. For example, P.I. Nadolishniy (2007) describes democratic governance as the exercise of power by authorities at different levels, both state and local, in collaboration with citizens and their organizations during the formation and implementation of public policy. This definition suggests a direct interplay between governance and public participation, yet it lacks critical engagement with the complexities and challenges of implementing such an idealized form of governance. Nadolishniy's assertion that "governance" and "democratic governance" are interchangeable terms might overlook the nuances that differentiate democratic processes from more autocratic forms of governance.

Similarly, M.V. Martynenko (2010) offers a somewhat limited view of democratic governance, framing it primarily as a process involving representative government bodies across social structures. This definition does not sufficiently account for the multifaceted nature of democracy, particularly the role of direct citizen engagement beyond formal representation. It implicitly assumes that the establishment of representative institutions alone is adequate for ensuring democratic governance, which may oversimplify the broader concept and overlook the need for deeper participatory mechanisms and accountability measures.

Yu.E. Humen (2018) takes the concept further by incorporating elements from domestic research and adapting the term "governance" to fit the Ukrainian context, reflecting a hybrid model that integrates state authority, civil society, and the private sector. This approach underscores the importance of cross-sector collaboration and effective mechanisms for decision-making. However, it might underestimate the potential power imbalances and conflicts of interest among these sectors, particularly in a post-authoritarian context like Ukraine's. The adaptation of Western democratic governance models to different political and cultural contexts, such as Ukraine's, is fraught with challenges that are not fully addressed in Humen's framework. The discussion around e-governance, as outlined by authors like O.Z. Romanchuk et al. (2021) and international researchers, adds another layer to our understanding of governance by highlighting the role of information and communication technologies (ICTs) in public administration. While the use of ICTs is often lauded for enhancing transparency, efficiency, and citizen engagement, this discourse tends to gloss over significant issues such as digital divide, cybersecurity risks, and the potential for surveillance and privacy breaches. The emphasis on technological solutions can also obscure deeper structural problems within governance systems, such as corruption, lack of accountability, and insufficient civic education, which are not necessarily resolved through technological means alone.

Furthermore, the development of e-government in Ukraine, as discussed by researchers like M.S. Mikhrovska (2020), highlights both the progress and setbacks in implementing digital governance frameworks. While initiatives like the "Digital Agenda of Ukraine 2020" demonstrate a commitment to integrating digital technologies into public administration, the slow pace of progress and lack of comprehensive implementation raise concerns about the readiness of state institutions and society to fully embrace these changes. The focus on digital transformation as a panacea for governance issues risks



oversimplifying the complex socio-political and economic landscape in which these technologies are being deployed.

Finally, the broader implications of these findings point to a need for a more critical and reflective approach to studying governance. The optimistic narratives around democratic governance and e-governance often fail to critically assess the limitations and potential unintended consequences of these models. For instance, while democratic governance aims to increase citizen participation and transparency, it also requires robust institutions and a politically engaged citizenry, conditions that may not be present in all contexts. Similarly, the push for e-governance might overlook significant barriers such as digital literacy, access to technology, and the infrastructural capacities of different countries.

In conclusion, while the literature on democratic governance and e-governance offers valuable insights into contemporary governance practices, there is a need for more critical and context-sensitive analyses that account for the diverse political, social, and technological landscapes in which these concepts are applied. By acknowledging the limitations and challenges of implementing these governance models, researchers and policymakers can better tailor their approaches to fit the unique needs and conditions of different societies, ultimately contributing to more effective and equitable governance outcomes.

Thus, over the past decade, democratically elected governments have become more active in regulating the activities of commercial entities on and off the Internet. Broadly speaking, governments take two approaches: regulation (hard law) and creating voluntary standards (soft law). With regard to the first approach, many jurisdictions adopt regulations in accordance with the model of democratic governance. The most common form involves placing some form of responsibility on internet companies for the content that appears on their platforms or websites. Several national governments have enacted relevant legislation, including Germany, the United Kingdom and India. The most far-reaching and comprehensive of these is the European Union's Digital Services Act, which imposes obligations on commercial actors to increase transparency, stop illegal content and regulate advertising to create responsible platforms free from manipulative design (European Commission, 2022b).

Another hard-law approach is based on the balance of power model of democratic government. An example of this is antitrust or competition regulation, which aims to use government power to reduce the concentration of private power. Again, the European Union has gone the furthest, using the size and power of the European market to check anti-competitive and monopolistic practices by technology companies. The Digital Markets Act, passed in 2022 together with the Digital Services Act, is clearly intended to reduce the gatekeepers of large online platform companies (European Commission, 2022a).

Using soft law approaches, governments create guidelines, codes of conduct, and other standards of behavior that technology companies voluntarily agree to adhere to. For example, the UN Guiding Principles on Business and Human Rights (UNGPs) (United Nations, 2011) and UN Special Rapporteur David Kaye's recommendations on content regulation offer companies a framework to inform their decisions (United Nations, 2018). Similarly, in 2018 the EU introduced a Code of Practice on Disinformation (European Commission, 2022c). In 2022, the White House Office of Science and Technology Policy released the AI Bill of Rights, which sets out guidelines for the development and use of artificial intelligence systems (The White House, 2022). These guidelines at least show companies how to act more democratically and with respect for human rights.

Conclusions

As we have observed, the characteristics of an inclusive and transparent society align closely with the principles of democratic governance. This relationship underscores that both are fundamentally aimed at creating a fair, open, and democratic environment for all members of society. The synergy between these two concepts is evident as they both emphasize the participation of all citizens, equal access to resources, and transparency in governmental processes.

1. Democratic Governance and Inclusive Society: Interconnected Principles

Firstly, democratic governance is defined by the active participation of all citizens in political processes and decision-making. This participation is facilitated through electoral processes, public debates, and mechanisms allowing citizens to address authorities on issues of concern. Inclusive societal institutions

reinforce these democratic principles by ensuring that opportunities for participation are accessible to all individuals, including those from marginalized groups such as people with disabilities, migrants, minorities, and other underrepresented populations.

Secondly, an inclusive society establishes conditions for equal opportunities and access to resources for all citizens. This means providing equitable access to education, healthcare, housing, and other basic services, regardless of social status, economic situation, or other characteristics. Democratic institutions are instrumental in ensuring that decisions made by authorities reflect the interests of society as a whole, rather than privileging certain groups or individuals.

Thirdly, a transparent society provides citizens with access to information about the workings of state bodies and decision-making processes. This transparency allows citizens to stay informed about government activities, monitor its actions, and detect instances of corruption. Democratic governance supports this transparency by ensuring that government mechanisms are open to public scrutiny and accountability.

Thus, the interaction between democratic governance and the institutions of an inclusive and transparent society is pivotal in creating conditions for equal participation in decision-making, safeguarding rights, and protecting the interests of all citizens. This interaction is essential for building a just, open, and democratic society that operates for the benefit of all its members.

2. Digital Technologies: Challenges and Opportunities in Democratic Governance

Digital technologies significantly enhance the interaction between the institutions of an inclusive and transparent society and democratic governance, making it more accessible, efficient, and effective. However, the integration of these technologies presents both opportunities and challenges:

Opportunities: Digital tools provide unprecedented access to information and political processes. The Internet and social media platforms enable citizens to receive news, engage in discussions, and express opinions, fostering greater openness and participation in political actions, which are vital for robust democratic institutions. Furthermore, digital tools promote equal access to services and opportunities; for example, electronic voting systems can make electoral processes more accessible to individuals with disabilities. Additionally, digital management systems increase government transparency by facilitating the monitoring of governmental activities, auditing expenditures, and controlling decisions, thus reducing corruption and enhancing public trust.

Challenges: Despite these advantages, digital technologies also pose significant challenges. The digital divide remains a critical issue, as not all citizens have equal access to technology, which can exacerbate existing inequalities and hinder inclusive participation. There are also concerns about privacy, data security, and the potential misuse of digital platforms for spreading misinformation or manipulating public opinion. These challenges necessitate a careful examination of how digital tools are implemented and governed to ensure they contribute positively to democratic processes rather than undermining them.

3. The Role of Education and Training in Enhancing Citizen Digital Skills

Education and training are crucial in developing the digital skills necessary for effective citizen participation in democratic governance. As digital technologies become increasingly embedded in political and social processes, ensuring that all citizens have the skills to navigate these tools is vital for fostering an inclusive democratic environment. Digital literacy programs should focus on:

Technical Skills: Teaching citizens how to use digital tools and platforms effectively for accessing information, engaging in civic discussions, and participating in digital voting processes.

Critical Thinking: Encouraging critical engagement with digital content, equipping citizens to identify misinformation, and understanding the ethical implications of digital interactions.

Civic Engagement: Promoting awareness of digital rights and responsibilities, fostering an understanding of how digital tools can be used for advocacy, community building, and holding government accountable.



4. Future Research Directions

Future research should focus on several key areas to deepen our understanding of the relationship between digital technologies and democratic governance:

Impact of Digital Technologies on Democratic Participation: Investigate how different digital platforms influence citizen engagement, political mobilization, and the quality of democratic participation across diverse socio-economic and cultural contexts.

Digital Literacy and Inclusivity: Explore effective strategies for enhancing digital literacy among various populations, particularly those who are marginalized or have limited access to technology, to ensure inclusive participation in democratic processes.

Ethical and Regulatory Frameworks: Examine the ethical implications of digital governance tools and develop robust regulatory frameworks that protect citizens' rights while promoting transparency and accountability in digital governance.

Innovations in E-Governance: Analyze the potential of emerging technologies, such as artificial intelligence and blockchain, in enhancing transparency, efficiency, and citizen trust in democratic institutions.

By addressing these areas, future research can contribute to a more comprehensive understanding of how digital technologies can be harnessed to support democratic governance while mitigating potential risks and challenges. This research will be instrumental in guiding policymakers, educators, and technologists in creating more inclusive, transparent, and effective democratic systems in the digital age.

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Towards a new Ukraine?: substantive and value-oriented guidelines of Ukrainian constitutionalism in the post-war period

До нової України?: змістовно-ціннісні орієнтири українського конституціоналізму в повоєнний період

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Abstract

The aim of the study is to analyze the substantive and value-oriented guidelines of modern Ukrainian constitutionalism in the post-war period. The relevance of the research is driven by the need to restore and reform Ukraine's legal system in the post-war period. Rebuilding the country requires not only physical reconstruction but also a rethinking and strengthening of the constitutional foundations upon which the state is built. The research methodology includes doctrinal research, comparative analysis, and empirical research methods. The study analyzed the shift in the values of Ukrainian constitutionalism in the post-war period. Key directions for the restoration and development of

Анотація

Метою дослідження є аналіз змістовноціннісних орієнтирів сучасного українського конституціоналізму у повоєнний період. Актуальність дослідження зумовлена необхідністю відновлення та реформування правової системи України умовах повоєнного періоду. Відбудова країни потребує не тільки фізичної реконструкції, але переосмислення та зміцнення конституційних засад, на яких будується Методологію держава. дослідження складають такі методи: метод доктринального дослідження, порівняльний метод, метод емпіричного дослідження: метол доктринального дослідження, порівняльний

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Ukraine's legal system were identified, including ensuring sovereignty, protecting citizens' rights and freedoms, developing democratic institutions, economic stability, national identity, international cooperation and integration, humanitarian support for war victims, and environmental sustainability. Challenges and opportunities facing Ukrainian society in the context of post-war recovery were analyzed, and measures to strengthen the legal order and democratic values were proposed.

Keywords: constitutionalism, guarantees, legislative adaptation, substantive and value-oriented guidelines, constitutional and legal responsibility.

метод, метод емпіричного дослідження. У результаті дослідження проаналізовано зміну цінностей українського конституціоналізму у повоєнний період. Визначено ключові напрямки відновлення і розвитку правової системи України, зокрема забезпечення суверенітету, захист прав і свобод громадян, розвиток демократичних інститутів, економічна стабільність, національна ідентичність, міжнародне співробітництво та гуманітарна інтеграція, підтримка від війни та постраждалих екологічна стійкість. Проаналізовано виклики можливості, що постають перед українським суспільством у контексті відновлення після війни, а також запропоновано заходи для зміцнення правового порядку і демократичних цінностей.

Ключові слова: конституціоналізм, гарантії, адаптація законодавства, змістовно-ціннісні орієнтири, конституційно-правова відповідальність.

Introduction

At the core of the doctrine and practice of constitutionalism is the focus on the individual, who is the main dimension of this concept's scientific and practical paradigm. The individual serves as the primary value-oriented guideline for the further development of constitutionalism, with their rights, freedoms, and legitimate interests being the ultimate goal of this system's functioning. The essence of modern Ukrainian constitutionalism, based on the principles of democracy and the rule of law, is defined by this goal.

In the current conditions of war, the issue of changes in the practical paradigm of Ukrainian constitutionalism becomes pertinent. This situation requires scientific research to ensure the effective functioning of the constitutional system and to identify the main trends in its development during the postwar reconstruction in Ukraine. Furthermore, it is important to conduct scientific research on innovative directions for the development of Ukrainian constitutionalism in the context of European integration efforts and the global challenges of the modern world.

Given the above, it is important to investigate the substantive and value-oriented guidelines of modern Ukrainian constitutionalism in the post-war period. The research tasks are:

- To identify and analyze the fundamental values enshrined in the Constitution of Ukraine that are relevant for the post-war period.
- To study the impact of the war on the substantive and value-oriented guidelines of Ukrainian constitutionalism and identify new challenges and tasks faced by Ukraine.
- To examine the necessity and possible directions of constitutional changes for the restoration and strengthening of democratic institutions in the post-war period.

The object of the study is modern Ukrainian constitutionalism, encompassing constitutional norms, principles, institutions, and processes that define the legal and political order of Ukraine in the context of post-war recovery. The subject of the study is the substantive and value-oriented guidelines of Ukraine's constitutional order in the post-war period, their impact on the legal status of individuals, the organization and functioning of state power, and the interaction between state bodies and civil society institutions.

The structure of the article, including key elements in each section is the following:



1. Introduction

Purpose and Overview:

Core Focus: The introduction establishes the centrality of the individual within the doctrine and practice of constitutionalism, emphasizing the protection of individual rights, freedoms, and legitimate interests as the primary objective of constitutional systems.

Contextual Background: It briefly introduces modern Ukrainian constitutionalism, highlighting its foundation on democratic principles and the rule of law.

Relevance: The introduction stresses the urgency of re-evaluating Ukrainian constitutionalism due to the war. This re-evaluation is crucial for ensuring the effective functioning of the constitutional system during the post-war reconstruction period and aligning with European integration efforts amidst global challenges. Research Aim: The introduction concludes with a clear statement on the necessity to investigate the substantive and value-oriented guidelines of Ukrainian constitutionalism in the post-war context. Research Objectives:

To identify and analyze the fundamental values enshrined in the Ukrainian Constitution that are relevant for the post-war period.

To study the impact of the war on Ukrainian constitutionalism and identify new challenges and tasks faced by Ukraine.

To examine the necessity and possible directions for constitutional changes to restore and strengthen democratic institutions in the post-war period.

Scope of the Study:

Object of the Study: Modern Ukrainian constitutionalism, including norms, principles, institutions, and processes defining Ukraine's legal and political order in the post-war recovery context.

Subject of the Study: The substantive and value-oriented guidelines of Ukraine's constitutional order in the post-war period, their impact on the legal status of individuals, the organization and functioning of state power, and the interaction between state bodies and civil society institutions.

2. Literature Review

Purpose:

Establishing the Theoretical Framework: To provide a comprehensive review of existing literature on constitutionalism, with a particular focus on its application and evolution in Ukraine.

Identifying Gaps: To highlight the lack of research specifically addressing the post-war reconstruction of constitutional systems in Ukraine and the impact of European integration efforts.

Content:

Historical Context: Review the development of constitutionalism in Ukraine, tracing its roots and evolution, especially after independence and during different political regimes.

Theoretical Perspectives: Discuss different theoretical frameworks and paradigms of constitutionalism that have been applied to Ukraine and similar contexts, such as transitional democracies and post-conflict societies.

Impact of War on Constitutional Systems: Analyze literature on the effects of war and conflict on constitutionalism, focusing on case studies or theoretical works that can provide insights into the Ukrainian context.

European Integration and Global Challenges: Review scholarly discussions on how European integration efforts and global challenges (e.g., security, human rights, democracy) intersect with national constitutional frameworks, particularly in transitional states.

Methodology

Purpose:

To outline the research design, methods, and approaches used to investigate the substantive and value-oriented guidelines of Ukrainian constitutionalism in the post-war period.

Content:

Research Design: Explain the overall research approach (e.g., qualitative, quantitative, mixed-methods) adopted for the study.

Data Collection: Detail the sources of data, including constitutional documents, legal texts, government reports, and scholarly articles. Mention if any empirical data collection was conducted, such as interviews, surveys, or case studies.

Analytical Framework: Describe the methods used for data analysis, such as thematic analysis, content analysis, or comparative analysis. Explain how these methods are appropriate for addressing the research objectives.

Limitations: Acknowledge any potential limitations of the study, such as data availability, scope constraints, or methodological biases, and how these were mitigated.

4. Results and Discussion

Purpose:

To present the findings from the research and provide a critical analysis of how these findings address the research objectives.

Content:

Fundamental Values Post-War: Discuss the fundamental values identified in the Ukrainian Constitution that remain pertinent or have gained new relevance in the post-war context.

Impact of War on Constitutionalism: Analyze the effects of the war on Ukraine's constitutional order, highlighting shifts in values, new challenges, and emerging tasks. Discuss how these changes impact the legal status of individuals and the functioning of state power.

Constitutional Changes and Democratic Institutions: Examine the necessity for constitutional changes to restore and strengthen democratic institutions. Discuss potential directions for these changes, drawing from empirical data or comparative analysis with other post-conflict societies.

European Integration and Global Challenges: Integrate the findings with broader discussions on European integration efforts and global challenges, assessing how Ukrainian constitutionalism can adapt to these dynamics while maintaining its core principles.

5. Conclusions

Purpose:

To summarize the main findings of the study, highlight the significance of these findings for the future of Ukrainian constitutionalism, and provide recommendations for further research or policy development. Content:



Summary of Key Findings: Recap the primary insights gained from the study, particularly regarding the substantive and value-oriented guidelines of Ukrainian constitutionalism in the post-war period.

Implications for Ukrainian Constitutionalism: Discuss the broader implications of the study's findings for the development of constitutionalism in Ukraine, especially in terms of democratic resilience, rule of law, and individual rights.

Future Directions: Offer recommendations for future research, suggesting areas that require further investigation or monitoring, such as long-term impacts of post-war reconstruction on constitutional practices or the integration of European norms into the Ukrainian constitutional framework.

Policy Recommendations: Provide practical recommendations for policymakers on how to strengthen democratic institutions and uphold constitutional values in the post-war and European integration contexts. By structuring the article in this manner, the reader is guided through a logical progression from understanding the background and context of the study to exploring the methodology, analyzing the findings, and reflecting on the implications and future directions. This structure ensures clarity and coherence, making it easier for the reader to follow the arguments and understand the significance of the research.

Theoretical Framework or Literature Review

Venislavsky's (2014) research examined constitutional values as the foundation for consolidating the Ukrainian people. Venislavsky considers the fundamental values of the constitutional order to be those political, legal, and moral ideals that the people, as the sole source of power, strive to achieve in the process of state-building and constitutional construction in Ukraine, which are reflected in the Preamble of the Constitution of Ukraine and the norm-principles that form the basis of the constitutional order. We agree with the researcher's position and believe that constitutional norms should enshrine the ideals agreed upon by society.

Kolodiy (2023) investigated the modernization of the Constitution of Ukraine in the context of post-war recovery. The author's conclusion deserves attention: is there really a need to modernize the Constitution of Ukraine? Is it a nationwide idea that is objectively necessary and supported by the majority of the country's citizens? Is Ukrainian society ready to actively work on a new draft Constitution, participate in its discussion, and implement the changes it will entail? Answers to these questions should form the basis for deciding on the method of modernizing the Constitution of Ukraine.

Krusyan's (2023) research analyzed Ukrainian constitutionalism in wartime conditions. It was noted that recent scientific research shows the development of such aspects of constitutionalism as the study of the problems of the globalization of constitutional law, which includes the analysis of the current aspects of this phenomenon; the doctrinal conceptualization of various models of constitutionalism, such as American, British, and European; the determination of the presence of transnational (global) constitutionalism; the development of various types of constitutionalism that correspond to the relevant areas of modern society development, including informational, economic, and ecological constitutionalism. We agree with the author that these areas of constitutionalism research are important for the development of Ukrainian constitutional and legal science and modern constitutionalism. It is important to note that some of these areas are the subject of academic discussions and may cause controversies, which contributes to further scientific explorations and doctrinal discussions.

Sofinska & Friedberg (2023) conducted an analysis of constitutional changes. Shcherbakova (2013) examined the values of united Europe. It was noted that Europeans are united by a historically formed worldview that includes the traditions of developing democracy as the best form of government. They also face the consequences of economic integration and political challenges, particularly the current risks of eastward expansion. The most important issues for Europe now are three main problems: the division of the EU into different levels of development, the functional imperatives of increasing integration, and the cumulative consequences of political decisions made. The EU's economic integration, which began under the banner of economic unification, also affects socio-cultural and political aspects. The European Union, being a successful project due to the institutionalization of political, economic, and social fields, could not have achieved such a level of success without broad tolerance for different cultures and peoples. The formation of European identity and consciousness occurs mainly in a supranational socio-political space

through elite influence and administrative decisions that facilitate the movement of goods and capital in a common economic and monetary space. The EU has problems not only in the political sphere but also in that the economy remains the dominant aspect of European integration. The Union also faces difficulties in dividing into avant-garde states and those that are moving more slowly. Discussions about a "two-speed Europe" have been ongoing for a long time, as economic unity has led to political differences. Europe's experience in abandoning the colonial system and world hegemony has given Europeans confidence in the ability to solve problems and organize their lives. This experience, along with the history of fighting authoritarian regimes and building civil society, unites European peoples in confidence in the effectiveness of democratic processes. The success of Europe's political unification is extremely important and can serve as an example for other regions of the world. In Asia, Latin America, Africa, and the Arab world, approaches and methods of political unification are just beginning to take shape, while Europe demonstrates the success of such an approach. Thus, the formation of European consciousness and identity is a process that cannot occur solely through administrative decisions but requires deep integration at all levels of social life.

Herman's (1972) article demonstrates how the concepts of constitutionalism changed and adapted during the Second World War and the Cold War. This process included adaptation to new geopolitical conditions, particularly in the context of the formation of the UN and the spread of the influence of the USA and the USSR. The author examines how global conflicts caused changes in approaches to constitutional norms and values, for example, the necessity of defining rights and freedoms under conditions of international peace and security. The author emphasizes that the internationalization of constitutionalism became an important factor in strengthening human rights and democracy in various countries of the world after the Second World War.

Downing (1988) researched how military crises and wars influenced the development of constitutionalism in Europe, particularly through the necessity of regulating power during and after military actions. The author analyzes how cultural and ideological changes caused by wars influenced the understanding of constitutional principles and norms in early modern times. This includes changes in the perception of human rights, the responsibilities of power, and social contracts. Thus, the article provides an important link between military conflicts and the development of constitutionalism in early modern Europe, highlighting their impact on political institutions and cultural ideas of that time.

Kotova and Tzouvala (2022) believe that in the context of increasing geopolitical competition, the future international legal order must be anti-imperialist; otherwise, it might not exist at all.

Müllerson's (2017) work reflects the importance of ideological disputes in the modern world and their impact on international relations, offering a deep analysis of the geopolitical and cultural aspects of such conflicts.

Zarbiyev (2022) focused on the imperfection of the values of international law. Zarbiyev highlights the need for improving international law, especially considering the risks of using false or manipulative arguments to justify the actions of states and other actors in international relations. The article proposes a conceptual approach to defining and understanding which justifications can be considered "false" or "demonstrably unacceptable" in international law. Zarbiyev's conclusions question the ethics and legitimacy of some approaches to international law, drawing attention to the necessity of open dialogue and critical review of the practice of using legal arguments. Thus, Farid Zarbiyev's article provides important considerations regarding the ethical and legal aspects of using justifications in international law, calling for greater responsibility and adherence to the principles of justice and the rule of law in international relations.

The article by dos Reis, & Grzybowski, (2021) examines contemporary trends in the interaction of international law and politics, indicating ambiguity and frequent cases of overlap between these spheres. The authors put forward ideas on the need for new approaches to regulating the relationship between international law and politics in the context of the modern globalized world.

Batanov O., Batanova N., Verlos, Omelchenko, and Lukashenko (2022) noted that constitutional and legal responsibility has legal characteristics that reveal its essence and content, as well as define its purpose in society and the state. It occupies a special place in the system of protection of the Constitution and the constitutional order, acting in synergistic unity with all mechanisms for protecting fundamental constitutional values. Proper understanding of the essential and functional-teleological characteristics of



constitutional and legal responsibility as a tool for protecting constitutional values determines its functionality and effectiveness. This is the relationship between the results of its influence on constitutional and legal relations and the goal set before it. Effective application of sanctions of constitutional and legal responsibility shapes political practice.

Lauterpacht (2011) examined the functions of law in the international community. Chaban and Vernygora (2010) in their work "Ukraine's Constitutional 'SAGA': Ukrainian Media Reflection of the Constitutional Process" noted that critical study of the images created by authoritative national media sources is an important perspective for inclusion in legal historiography, especially when assessing discursive interpretations (or misinterpretations) of historical arguments.

Modern Ukrainian constitutionalism in the post-war period relies on a number of substantive and value-based orientations that determine its directions and development. The main trends in the development of Ukrainian constitutionalism in the context of integration into the European Union and ensuring a balance of international interests include the following.

Legislative framework and constitutional enshrinement of human rights and freedoms - researchers pay attention to analyzing the legislative enshrinement of constitutionalism values in the post-war period.

Institutional reform and legal control - attention is given to the changes in social relations during the war and the need to consolidate these changes at the constitutional level of Ukraine.

European integration and international obligations.

Civil society and public participation - the role of civil society during the war and the need to consolidate changes at the legislative level are noted.

Methodology

The study of the substantive and value-oriented guidelines of modern Ukrainian constitutionalism in the post-war period employed several methods, including doctrinal research, comparative analysis, and empirical research.

The study of the substantive and value-oriented guidelines of modern Ukrainian constitutionalism in the post-war period employed several methods, including doctrinal research, comparative analysis, and empirical research.

Data Collection

The study employed a multi-faceted empirical approach to gather comprehensive data on Ukraine's legal system, socio-political institutions, and economic mechanisms in the context of post-war recovery. The primary data collection techniques included:

Examination of Legal Acts: An in-depth review of existing legal documents was conducted, including the Ukrainian Constitution, laws, subordinate acts, and international treaties. This examination focused on the regulations governing state institutions, citizens' rights and freedoms, and economic and social relations.

Legislative Comparison: Ukrainian laws were compared with international standards, especially those set by the European Union and other relevant international organizations. This comparison aimed to assess the alignment of Ukrainian legislation with global norms and identify areas needing reform or adjustment.

Direct Observation: The study involved direct observation of processes within the legal system and state institutions, as well as the socio-political phenomena occurring during the post-war period. This observational method provided real-time insights into the functioning and dynamics of these entities.

Data Analysis

The data analysis was conducted using several complementary methods to provide a nuanced understanding of Ukrainian constitutionalism in the post-war context:



Empirical Analysis:

Descriptive Analysis: The collected data was analyzed to provide a detailed description of the current state of Ukraine's constitutional system, legal frameworks, and socio-political processes. This analysis helped in identifying key issues, challenges, and areas of concern within the Ukrainian context.

Effectiveness Evaluation: The effectiveness of current reforms and policies was assessed based on empirical data and expert evaluations. This evaluation provided a basis for formulating recommendations aimed at improving the functionality and transparency of state institutions and enhancing public engagement in governance processes.

Doctrinal Research:

Legal Norms and Theories Analysis: A thorough analysis of the legal norms, theories, and principles underlying Ukraine's constitutional system was conducted. This included studying the Constitution, legislative amendments, and international legal obligations to understand their impact on the country's legal landscape.

Comparative Legal Analysis: Ukrainian constitutional law was compared with legal systems in other countries, particularly those with similar historical backgrounds or undergoing comparable socio-economic transformations. This analysis identified effective constitutional solutions and legal mechanisms that could be adapted to the Ukrainian context.

Theoretical Framework Development: The doctrinal research also involved developing theoretical models to explain the essence and purpose of constitutional norms in Ukraine, their role within the broader legal system, and their impact on societal structures.

Comparative Method:

Cross-Country Comparison: A comparative analysis was conducted by examining constitutional reforms and legal mechanisms from other countries that have experienced similar post-conflict recovery phases. This analysis aimed to discover effective legal practices and approaches that could be tailored to the Ukrainian context to foster stable and sustainable development of constitutional law.

Identification of Gaps and Best Practices: Through comparative analysis, the study highlighted weaknesses in the national legal system and identified best practices that could be adapted from other jurisdictions. This method facilitated the development of actionable recommendations for enhancing legal practices and bolstering the institutional capacity of Ukrainian state bodies.

By integrating these methodologies, the study offered a comprehensive examination of the substantive and value-oriented guidelines shaping modern Ukrainian constitutionalism. The findings provided a detailed understanding of the challenges and opportunities for legal and institutional development in Ukraine during the post-war recovery period, as well as recommendations for future reforms and policy directions.

Results and Discussion

Constitutionalism is a complex and multifaceted concept that integrates various elements of legal, political, and moral nature. The substantive-value guidelines of constitutionalism include the following main aspects: the rule of law, the separation of powers between the legislative, executive, and judicial branches to prevent the usurpation of power, the protection of fundamental human and citizen rights and freedoms, democracy, the recognition of law as the primary regulator of social relations, ensuring equal opportunities for all citizens, respect for the dignity and value of every person, and constitutional control. These guidelines not only determine the structure and functioning of state power but also form the value foundation of social life, contributing to the development of a democratic society where the rights and freedoms of every citizen are protected and respected.

Krusyan (2024) notes that constitutionalism is a public-legal system of constitutional organization of modern society based on law, democracy, and the affirmation of constitutional-legal human freedom, the content of which includes the constitution and constitutional legislation, constitutional legal relations,



constitutional legal consciousness, and constitutional legal order. The functioning of this system is aimed at limiting (self-limiting) public power in favor of civil society, human rights, and freedoms.

The peculiarity of the core values of the constitutional order is that they are formed in the consciousness of society throughout the entire period of national statehood development. They are partially reflected or directly enshrined in various political and legal acts adopted at different stages of state development, and they enter the official text of the current Constitution of Ukraine in their mostly formulated and finalized form. Their formation is significantly influenced by the national-historical traditions and customs of the Ukrainian people. Values are a kind of cultural "code" that ensures the process of cultural identification of the individual, society, and nation, as well as the development of the national consciousness of the entire people.

The protection of the rights and interests of individuals and citizens in Ukraine is based on constitutional norms, current legislation, and international agreements ratified by the Verkhovna Rada. However, the dynamics of international law development are higher than the speed of adaptation of Ukrainian legislation to European norms and standards, which determine progressive changes in the international legal system. A positive aspect is that the strategy of state-legal reform in Ukraine, particularly in accordance with constitutional requirements, is aimed at approaching the European Union.

For example, the Association Agreement between Ukraine and the European Union defines democracy, respect for human rights, and the rule of law as key aspects on which common values are based (Verkhovna Rada of Ukraine, 2014). This Agreement contains provisions requiring unwavering respect for democratic principles and human rights, which correspond to international standards such as the Helsinki Final Act (Organization for Security and Cooperation in Europe, 1975), the Paris Charter (Organization for Security and Cooperation in Europe, 1990), the UN Universal Declaration of Human Rights (United Nations, 1948), and the Convention for the Protection of Human Rights and Fundamental Freedoms (Council of Europe, 1950).

The Association Agreement between Ukraine, on one side, and the European Union, the European Atomic Energy Community, and their Member States, on the other side, dated 27.06.2014, plays an important role today in strengthening the legal protection of democratic values, human and citizen rights in Ukraine. It is a significant step towards building constitutionalism in Ukraine, strengthening the place of the Constitution in the national legal space.

The Ukrainian Constitution contains clear commitments to protect human rights and freedoms and ensure decent living conditions. According to Article 3 of the Basic Law, the individual, their life and health, honor and dignity, inviolability, and security are the highest social values in Ukraine. Human rights and freedoms are recognized as inalienable and inviolable, and their protection is carried out by the court and through the activities of other state authorities. An important principle of constitutionalism is the impossibility of amending the Constitution of Ukraine if such amendments involve the abolition or restriction of human and citizen rights and freedoms. These principles determine the nature of constitutional law in Ukraine and reflect the importance of the Basic Law as the foundation of the social contract in the country (Law $254\kappa/96\text{-VR}$, 1996).

Venislavskyi (2014) proposes to conditionally divide all the basic values of the constitutional order enshrined in the text of the Constitution of Ukraine into two large groups:

Key historical, political, legal, moral, and ideological ideas contained in the preamble. This group briefly defines the general goals for which the Constitution is adopted: ensuring human rights and freedoms, decent living conditions, strengthening civic harmony, developing a democratic, social, legal state. These values occupy a leading place in the hierarchy of social values and are considered universal and civilization-wide. They include the following basic constitutional values: awareness of responsibility before God, one's conscience, past, present, and future generations; care for strengthening civic harmony in Ukraine; the ideas of democracy (the Constitution is adopted on behalf of the people as an expression of its sovereign will with a desire to develop and strengthen a democratic state); state and historical values (consideration of the centuries-old history of Ukrainian state-building and the right to self-determination exercised by the Ukrainian nation, the entire Ukrainian people; development and strengthening of the rule of law). These fundamental political-legal ideas permeate the entire content of the Constitution, influencing all its provisions.

Political-legal values and ideas formally embodied in specific constitutional principles, mainly enshrined in Section I of the Basic Law of Ukraine. These principles are fundamental, as most of them define the essence of the constitutional order of Ukraine and its foundations. It is according to the constitutional principles that the normative regulation of practically all social relations is carried out. They are a concentrated expression of the most important essential features and values of modern constitutionalism, which in their entirety and interconnection reflect the peculiarities of domestic state-building and the main ideas of Ukrainian society. The basic values of the constitutional order, through which the social ideal is manifested and which are extremely important for society and the state, include: social freedom in a broad sense, legal limitation of public power, priority of the individual, their rights and freedoms, state sovereignty, republican form of government, social orientation of state activity, state responsibility to the individual, ideological, political, economic pluralism, guaranteeing local self-government, interethnic harmony, etc. (Venislavskyi, 2014).

Ensuring the constitutional rights of citizens in Ukraine, particularly the category of "human and citizen rights," becomes an extremely complex task in conditions of military conflict. This issue is very complex and debated. On the one hand, the threat to these rights is primarily posed by the actions of the aggressor country, which are effectively war crimes. On the other hand, due to "security and defense issues," the state often limits some citizen rights without sufficient legal balance between the necessity of restrictions and their legal consequences. Currently, Ukraine has not yet achieved effective assurance of such a balance, while society lacks unity in resolving this issue and experiences additional pressure from the state, which is often perceived as unfounded and unjust.

The state must compensate for this excessive pressure by means that maintain unity and support from citizens; however, the chosen path often does not ensure this. The introduction of curfews, movement restrictions, and document checks, although justified by national security needs, are often ineffective and lack proper legal formalization, control, or connection with the declared purpose of the measures (Kolodiy, 2023).

We believe that in the context of defining current problems in the functioning of Ukrainian constitutionalism during the war, it is necessary to focus on the constitutional-legal status of the individual and citizen. The conditions of martial law lead to certain peculiarities in this context, as the normative-legal environment regulating social relations in such conditions changes due to the adoption of extraordinary and other special normative-legal acts. In particular, temporary restrictions on rights and freedoms are established, according to Article 64 of the Constitution of Ukraine. Such conditions highlight the need for special measures to ensure and protect human and citizen rights in wartime. It is important that restrictions on constitutional rights and freedoms are lawful, pursue a legitimate aim, and do not violate the essence of these rights (Law $254\kappa/96\text{-VR}$, 1996).

Under martial law, significant transformations have occurred in the system of organization and functioning of public authorities at the local level. These changes are reflected in the creation of military administrations, the alteration of local government powers, and new forms of interaction with state authorities, particularly with military administrations. Public authorities have adapted their functional focus in accordance with the requirements of the legal regime of martial law, which entails granting necessary powers to ensure national security and defense. This has led to increased coordination and interaction between local governments and military structures, as well as the necessity for clear delineation of their powers.

When analyzing the functioning of public authorities during wartime, it is important to consider that democratic institutions, though limited by the conditions of martial law, continue to function. Concurrently, issues related to the roles of the President and Parliament require attention and correction after the war. Changes in the organization and functioning of state power in the context of martial law are justified but should be minimized after the war to ensure the goals of constitutionalism, which involves limiting power in the interests of the rights and freedoms of citizens and civil society.

Under martial law, Ukraine's constitutional legislation, which forms the basis of modern constitutionalism, undergoes significant changes, even though the Constitution itself remains unchanged. These changes reflect the state's priorities during wartime, such as defense, national security, law enforcement, human rights protection, the economy, and foreign policy. Notably, the war stimulates the adoption of special legislation aimed at supporting the national defense effort, which requires further improvement.



In the context of the further development of Ukrainian constitutionalism, the continuation of European integration processes is also relevant, gaining particular significance during the war. Despite the conflict, Ukraine has not only maintained but accelerated its path toward European integration. These steps are crucial for affirming constitutional principles, protecting citizens' rights and freedoms during and after the war, and promoting the development of constitutionalism in Ukraine. In February 2023, Ukraine received an important document from the European Commission called the "Analytical Report Supplementing the Commission's Opinion on Ukraine's Application for EU Membership." This document audits Ukraine's alignment with European law and outlines a plan for future accession negotiations, consisting of nine main steps, known as the "Main steps EU accession" (Commission staff working document, 2023).

According to the European Commission's analysis, Ukrainian legislation in certain areas is already quite close to European law, such as energy, the customs union, external relations, and foreign, security, and defense policy. In other areas, such as the free movement of goods, media, food safety, economic policy, science and research, Ukraine shows a medium level of preparation. There are also areas where the alignment with European norms has only begun, such as the freedom to provide services, freedom of movement of capital, public procurement, antitrust policy, corporate law, financial services, justice, freedom and security, education and culture, consumer protection, and healthcare, where Ukraine has demonstrated an inconsistent level of integration.

To meet the requirements of the European community, Ukraine must adapt its legislation to European law across all thirty-three "negotiation chapters." This requires not only mechanical adaptation but also real practical integration of EU law into Ukraine's political and legal system, particularly in the areas of human rights and other European values. Therefore, for the further development of Ukrainian constitutionalism, it is important to focus on European integration processes, which demand significant efforts to adapt legislation to European standards and principles, as well as its actual implementation in Ukraine's constitutional and legal practice.

Another aspect influencing the directions of modern Ukrainian constitutionalism is the role of civil society. The war has changed not only the practical activities of civil society but also the theoretical understanding of its role. The current realities of martial law have led to new emphases in doctrinal characterization, making it more patriotically oriented, initiative-driven, and active. Significant changes have also occurred in the functional role of civil society, particularly in strengthening interaction with government structures to overcome the consequences of aggression and enhance the country's defense capabilities (Krusyan, 2023).

In this context, Batanova (2018, 2020) aptly notes the role of constitutional and legal responsibility in ensuring the substantive and value orientations of constitutionalism. Constitutional and legal responsibility is aimed at ensuring the stability of the constitutional order and the balance of rights and duties of participants in constitutional legal relations. This involves the possibility of the state applying coercive measures in the event of a constitutional delict, which means a negative assessment of unlawful behavior, disciplines the subjects of constitutional legal relations, prompting them to properly fulfill their constitutional duties, and also performs a preventive function. Therefore, constitutional control and constitutional legal responsibility in their synergistic unity become important means of ensuring constitutional legality and law and order. Identifying the relationship between control and responsibility helps to understand the special content of control as a guarantee of constitutional norms. Constitutional control is a specific institution for ensuring the principle of constitutional supremacy. It acts as a specialized mechanism, a system for ensuring the constitution as a normative legal act of the highest legal force, and is a type of control function. Thus, constitutional control is the activity of state bodies to implement the principle of constitutional supremacy and maintain the regime of constitutional legality through specific methods. Its general goal is to ensure the stability of the constitutional order, the normal functioning of society, a dignified life and free development of individuals, the formation of civil society, and the rule of law. Despite the specific goals of each constitutional law institution (constitutional order and its principles, human rights, territorial organization, the organization and activities of state power, local self-government, etc.), the ultimate goal remains unified, as it is what constitutional law aspires to as a whole.

The war has also revealed substantial problems that require comprehensive solutions, such as collaborationism and violations in volunteer activities. Ukrainian civil society has become a reliable support for the state in many social challenges, including post-war reconstruction and European integration. Therefore, highlighting the role of civil society in affirming and further developing Ukrainian statehood, as

well as in the post-war reconstruction of the country, is critically important in the context of current challenges.

Discussing the issue of human rights restrictions during the war, especially considering the necessity to adhere to international principles and standards of international humanitarian law, it is important to pay attention to the issue of ensuring and protecting human rights in the temporarily occupied territories of Ukraine. Currently, on these territories, fundamental human rights and freedoms are massively violated, such as the right to life, liberty and personal security; the right to humane treatment and the prohibition of torture, cruel and inhumane treatment; the right to a fair trial and protection from arbitrary arrest; the right to freedom of movement; the right to citizenship; the right to property; the right to freedom of thought and expression; the right to social protection, etc.

Undoubtedly, the state may declare its inability to protect basic human rights in uncontrolled territories. However, this approach does not solve the problem of maintaining sovereignty, territorial integrity, and human rights protection. Moreover, it is unacceptable in the context of modern Ukrainian constitutionalism.

Regarding the issue of modernizing the Constitution of Ukraine in the context of post-war recovery, we believe this step is possible as a future stage of the country's development. Firstly, post-war recovery will take place in the future; secondly, it is extremely difficult to predict what it will be like; thirdly, it is unknown what political, economic, social, spiritual, legal, and other factors will influence this process and what concepts, strategies, and plans will accompany it.

However, it can be confidently stated that the issue of modernizing the Constitution of Ukraine will be relevant in the process of post-war recovery. Although it may not become a priority or urgent, it will undoubtedly become foundational for the modernization of Ukraine's legal system. Given this, it is possible to consider prospective directions for its implementation in the context of new value orientations.

Conclusion

As a result of the conducted research on the substantive and value orientations of modern Ukrainian constitutionalism, the following conclusions were drawn:

- 1. The current realities of the large-scale armed aggression of the Russian Federation against sovereign Ukraine underscore the relevance of the issues of Ukrainian constitutionalism. Constitutionalism serves as a universal bearer of the theoretical energy of constitutional democracy, the foundation of the constitutional practice paradigm, and the criterion of the constitutionality of the actions of public authorities and other legal subjects. Ukrainian constitutionalism, with its rich national history and roots in the Western legal culture of European law and state-building, serves as the scientific-theoretical and ideological basis for the practical establishment of Ukraine as a sovereign, independent, democratic, legal, and European state.
- 2. The Constitution of Ukraine contains a number of fundamental values that gain particular relevance in the post-war period. These values form the foundation of the country's legal and social order, ensuring the stability and development of society. Human rights and freedoms are fundamental values of the constitutional order. In the post-war period, special attention should be paid to protecting the rights of those affected by the war, internally displaced persons, veterans, and other vulnerable groups. The state should promote social well-being and ensure the basic needs of the population, including the restoration of infrastructure, medical assistance, education, and other social services. The fundamental values enshrined in the Constitution of Ukraine are the foundation for the restoration and development of the country in the post-war period. They ensure legal and social stability, contribute to strengthening state sovereignty, protecting the rights and freedoms of citizens, and developing democracy and local self-government. The implementation of these values in the post-war period is critically important for creating conditions for the sustainable development and prosperity of Ukrainian society.
- 3. Modern conditions of war define the necessity for changes in practical approaches to Ukrainian constitutionalism, which require careful scholarly analysis to ensure effective functioning of the constitutionalism system and to determine the main directions of its development during Ukraine's post-war reconstruction. The war has underscored the necessity of strengthening constitutional guarantees of state sovereignty and territorial integrity of Ukraine. Additionally, it is necessary to enhance the protection of rights and freedoms of citizens, especially those affected by the war, and constitutional mechanisms to provide assistance to victims, restore their rights, and integrate internally



- displaced persons. Special attention should be paid to the development of regions that have suffered the most from the war.
- 4. Issues related to judicial system reform to ensure its independence and efficiency remain relevant; introduction of additional mechanisms to monitor human rights compliance; ensuring financial and administrative autonomy of regions; introducing new mechanisms of social support for those affected by the war; preparation for EU membership through adaptation of national legislation; embedding requirements for transparency and accountability of state authorities in the Constitution.

For further scientific research, it is deemed necessary to explore the experiences of other countries that have undergone military conflicts and successfully restored their constitutional order, as well as to analyze mechanisms for overcoming constitutional crises and ensuring stability of the legal system in post-conflict conditions.

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The challenge of irregular migration in the Aegean Sea: an analysis of its causes, impact, and solutions

Migración Irregular en el Mar Egeo: Migración irregular en Grecia, causas, consecuencias y contramedidas

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Abstract

This article examines irregular migration in the Aegean Sea, focusing on its causes, consequences, and countermeasures. The study employed a narrative literature review to identify key themes and synthesize findings on irregular migration. offering a qualitative and interpretative overview of the current situation along the Eastern Mediterranean route. The research delves into the complexities of illegal human movements in the Aegean, analyzing statistical data on sea arrivals and apprehensions. The Turkey-Greece corridor's appeal for asylum seekers is explored, alongside contributing factors to the increase in irregular migration. The refugee crisis has prompted Greece and the EU to implement strategies such as Frontex, Integrated Border Management, Hellenic Coast Guard modernization, agreements with neighboring countries, and enhanced border security to address this challenge.

Keywords: irregular migration, Aegean Sea, Greece-Turkey corridor, refugee.

Resumen

Este artículo examina la migración irregular en el Egeo, centrándose en sus causas, consecuencias y contramedidas. Utilizamos una revisión narrativa de la literatura para identificar temas clave sobre la migración irregular. sintetizando y analizando los datos para resumir hallazgos e identificar lagunas. Nuestra investigación ofrece una perspectiva cualitativa e presentando una interpretativa, narrativa coherente sobre el estado actual de la migración irregular a lo largo de la ruta del Mediterráneo Oriental. El estudio aborda diferentes enfoques para interpretar la migración irregular y describe las peculiaridades de los movimientos humanos ilegales en el Mar Egeo. Se analizaron datos estadísticos que muestran el número de llegadas por mar y detenciones en la región. Analizamos por qué el corredor Turquía-Grecia es preferido por muchos solicitantes de asilo y los factores que impulsan el aumento de la migración irregular. La crisis de refugiados ha obligado a Grecia y a las autoridades de la UE a implementar estrategias para contrarrestar este fenómeno en el Mar Egeo. Estas estrategias incluyen la creación de Frontex, la implementación de la Gestión Integrada de Fronteras, la modernización de la Guardia Costera Helénica, acuerdos con países vecinos, y la mejora de la seguridad fronteriza.

Palabras clave: migración irregular, mar egeo, corredor greco-turco, refugiados.

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Introduction

The social, economic, political, and technological developments that have occurred recently have created the premises for significant changes in human movements. Currently, human migration has been one of the top public concerns and political agenda items in the world. Both historically and currently, most migrants move to take advantage of opportunities since they migrate between rural and urban territories (Guresci, 2022), developing and developed regions (Oleribe & de la Fuente, 2022), or they flee war, violence, or natural disasters seeking safety, protection, and access to human rights (Alarcón, 2022; Javanbakht, 2022). In some cases, people may decide to migrate in an irregular manner because they consider legal channels limited or time-consuming due to restrictive immigration policies, long waiting times for visas, or strict eligibility criteria.

It is not always easy to define what irregular immigration means and which individuals can be considered as irregular migrants. Although the concept is treated as evident in media and political discourses, it is not easy to find agreement on the best term with which to denote irregular migration (Ambrosini & Hajer, 2023). In the context of European Union (EU) legislation, there is no accurate terminology to describe irregular migration since the migration management systems of the 27 EU member countries differ from each other (Morehouse & Blomfield, 2011). Irregular or illegal migration refers to policy of admission of foreigners into a different national space and the aspirations to mobility of people who are not entitled to enter or settle in (Triandafyllidou & Bartolini, 2020). Other researchers indicate that irregular migration movement of persons takes place outside the laws, regulations, or international agreements governing the entry into or exit from the state of origin, transit or destination (Sigona et al., 2021). Irregular migration can occur in the different ways. Firstly, it is associated with legal entering another country but providing false information and documentation (Spencer & Triandafyllidou, 2022). Secondly, it happens when a person enters another state legally but exceeds the legal duration of residence granted (Ambrosini & Hajer, 2023). Thirdly, irregular migration deals with giving birth or being born in the country of illegal transit (Spencer & Triandafyllidou, 2022). Fourthly, irregular migrants encounter expiration of legal residence or work permit duration due to loss of status (Morehouse & Blomfield, 2011). An extensive literature shows that the increasing irregular migration is related to the effects of globalization because open borders bring complex and multileveled transformations and become the reason for states' weakness and ineffectiveness in controlling international migration (Çıtak, 2019; Echeverría, 2020; Shakun, 2022). Predictably, such situation creates the aspirations for a new legal paradigm aimed at governing the large movements of migrants and refugees across international borders (Filipova et al., 2021).

In addition, digitalization has a significant effect on illegal migration, influencing various aspects of the phenomenon through information dissemination, communication and coordination, online recruitment, digital surveillance and border control (Kryvoshein, 2023; Morgan, 2023). Currently, irregular migration is a growing concern in migration policies across Europe (Purkayastha et al., 2023). According to Frontex, around 330 000 irregular border crossings were detected at EU's external border in 2022. This is the highest number since 2016 and an increase of 64% in comparison with the previous year (Frontex, 2023b). The migration route of the Eastern Mediterranean is one of the regions where these irregular migrations are prevalent. The rugged structure of the Aegean coast between Turkey and Greece and the close physical between the Aegean islands of Turkey and Greece can facilitate irregular crossings. Undoubtedly, the uncontrolled immigration has caused serious problems in the Aegean, which has become the main "gates" of illegal entry (Keady-Tabbal & Mann, 2023; Tzagkarakis et al., 2021). The present study provides a descriptive analysis of irregular migration in Greece, its causes and consequences. Also, we outline the effective countermeasures against irregular migration in the Aegean Sea after the Arab Spring process started in 2011 and the subsequent political and social events led to significant movements along the Eastern Mediterranean migration route.

From 2021 to 2023, irregular migration in the Aegean Sea continued to be a significant issue, reflecting ongoing geopolitical tensions and the impact of regional conflicts. In 2021, Frontex reported a noticeable increase in irregular crossings in the Aegean Sea, driven primarily by migrants and refugees fleeing instability in countries such as Syria, Afghanistan, and Turkey. This wave was noticed after a period of relative calm during the COVID-19 pandemic, with around 60,000 irregular crossings recorded by Frontex that year (Frontex, 2021). The following year, 2022, saw a continued but fluctuating flow of irregular migration. The number of crossings remained high, with approximately 50,000 recorded incidents. Factors contributing to this trend included shifting migration routes and strengthened border controls (Frontex, 2022). The Greek authorities and their European counterparts intensified their efforts to manage and reduce



these flows through increased surveillance and border patrols. In 2023, irregular migration in the Aegean Sea demonstrated a further decrease, with around 40,000 irregular crossings reported. This decline can be attributed to enhanced cooperation between European nations, stricter border enforcement, and the implementation of various EU migration policies aimed at controlling flows and improving border management (Frontex, 2023a).

However, the situation remained changeable due to ongoing regional conflicts and the sophisticated tactics used by smugglers and migrants (Augustova et al., 2021). The efforts by the EU and national authorities to address the root causes of migration and improve reception conditions continue to be crucial in managing this complex issue. The authors consider that the understanding and interpreting irregular migrations occurring on the Turkey-Greece route in the Eastern Mediterranean could provide conceptual benefits to migration research.

Research design and methods

In the present study, a comprehensive literature review was conducted to investigate the concept of irregular migration in a holistic and truly manner and to address struggling against irregular migration in Greece to find an adequate and shared response. Since the literature review is a way of synthesizing research findings to show evidence on a meta-level and to uncover the areas in which more research is needed, it is an important approach that is widely used to develop the theoretical frameworks and build the conceptual models in the field (Snyder, 2019; Turnbull, Chugh, & Luck, 2023). Besides, the narrative literature review oriented towards revealing causes, consequences and effective countermeasures against illegal migration was designed to conceptualize the topic differently and examine it in detail within diverse disciplines such as history, economics, politics, law, sociology, environmental studies, media, and security science.

In the context of irregular migration in the Aegean, we applied a narrative literature review that represents a summary and synthesis of existing literature on the particular topic, given in a narrative format (Basheer, 2022). The research provided qualitative and interpretative overview of the literature and aimed at presenting a coherent narrative about the current state of irregular migration along the Eastern Mediterranean migration route. The narrative literature review was conducted in three stages: (1) organization of the literature, identification of key themes and concepts related to irregular migration; (2) synthesis and analysis of the literature, discussing conflicting findings and alternative theories in the field, development of the narrative itself; (3) summarizing the main findings, identifying gaps in the current literature, suggesting potential directions for future research.

In preparing a manuscript, we relied on the qualitative methods to analyze, organize, and present the literature in a meaningful way. The methods we applied included: literature search to identify a broad range of studies that contribute to the understanding of the topic of irregular migration; categorization and thematic analysis to organize the selected literature into categories based on key concepts, themes, and trends related to the process of irregular migration in the Aegean; critical evaluation to assess the methodological quality, strengths, and limitations of individual studies in the area; synthesis of findings to develop a coherent narrative, to identify patterns across different investigations, and discuss how each contributes to the overall understanding of the research problem; narrative development to structure the review in a logical and chronological manner. When conducting the narrative literature review on the problem of irregular migration along the Eastern Mediterranean migration route, the authors adhered to ethical principles to ensure the integrity and responsible use of scientific data.

When studying the research topic, several research tiers were revealed. Firstly, a number of scholars refer to the analysis of migration routes and patterns (Manafi & Roman, 2022; Rowe & Patias, 2020). They examined the routes taken by irregular migrants and the factors influencing migration decisions and the impact of changing border controls and policies. Secondly, some works are devoted to the refugee crisis in the Aegean. Öztürk & Erkan (2023) discussed the humanitarian conditions faced by migrants and the security measures in the region. Thirdly, the problems of border control and enforcement were discussed by Beste (2021) and Martins (2023). Fourthly, the impact on host communities was investigated in the works of Kousis, Chatzidaki, & Kafetsios (2022). And fifthly, some studies deal with the legal and ethical dimensions of irregular migrations (Keady-Tabbal & Mann, 2023). Here, the legal frameworks governing migration and asylum, including the rights of migrants and refugees under international law, were evaluated.

In this regard, it is considered that this study could provide a new perspective to the existing literature and a different viewpoint on the issue of irregular migration. Also, it could assess the effectiveness of existing migration policies in Greece and explore the alternative approaches to managing irregular migration in the Aegean Sea that has been demonstrating the highest increase in the recent years.

Results and discussion

Irregular Migration in Stormy Waters: The Aegean Sea and the Turkey-Greece Corridor

Geographical location plays a critical role in terms of the characteristics and occurrence of irregular migrations. Factors such as being an intercontinental transit route, bordering important land and sea routes, etc., can create appealing effects in terms of migrations. Greece served as the initial point of the "Balkan corridor" while transferring asylum seekers, under the Dublin Regulation had been suspended, between EU countries with high social and economic development levels and the Middle East region known for political and economic instability including government crises, civil wars, and human rights violations (Tsourapas & Zartaloudis, 2022). Irregular migrants when choose Greece that is often referred to as a "Soft Spot" to enter into the EU are influenced by a combination of geographical, geopolitical, and socio-economic factors. Primarily, it is geographical proximity of the country to several source regions in the Middle East, Asia, and Africa that makes Greece a natural entry point (Kuschminder & Waidler, 2020). Also, the Eastern Mediterranean Sea serves as a common route for irregular migrants due to its numerous islands (İçduygu & Altıok, 2024). The physical proximity of the Greek islands and geographical formations in the Aegean Sea to Turkey, the ambiguity of the Turkey-Greece continental shelf, the geographical structure of the sea and coasts allowing for irregular crossings, favorable climate, and the long and rugged nature of coastal borders create opportunities for irregular crossings through this region (Dinas et al., 2019). Other factor deals with the fact that Greece is part of the Schengen Zone, an area within the EU where passport controls are largely abolished. Once migrants enter Greece, they gain easier access to other Schengen countries without facing additional border checks (Kuschminder & Waidler, 2020). At the same time, Greece shares a land border with Turkey, which has been a transit country for migrants attempting to enter Europe. The challenging topography, especially in the Aegean region, has made it difficult for Greek authorities to fully control and monitor the border (İçduygu & Altıok, 2024). Other findings state that the choice of entry point can be influenced by the variation in asylum policies among EU member states (Dimitriadi, 2023). For example, migrants may choose countries perceived to have more favorable asylum policies. For Greece, until 2011 it lacked a sufficient legal framework to process and host asylum seekers and had been severely criticized for failing to provide to asylum applicants a functioning asylum process (Digidiki & Bhabha, 2020; Dimitriadi, 2023). In addition, the present of human smuggling networks facilitating irregular migration routes can influence migrants' choices. These networks may advertise certain routes or destinations, including those leading to Greece (Kinacioğlu, 2023). In the first six months of 2013 approximately 3,000 irregular migrants were caught at the Turkey-Greece border corridor. The number increased to 23,000 in the first six months of 2014 that highlights the size of the problem posed by irregular migration (Dimitriadi, 2022). According to the Hellenic Coast Guard (HCG, 2021) Headquarters, they apprehended 9,357 irregular migrants and refugees in the Aegean Sea, and the number reached 847,930 in 2015. In recent years the number has been decreasing. In 2020 and 2020 the number of irregular migrants and refugees was 9,837 and 4,184 respectively (Makri et al., 2022)

Figure 1 shows apprehensions in the Aegean Sea between 2013 and 2021.



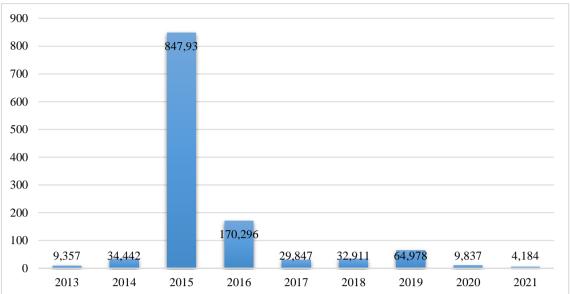


Figure 1. Number of irregular migrants and refugees apprehended in the Aegean Sea between 2013 and 2021. Source: Makri et al., (2022)

According to the data published by the United Nations High Commissioner for Refugees (UNHCR), approximately 1,000,000 refugees entered Greece through irregular migration over Turkey via Eastern Mediterranean Migration Route in 2015 and 97% of these were sea arrivals. As of 2023, the number of irregular border crossing via sea routes prevail and accounted for more than 85% from the total. So far in 2015 there were 799 deaths and disappearances in the Eastern Mediterranean. Table 1 shows total arrivals through the entire Eastern Mediterranean route.

Table 1. *Total arrivals in the entire Eastern Mediterranean.*

Year	Sea arrivals	Lans arrivals	Dead and missing
2023	41,584	7,160	710
2022	12,758	6,022	343
2021	4,331	4,826	115
2020	9,714	5,982	105
2019	59,726	14887	71
2018	32,494	18,014	187
2017	29,718	6,592	56
2016	173,450	3,784	441
2015	856,723	4,907	799
2014	41,038	2,280	405

Source: UNHCR (2024).

It is worth mentioning that thousands of migrants have made their way illegally into Greece from Turkey, using smuggling networks. Every year Greek authorities have arrested people for allegedly smuggling migrants across the Aegean Sea. Taking into account the data of the HCG Headquarters, in 2013 118 smugglers were apprehended. In 2015 there were already 482. Since 2018 their numbers have decreased and reached 79 in 2021 (Makri et al., 2022). The islands of Lesvos (Midilli), Chios (Sakız), Samos (Sisam), Kos (İstanköy), and Leros (Leryoz), located in the Aegean Sea and belonging to Greece, are among the first locations, where refugees arrive first, due to their proximity to Turkey (Katsanevakis, 2015). The proximity of 95 habitable islands in the Aegean Sea to Turkey makes irregular migrants to establish a permanent life there (Dinas et al., 2019). However, since the geographical, social, and economic capacities of these islands are insufficient to absorb these refugee populations, various problems may occur in areas including shelter, nutrition, health, and education (Alarcón, 2022). Many migrants crossed the Meriç (Evros) River which runs along most of the land border between Greece and Turkey (Pavlidis & Karakasi, 2019). Greece attempted to prevent uncontrolled and irregular migration by fencing off the shores of the river, but this was not a definitive solution (Öztürk & Erkan, 2023). Considering that most of refugees, who reached

Europe in 2015, were irregular migrants crossing from to the Aegean islands, it can be clearly seen that irregular migrations became a global issue of concern, not only for Greece.

Causes and Effects of Irregular Migration in Greece

Greece's borders with Turkey in the east and south and the border with Albania in the north are common passage routes for numerous migrants, particularly from Africa and Asia (Nikas & Aspasios, 2021). The Turkey-Greece corridor is preferred by many asylum seekers from such countries as Afghanistan, Pakistan, Bangladesh, Sub-Sahara, Syria, Iraq, and Palestine trying to enter Europe as they are forcibly displaced from their homeland, being victims of human trafficking and migrant smuggling. Many of irregulars are usually undocumented labor migrants (Pries & Savci, 2023; Tsourapas & Zartaloudis, 2022).

Many irregulars flee due to the deteriorating humanitarian conditions, such as poverty, unemployment, corruption, violence, and insecurity, natural disaster, or famine in the states of origin. Turmoil or warfare, like in the Horn of Africa and Sudan, constitutes another major driver. In addition, the so-called "Arab Spring" caused a surge of irregular migrants running to Europe, including Greece. Full-fledged wars or armed conflicts in Iraq and Afghanistan have also increased migration flows significantly (Makri et al., 2022). Other factors include terrorism, prolonged repressive regimes, and inequality. These have affected the decision of individuals residing in the Middle East to migrate (Boissonneault & Costa, 2023). Furthermore, lack of legal rights, limited access to services such as healthcare, education, municipal services, and banking, severe working conditions, problems experienced regarding work permits, poor living standards, experiences of marginalization or discrimination, have led to leaving the state of origin (Ferwerda & Gest, 2021) 60% registered refugees, who sought asylum on the Greek islands from the beginning of 2015 to 3 July 2015, were Syrian (Katsanevakis, 2015). In 2018, top three nationalities of irregular migrants apprehended in the Aegean Sea were from Afghanistan, Siria, and Iraq (Makri et al., 2022).

According to the UNHCR, in 2023, the majority 4,749 refugees and asylum-seekers, who arrived in Greece by sea, are from the State of Palestine (23%), Afghanistan (11%), Somalia (10%), Eritrea (9%), and the Democratic Republic of Congo (9%). Women account for 22%, children for 21% and men for 57% (UNHCR, 2024). Approximately 1% of irregular migrants entering via the Turkey-Greece route were individuals Iran, facing various challenges such as conflict, persecution, or economic hardship, may also choose to seek asylum or better opportunities within the EU (Ballière, 2023). In 2024, the Eastern Mediterranean still remains as a preferred route for many people seeking for asylum. Thus, 1,331 irregular arrivals were counted and 1,157 of them were done in the Aegean Sea (UNHCR, 2024). Figure 2 shows the designations of irregular migrants in the Aegean Sea in 2024.

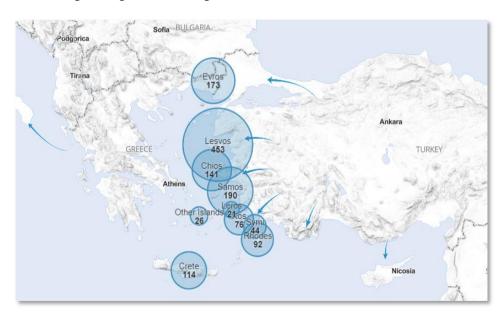


Figure 2. Number of irregular migrants who arrived to the Aegean islands in 2024. Source: UNHCR (2024).



As irregular migration can be defined as the unlawful entry to another country or unlawful residence within that country, many individuals use illegal means to irregularly migrate to other countries, often seeking to circumvent official immigration channels. Some findings show that the reasons for this method involve avoiding danger as the action is prohibited and believing that they would access a secure and guarded route through migrant smugglers since they lack legal documentation (Ambrosini & Hajer, 2023). A number of irregulars had applied for legal permits such as work permits, student visas, family reunification programs, and residency permits, but they chose this route due to negative responses (Haddeland, 2021). At the same time, many individuals decide migrate, hiding in unsanitary compartments of land or sea vehicles or being transferred to another vehicle, in ways that do not befit human dignity. Migrant smuggling networks are the methods used for these illicit crossings (Spencer & Triandafyllidou, 2022; Tedeschi, 2022). Figure 3 shows refugees trying to illegally cross the border to the EU. Importantly, a significant portion of irregular migrations occurs due to technological applications such as GPS, mobile maps, and online cartographic information that facilitate these crossings (Alencar, Kondova, & Ribbens, 2019).

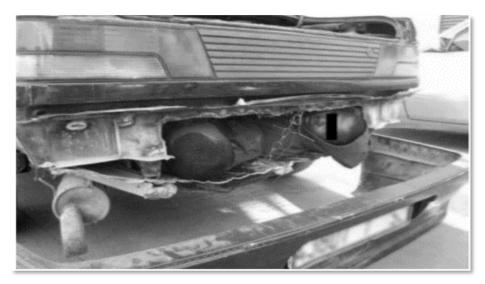


Figure 3. Refugees trying to illegally cross the border to the EU when hidden in a vehicle compartment. Source: UNODC (2011).

For the last years Greece has been experiencing a serious economic recession which was exacerbated because of during COVID-19 pandemic (Maris & Flouros, 2022; Stylianidis & Souliotis, 2019). Increase in unemployment rates, decreases in purchasing power, structural issues in the public sector, and high taxes can lead to increased social tension. The influx of migrants from Asia and Africa, deepened the illegal migrant and refugee crisis in Greece (Stylianidis & Souliotis, 2019) and affected social, economic, and political aspects.

According to recent findings, in Greece the economic impact is significant, especially in regions with high concentrations of migrants (Megalokonomou & Vasilakis, 2023). Local resources and services may be strained as municipalities deal with the increased demand for housing, healthcare, education, and social services (Alarcón, 2022). The presence of a large number of migrants affects the local job market significantly and there can be concerns about potential competition for low-skilled jobs and downward pressure on wages (Blouchoutzi et al., 2023). The integration of migrants into the Greek society can be a complex process due to cultural and linguistic differences, varying levels of education and skills. Moreover, the influx of migrants causes the increased demand for public services, including healthcare, education, and housing (Ferwerda & Gest, 2021). The arrival of migrants, especially those in vulnerable situations, raises humanitarian concerns.

Greece, as an EU member state, is part of broader discussions and agreements regarding the management of migration flows. The handling of the migrant influx can influence Greece's relationships with other EU member states and impact broader European cooperation on migration issues. Thus, on September 23, 2020, the European Commission released its draft Pact on Asylum and Migration aimed to launch an effective approach to migration based on "flexible solidarity," allowing different member states different roles, contain the elements of a successful migration policy (Digidiki & Bhabha, 2020).

Thus, the negotiations have been still ongoing since the Pact require agreement among EU member states on certain aspects, including issues related to the distribution of responsibility and solidarity among member states, may face challenges due to differing opinions and interests.

In addition, irregular migration is a concept considered to be in connection with human trafficking, migrant smuggling, international terrorism, and transnational crimes. This is because irregular migration events have been associated with terrorist attacks and bombings, leading to discussions on national security and border security (Baker-Beall, 2019). The fact that the 9/11 attacks in 2001, the bombings in Madrid in 2004, the attacks in the UK in 2007, and the terrorist acts against the Charlie Hebdo magazine in France in 2015 were committed by migrant, we observe the cases citizens are against the presence of settled migrants. This situation has had serious effects on anti-immigrant sentiment, racism, xenophobia, and voter behavior, including the strengthening of far-right, racist, anti-migrant political parties (Dinas et al., 2019; Galantino, 2022; Vitiello, 2022). Therefore, irregular migration and the presence of asylum seekers may have a significant impact upon the security situation in Greece, including border security and law enforcement (Makri et al., 2022); social tensions Tsourapas & Zartaloudis (2022); capacity strain of services; integration challenges, engagement of irregular migrants and asylum seekers in criminal activities, often due to economic desperation (Ferwerda & Gest, 2021); spread of broader transnational issues, including crossborder crime (Ambrosini & Hajer, 2023). Obviously, comprehensive and well-coordinated countermeasures that address migration will enhance border management and promote integration of irregular migrants.

Countermeasures of the EU and Greece Against Irregular Migration

Greece, a member of the EU, has become increasingly associated with significant irregular migration flows and a refugee population. Erupted in 2010, the refugee crisis has made Greece a key topic of domestic and foreign policies (Megalokonomou & Vasilakis, 2023) making Greek and EU authorities search for adequate solution.

In 2004, to safeguard its borders and enable member states to combat irregular migration the EU established Frontex (European Border and Coast Guard Agency) which undertakes a significant responsibility in addressing the migration pressure (Frontex, 2019). Well-equipped, Frontex personnel are actively engaged in counteracting to irregular migration movements. However, the harsh treatment of migrants by Frontex officials with military equipment raised the question of the balance between security and freedom. Also, the strict passport and visa policies of the EU, especially exemplified by Greece, intensify the talks about "securitization" and "externalization" of borders (Cusumano & Riddervold, 2023). Additionally, the concept of Integrated Border Management (IBM) was introduced that is implemented as a shared responsibility of Frontex or European Border and Coast Guard Agency and the national authorities responsible for border management, including coast guards to the extent that they carry out maritime border surveillance operations and border control tasks (Makri et al., 2022). In the context of irregular migration in Greece, the HCG is responsible for law enforcement at sea, ports and coastal areas, maritime border control, counteracting to irregular migration and human trafficking, drug interdiction, search and rescue jointly with the Hellenic Air Force and Hellenic Navy, etc. (HCG, 2021)

Another method employed by the EU and Greece to manage irregular migration is the agreements with neighboring countries. The agreement signed between the EU and Turkey on March 18, 2016, also known as the Aegean Agreement, which primary purpose is to establish a legal framework for the prompt and orderly return of individuals who have entered the EU irregularly and are found to be unauthorized to stay (Urbaneja Cillán, 2020). From April 2016 to November 2017, 1,360 refugees were readmitted to Turkey under the readmission agreement, 216 of whom were Syrian individuals (Alpes et al., 2017). At the same time, some authors claim that the readmission agreement erodes international legal principles and cause risk of serious human rights violations (Janmyr & Skribeland, 2020). Moreover, the agreement has contributed significantly to prevention of deaths in the Aegean Sea and dismantle networks of irregular migrant smuggling (Çavuşoğlu, 2016). Currently, the EU seeks the possibilities to establish migration cooperation agreements with North African countries. For example, on June 2023, during the negotiations in Brussels the EU Commission President proposed a broad cooperation agreement, potentially worth over €1 billion, to Tunisian President. The draft agreement if oriented towards combatting people-smugglers, strengthening maritime border control by Tunisians, and sea rescue and repatriation of Tunisians staying illegally in Europe (Jacqué, 2023).



Reception is one of effective strategies of asylum management and concerns service provisions like identification, screening and submission of an asylum application rendering the individual under the care of the host state. Also, reception guarantees an access to legal assistance, counselling, healthcare, shelter, food, interpretation, education particularly for children, and special accommodation for vulnerable groups (Mantanika & Arapoglou, 2022).

In Greece there are two types of administrative detention centers: closed centers for illegal immigrants who are under administrative detention; open centers for asylum seekers where they get language training, legal assistance, and can undergo social integration programs (Marmani, 2023). With staffing shortages and financial limitations, the Asylum Service becomes operational only in 2013, and the first Regional Asylum Office outside of Athens, opened in 2015 in Thessaloniki, with branches in Thrace, Epirus, Thessaly, Western Greece, Crete, Lesvos, Chios, Samos, Leros and Rhodes. The First Reception Center in the land border of Evros (Fylakio center) was opened in 2013 (Dimitriadi, 2023).

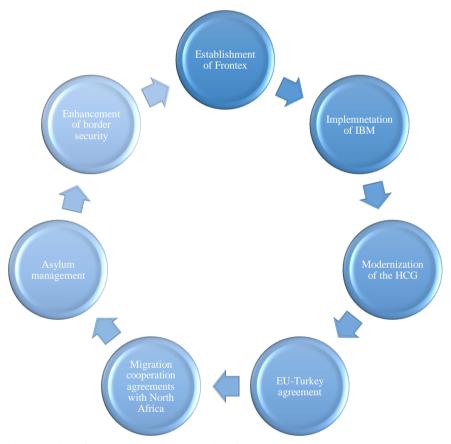


Figure 4. The strategies of the EU and Greece against irregular migration.

Besides, Greece has implemented various measures to enhance its border security, particularly in response to challenges related to irregular migration and the movement of people across its borders. The enhancement of border security includes: deployment of border patrol and coast guard personnel to key border areas, including land borders and coastal regions (HCG, 2021); the use of technology, including surveillance systems, drones, and sensors to improve monitoring along the borders Castiglione (2022), construction of physical infrastructure along the land and sea borders like fences, barriers, and checkpoints Castiglione, (2022), Karamanidou & Kasparek (2022) close cooperation with Frontex to benefit from joint operations and information exchange (Perkowski et al., 2023); advanced training border control personnel, providing them with the necessary skills and knowledge to address the complexities of irregular migration and border security (Karamanidou & Kasparek, 2022). Figure 4 summarizes the strategies of the EU and Greece against irregular migration.

We must admit that addressing irregular migration in the Aegean Sea requires a comprehensive and coordinated approach, involving not only border control measures but also efforts to address root causes, protect human rights, and ensure a fair and efficient asylum process. The effectiveness of these strategies

may vary over time and may be influenced by factors such as geopolitical developments and changes in migration patterns.

At the same time, the research refers to a number of political and social implications that were formulated from the complex issue of irregular migration. Definitely, on the one hand, the influx of irregular migrants tensed the relations between the EU member states, particularly between frontline countries like Greece and other EU nations. Misunderstandings often arise over the distribution of responsibility for managing migrants and effectiveness of EU migration policies. On the other hand, the impact of irregular migration is significant, affecting both the migrants themselves and the local communities. Irregulars often face not comfortable conditions, which lead to health and safety concerns. For locals, the sudden arrival of large numbers of people strains public services and infrastructure, creating social tensions. Therefore, the research outcomes may be used to provide effective integration measures within the communities, contributing to stabilization of the situation in the Aegean. Other solutions must include enhancement of regional cooperation to address the root causes of migration, such as conflicts and economic instability in countries of origin. Besides, the findings can be implied for the development of efficient processing systems for asylum seekers as well as the implementation of various innovative technologies and approaches for border management to create a more balanced and sustainable pattern to counteract to irregular migration in the Aegean Sea.

Conclusions

Irregular migration refers to policy of admission of foreigners into a different national space and the aspirations to mobility of people who are not entitled to enter or settle in. Irregular migration can occur in the different ways: through legal entering another country but providing false information and documentation; entering another state legally but exceeding the legal duration of residence granted; giving birth or being born in the country of illegal transit; encountering expiration of legal residence or work permit duration due to loss of status. Currently, the increasing irregular migration is related to the effects of globalization because open borders bring complex and multileveled transformations and become the reason for states' weakness and ineffectiveness in controlling international migration.

The migration route of the Eastern Mediterranean is one of the regions where these irregular migrations are prevalent. The rugged structure of the Aegean coast between Turkey and Greece and the close physical between the Aegean islands of Turkey and Greece can facilitate irregular crossings. Irregular migrants when choose Greece to enter into the EU are influenced by a combination of geographical, geopolitical, and socio-economic factors. Primarily, it is geographical proximity of the country to several source regions in the Middle East, Asia, and Africa that makes Greece a natural entry point. Also, the Eastern Mediterranean Sea serves as a common route for irregular migrants due to its numerous islands. Other factor deals with the fact that Greece is part of the Schengen Zone, an area within the EU where passport controls are largely abolished. At the same time, Greece shares a land border with Turkey, which has been a transit country for migrants attempting to enter Europe.

Findings show that many irregulars flee due to the deteriorating humanitarian conditions, such as poverty, unemployment, corruption, violence, and insecurity, natural disaster, or famine in the states of origin. Full-fledged wars or armed conflicts in Iraq and Afghanistan have also increased migration flows significantly. Other reasons include terrorism, prolonged repressive regimes, and inequality. Furthermore, lack of legal rights, limited access to services such as healthcare, education, municipal services, and banking, severe working conditions, problems experienced regarding work permits, poor living standards, experiences of marginalization or discrimination, have led to leaving the state of origin. Today, the majority refugees and asylum-seekers, who arrived in Greece by sea, are from the State of Palestine, Afghanistan, Somalia, Eritrea, and the Democratic Republic of Congo. Women account for 22%, children for 21% and men for 57%. The influx of migrants from Asia and Africa, deepened the illegal migrant and refugee crisis in Greece and affected social, economic, and political aspects.

The refugee crisis has made Greece a key topic of domestic and foreign policies making Greek and EU authorities search for adequate solution. According to findings, the countermeasures include establishment of Frontex; implementation of IBM; modernization of HCG; concluding agreements with neighboring countries like the agreement signed between the EU and Turkey on March 18, 2016; establishment of migration cooperation agreements with North African countries; introduction of effective strategies of asylum management; enhancement of border security.



At the same time, these strategies, addressing irregular migration, has its weaknesses. For example, Frontex sometimes faced criticism for limited operational capacity. The implementation of IBM and the modernization of the HCG contributed to enhancement of surveillance and border control. However, these measures can be hindered by insufficient resources and non-systemic training of personnel. The establishment of agreements with neighboring countries often encounters some obstacles related to political instability and different national interests that worsens the situation with the irregular migration in the Aegean. Additionally, the introduction of effective asylum management strategies and enhancement of border security struggle with a number of challenges, particularly balancing security with humanitarian concerns. Therefore, the effectiveness of the above-mentioned strategies often relies on broader regional cooperation and political will, which can be inconsistent. As a result, the research may not fully reveal the complexities of irregular migration in the region. Further research should concern the verification of countermeasures effectiveness and comparison of Greece's migration policy with legislation of other Mediterranean countries facing irregular migration.

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Public art as a driver of change: exploring its socio-political impact in the modern era

Публічне мистецтво як рушійна сила змін: дослідження його соціально-політичного впливу в сучасну епоху

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Abstract

This article explores the socio-political impact of public art installations. It interprets impact indicators, describes public art as a result of sociopolitical transformations, reveals characteristics of national identity through public art, studies public art during war, and compares the symbolism of public art installations across different countries. The research employed a descriptive methodology, including literature analysis, visual and document analysis, theoretical assessment of impact indicators, historical and comparative analysis, and content analysis. The findings demonstrate that public art is a crucial cultural phenomenon that shapes collective memory, national identity, and cultural heritage.

Анотація

У статті досліджено соціально-політичний вплив публічних арт-інсталяцій. інтерпретує індикатори впливу, описує паблікрезультат соціально-політичних трансформацій, розкриває характеристики національної ідентичності через паблік-арт, вивчає паблік-арт під час війни та порівнює символіку публічних арт-інсталяцій у різних здійснення країнах. Для дослідження використано описові методи, у тому числі аналіз літератури, візуальний аналіз і аналіз документів, теоретичну оцінку показників впливу, історичний і порівняльний аналіз, а також аналіз контенту. Результати демонструють, що публічне мистецтво ϵ

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The study identifies various types of public art and highlights the growing popularity of digital and multimedia art. It also distinguishes impact indicators of public art installations and proves that public art plays a vital role in stimulating socio-political transformations, shaping cultural identity, advocating for positive change, increasing civic engagement, and addressing social justice issues. The research emphasizes the short-term and long-term effects of public art installations and pays special attention to their role during wartime.

Keywords: artworks, challenges, community, impact indicators, urban environment.

вирішальним культурним феноменом, який формує колективну пам'ять, національну ідентичність i культурну спадщину. Дослідження визначає різні типи публічного мистецтва та підкреслює зростаючу популярність цифрового та мультимедійного мистецтва. У статті виокремлено індикатори впливу публічних арт-інсталяцій і доведено, що публічне мистецтво відіграє важливу роль стимулюванні соціально-політичних трансформацій, формуванні культурної ідентичності, пропагуванні позитивних змін, підвищенні громадянської активності вирішенні питань соціальної справедливості. Дослідження наголошу€ короткостроковому та довгостроковому впливах публічних арт-інсталяцій і приділяє особливу увагу їх ролі під час війни.

Ключові слова: твори мистецтва, виклики, суспільство, показники впливу, міське середовище.

Introduction

The modern era is associated with significant transformations in various aspects of human existence and marked by industrialization, fostering urbanization and new labor dynamics (Rudenko & Kharkov, 2023). Technological advancements, such as the discovery of electricity and the development of automobiles, airplanes, computers, and the internet, revolutionized communication, transportation, and manufacturing. Globalization emerged as a defining feature, enhancing interconnectedness and interdependence of the world's economies, cultures, and populations through advanced communication and transportation (Vdovichena et al., 2022). Politically, the modern era witnessed the rise of nation-states, the spread of democratic ideals, significant geopolitical shifts, wars, and the rise of new political ideologies like communism and capitalism, reshaping the global landscape (Bashovski & Rossi, 2023). It has brought both unprecedented opportunities and challenges, such as environmental degradation and the need for sustainable development, reflecting a complex interplay of progress and problems (Inácio, 2020).

Despite a number positive changes, modern times are facing significant challenges such as climate change, economic inequality, and political instability (Kolinets, 2023). Additionally, issues like digital privacy, cybercrime, and the mental health influence rapid social changes and require the comprehensive solutions. In Ukraine, the ongoing conflict with Russia has significant humanitarian and economic impacts, drawing international attention and support (Kot et al., 2024; Tampubolon, 2022). The debates over human rights, effects of the COVID-19 pandemic, and the role of technology in society continue to shape political landscapes, highlighting the complex nature of contemporary socio-political dynamics.

Obviously, socio-political development is closely connected with culture, particularly art as a fundamental part of it, since art objects often reflect the community values, beliefs, and norms, and they serve as the instruments for expressing political ideologies, social issues, and cultural identity (Kopiievska et al., 2023). At the same time, art influences public opinion and fosters social change (Kot et al., 2024). Also, socio-political development, such as government policies, social movements, and historical events, impact the themes and forms of artistic expression significantly (Johnstone & O'Hare, 2023).

This interconnection highlights the role which culture and art play in reflecting socio-political trends, forming a complex and dynamic relationship within the human society. Public art refers to artworks that are displayed in public spaces and it includes a variety of art forms such as sculptures, murals, installations, and performances. Usually, they are integrated into the urban or natural environment (Demir Türközü & Caliskan, 2021; Mezzadri, 2021). In the context of socio-economic development, public art encourages the economic growth by attracting tourists and investors to an area (Lee et al., 2020).



Public art is most impactful when it is engaging and interactive, as it has the power to connect people with their surroundings and each other in meaningful ways (Milne & Pojani, 2022). Engaging public art draws the attention of visitors, inviting them to interact with artworks through physical engagement with installations, participation in events, or digital interactions created by means of augmented reality (AR) or interactive displays. According to Cheng et al. (2023), public art has great potential to not only beautify public spaces but also to enrich the cultural and social profile of a community. At the same time, public art is deeply interconnected with socio-political development and it often serves as a visual and symbolic expression of the issues, values, and aspirations of a society (Mosendz et al., 2022).

For example, during periods of political protest or social movements, public art can become a powerful form of expression, conveying messages of resistance or hope. Socio-political developments also influence the funding, creation, and reception of public art (Johnstone & O'Hare, 2023). Government policies, public funding priorities, and societal attitudes towards art and culture all impact the availability and nature of public art projects. Additionally, public art is used as a tool for political or social agendas, with governments or advocacy groups promoting specific messages or ideologies artworks (Iannelli & Marelli, 2019). Therefore, public art is not only a reflection of socio-political development but also a dynamic force that can shape and influence it.

The investigation of socio-political impact of public art installations is to understand how these artworks influence and are influenced by the social and political dynamics of a community. Such analysis seeks to uncover the ways in which public art shapes public discourse, community identity, and civic engagement. Definitely, studying the socio-political impact of public art, researchers can provide explanations how these installations contribute to the cultural, social, and economic development of the society. This knowledge is aimed to inform decision-making around public art policies or urban planning strategies, enhancing the role of public art in creating an enthusiastic, inclusive, and reflective community.

Literature Review

Public art is a topic of extensive studies across various fields, including philosophy, history, education, and cultural studies. Philosophically, scholars explore the nature and purpose of public art, examining questions related to aesthetics, meaning, and the role of art in the society (Rietveld & Kiverstein, 2022). Some philosophical investigations show how public art shapes perceptions, emotions, and experiences, and describe its potential to provoke reflection and social change (Rietveld & Kiverstein, 2022). Historians trace the evolution of public art from ancient civilizations to the contemporary society, analyzing its cultural, social, and political significance over time (Bilozub et al., 2023).

In educational contexts, public art serves as a valuable resource for teaching and learning about art, history, culture, and civic engagement (Pedroso et al., 2023). Educators incorporate public art into curricula to foster critical thinking, creativity, and cultural awareness among students, encouraging them to explore and interpret artworks in public spaces (Alimi Selmani, 2024; Huang & Zheng, 2023). Some works are devoted to the analysis of public art from the cultural perspective reflecting the ways how different groups of actors shape the cultural identities, values, and narratives within the society.

In scientific works, public art is interpreted as a cultural phenomenon that contributes to the formation of collective memory, identity, and heritage within communities (Milne & Pojani, 2022). Also, it is described as a form of cultural expression and communication that shapes social interactions and community dynamics (Cheng et al., 2023). Villanueva et al. (2024) indicate that public art is a tool influencing citizens' emotions, perceptions, and behavior. At the same time, it has certain therapeutic and healing potential (Tabor et al., 2023). In urban studies, public art refers to artistic expressions and installations that are integrated into the settlement environment, typically in public spaces (Mezzadri, 2021).

It is important to note that public art is often seen as a "voice of the people" (Müller, 2019; Røyseng, 2021; Timko, 2021). According to Røyseng (2021), public art is accessible to everyone, being a powerful tool for expressing collective sentiments and experiences. In this context, public art also serves as a platform for marginalized or underrepresented groups to share their stories and perspectives, giving voice to those people who do not have access to traditional forms of expression. Simoniti (2021) indicates that this art starts an important dialogue, encouraging citizens to engage with important social, political, and cultural issues.

Public art has been a part of human expression for thousands of years, with examples dating back to ancient civilizations (Bilozub et al., 2023). Some of the earliest forms of public art can be traced to the ancient Egyptians, Greeks, and Romans, who created statues, monuments, and architectural complexes to commemorate leaders, gods, or important events. The functions of public art have evolved over time, showing the changes in society, culture, and artistic practices (Marcondes, 2020). In ancient civilizations, public art often served ceremonial and religious functions (Kecheng & Hussain, 2023). Arranz Otaegui & Moore (2022) insist that throughout history, rulers and governments have used public art as a tool for propaganda and ideological control.

In more recent times, such artwork has increasingly been used as a form of social commentary and critique, addressing pressing issues such as politics, social justice, and the environment (Marcondes, 2020). Artists use public art to provoke thought and stimulate debate on important issues in the society. Contemporary public art often emphasizes community engagement, urban regeneration, and environmental challenges (Cheng et al., 2023). Importantly, this art raises awareness about social inequalities based on factors such as race, gender, class, and sexuality (Zebracki, 2020). Also, these days public art reflects and responds to political conflicts, wars, and acts of violence (Kot et al., 2024). Artists use public art to memorialize victims of violence, to protest against war and injustice, and to promote peace.

A number of investigations mention different types of public art. They include monuments and memorials that commemorate historical events or individuals; sculptures and statues; murals used convey social or political messages or to transform urban or natural environments (Demir Türközü & Caliskan, 2021; Mezzadri, 2021). In some works, performance art is mentioned (Iannelli & Marelli, 2019). It refers to a wide range of activities, such as dance, theater, music, and interactive performances, and is often used to engage audiences and provoke thought. Currently, digital and multimedia art incorporating digital technologies has become more popular among artists to explore new forms of creativity and expression (Young & Marshall, 2023). Stoltz (2023) differentiates environmental or ecological art that addresses the environmental issues and sustainability concerns through artistic expression.

Public art installations vary significantly across countries, reflecting diverse cultural, social, and political contexts. According to American scholars Topaz et al. (2022), in the United States, public art often reflects issues of race, identity, and history. In the UK, public art engages with themes of national identity and colonial history (Grindon et al., 2023). African artworks address the issues of apartheid, reconciliation, and social justice (Olaiya, 2022). In Latin America, public art is used to reflect the country's rich cultural heritage and social diversity (Conduru, 2023). In comparison, Chinese public art shows the country's rapid modernization, economic growth, and emergence it as a global power (Cheng & Worrall, 2021).

Several scholars provided in-depth analyses of specific public art installations in their scientific articles. For example, Korzilius (2022) and Sokołowska-Paryż (2022) explored how the Vietnam Veterans Memorial, known for being minimalist monument, reshaped public commemoration practices in the United States. Some works are devoted to Holocaust memorialization of the past two decades, particularly Auschwitz Memorial in Poland, Monument against Fascism in Germany, and United States Holocaust Memorial Museum (Popescu & Schult, 2019). Ballard & Linden (2019) studied Smithson's land art sculpture Spiral Jetty that could be named as the first marker of the Anthropocene in art.

In addition, the researchers explained the narrative qualities of an installation and described its ability to articulate human relationships with environmental transformation. One notable example is the "Fearless Girl" statue installed on Wall Street in New York City. This bronze sculpture of a young girl facing the famous "Charging Bull" symbolizes a stand against gender inequality in corporate leadership. Chused (2020) admits that the installation became a global icon of female empowerment and prompted discussions on women's roles in business and the broader workforce.

Therefore, the literature review proves that public art installations around the world raise important socio-political questions that reflect the unique challenges and complexities of each country's history and society (Røyseng, 2021). These installations provide a platform for dialogue, reflection, and engagement with pressing issues, making them an integral part of the cultural landscape (Simoniti, 2021). At the same time, public art changes the socio-political landscape of a country creating debates about important social and political issues or promoting cultural understanding and tolerance by showcasing diverse cultural perspectives (Müller, 2019). From the works of Archer (2024), it is obvious that public art addresses



historical injustices. Moreover, it fosters civic engagement by encouraging people to participate in public life (Iannelli & Marelli, 2019).

Taking this into consideration, the study is to analyze the socio-political impact of public art in the modern era. Accordingly, the authors focus on the following research objectives: (1) interpret public art from philosophical point of view through impact indicators; (2) to describe public art installations as a result of socio-political transformations; (3) to reveal the characteristics of national identity through public art installations; (4) to study public art installations in the time of war; and (5) to compare symbolic boundaries of public art installations throughout the world.

Methodology

To achieve the research objectives the descriptive methodology was applied, particularly descriptive literature analysis, visual and document analysis, theoretical assessment of impact indicators, historical and comparative analysis, and content analysis. While investigative the problem of sociopolitical impact of public art installations, the descriptive methodology was introduced within the framework of positivism, constructivism, and critical theory (Beinart, 2020; Cheng at al., 2023). Positivism sought to reveal the common patterns and regularities through the empirical evidence, logical reasoning, and systematic observation of using public art installations in the urban and natural environment.

Aiming for objective generalization and synthesis of the scientific findings, positivism contributed to the structurization and standardization of descriptive methods. Constructivism helped to interpreted the knowledge based on the socio-political processes and interactions within the society. Also, the paradigm recognized multiple realities and perspectives on the problem, resulting in the detailed description of the role of public art installations at the same time, critical theory examined the socio-political dynamics, society structures, and socio-political discourse to study the social, cultural, educational, and political influence of artworks.

The exploration of socio-political impact of public art installations was performed in three stages: planning and data collection; data analysis; interpretation of results and dissemination. Each stage involved specific methods to ensure the research is accurate and comprehensive. The first stage – planning and data collection – was oriented towards defining the research objectives based on the existing literature analysis, choosing the methodology design, and collection of quantitative and qualitative data on the socio-political impacts of art installations. At this stage, the descriptive literature analysis, visual and document analysis, historical and comparative analysis were implemented.

The descriptive literature analysis was used to examine the existing written sources and involved systematically reviewing of various types of literature to understand the context and effects of the public art installation. As a valuable method, it allowed to explore a wide range of works to explain how public art shapes the country's social and political profile and how it is changed through socio-political transformations. Importantly, while exploring the socio-political impact of public art installations, the interdisciplinary approach was applied and it drew on the literature from history, sociology, political science, and cultural studies analyzing the research phenomenon from the multiple perspectives. The visual analysis examined and interpreted the visual data, such as artworks, photographs, videos, and other visual media. This approach was particularly useful in understanding the context of public art installations and their socio-political impact upon the society development.

The document analysis related to the systematic procedure for evaluating the official documents to extract the necessary information on the phenomenon of public art installed in the urban landscape. Visual and document analysis helped to understand the historical period and cultural background of artworks as well as to consider the social, political, and economic conditions through the time. The historical analysis involved the interpretation and contextualization of historical data to make the clear conclusions about the past and its influence on the present and future. At the same time, the comparative analysis involved understanding public art installations as a socio-political phenomenon in different countries to identify general patterns.

At the second stage the data was analyzed and prepared for presentation by checking for possible errors, examining the qualitative data, and organizing the quantitative data. Here, the theoretical assessment of impact indicators was employed. It enabled to evaluate the existing theoretical frameworks, concepts, or

models that are relevant to the study of the role of public art installations and to outline the impact indicators that are necessary to contribute to the theoretical knowledge about the research problem. These indicators reflect their social, cultural, economic, and political effects and include the following: community engagement, media coverage, cultural awareness and education, artistic innovation, visitor statistics, influence of the installation on urban planning and development, sustainability and changes in public behavior.

The third stage related to the interpretation of the findings in the context of the research questions and presentation of the broader socio-political landscape where public art installations are applied widely. The researchers, employing the content analysis, enabled to compare the outcomes with the existing scientific literature to highlight the contributions and implications. When the socio-political impact of public art installations was explored, the content analysis involved the examination of textual and visual to identify the patterns of the research problem and to transform qualitative data into conclusions. Finally, a concise summary of the main findings and recommendations for artists, art experts, policymakers, and the general public was presented for further dissemination.

Results and Discussion

Philosophical interpretation of impact indicators related to public art installations

The study of public art installations through philosophical theories involves the analyzing of these artworks on the basis of different philosophical frameworks and perspectives. Since philosophy provides a number of analytical tools for examining the nature of art and its role in the society, the researchers are able to uncover the meaning and significance in public art installations more accurately (Smith, 2019). According to the recent findings, three philosophical theories were distinguished: aesthetic theory (McNally et al., 2023), semiotics (dos Reis & Elias, 2020), and postmodernism (Bekh et al., 2021). Aesthetic theory was explained by Immanuel Kant who argued that the aesthetic experience is based on subjective judgments of beauty and the feeling of pleasure or disinterest (Costello, 2021). Public art can be analyzed as an object that possesses an ability to evoke these aesthetic responses.

McNally et al. (2023) indicate that aesthetics considers the peculiarities of public art and, therefore, helps to distinguish it from other forms of human expression. Charles Sanders Peirce's semiotics is related to the theory of signs and symbols (de Waal, 2024). Public art installations can be assessed with the use of the signs and symbols they are characterized by and the meanings they convey. Further semiotics was extended to cultural analysis and showed that the signs are culturally constructed and can have multiple meanings within the society (dos Reis & Elias, 2020).

At the same time, postmodernism, developed by Jean-François Lyotard, is related to the fact that in the postmodern era, public art has lost their single value, leading to the plurality of voices and perspectives (Burdman, 2020). As a result, studying the socio-political impact of public art installations they should be analyzed as fragmented and plural object of a heterogeneous nature which may have many different meanings.





Figure 1. Impact indicators of public art installations. Source: authors' own development.

Considering philosophical theories, the following impact indicators of public art installations were revealed: community engagement, media coverage, cultural awareness and education, artistic innovation, visitor statistics, influence of the installation on urban planning and development, sustainability and changes in public behavior (dos Reis & Elias, 2020). Figure 1 demonstrates impact indicators of public art installations. The findings show that community engagement is a critical indicator in studying the sociopolitical impact of public art installations, as it reflects the extent to which these artworks influence the local community.

Petronienė & Juzelėnienė (2022) insist that when community members are actively involved in the artistic process, art becomes a reflection of their values, experiences, and aspirations. As artworks often address themes that are relevant to the community's history, culture, and current challenges, the use of public art installations can lead to greater political awareness and activism among local citizens. Media covers the influence of public art installations beyond the immediate community (Røyseng, 2021). Obviously, positive media coverage enhances the visibility and prestige of artworks, drawing attention to their cultural, social, and political significance. On the other hand, negative media coverage deforms the narrative around public art, affecting how it is perceived by the broader public and policymakers.

At the same time, public art installations serve as powerful educational tools, helping to raise awareness about cultural heritage and traditions (Banerjee, 2023). Also, they represent different cultural perspectives and, therefore, broaden people's understanding of the world and promote intercultural dialogue. Moreover, public art is used in both formal and informal education, providing the extensive opportunities for learning outside the traditional classroom (Pedroso et al., 2023).

For example, Huang & Zheng (2023) explain that public art installations are integrated into the curricula of educational institution or used as educational resources, enhancing cultural literacy and understanding among learners. Artistic innovation in public art installations promotes the social changes and cultural transformation as well (Young & Marshall, 2023). It was found that artistic innovation often separated from traditional forms and styles encourages artists to address the burning social and political issues.

Visitor statistics provides the quantitative data on the engagement of artworks with the public (Lee et al., 2020). Using such data, the researchers assess the popularity of public art installations. High visitor numbers suggest that the artwork captures public interest and is successful to perform its socio-political role. According to Downey & Sherry (2023), visitor statistics is an indicative of artwork's ability to integrate

with the community and its potential to have a certain impact on socio-political discourse. Obviously, public art plays a transformative role in formation of the physical and cultural landscape of the settlement. This can contribute to the development of a unique sense of place and provokes economic growth and tourism.

Other indicator, sustainability and changes in social behavior, contributes to raising the awareness about the environmental issues, promoting eco-friendly practices, and inspiring positive initiatives for sustainable development (Stoltz, 2023). For example, public art installations that use recycled materials encourage people to consider their impact on the environment and adopt more sustainable lifestyles. Considering impact indicators of public art installations above-mentioned, it is logical to proceed to the analysis of socio-political impact of artworks and understand their roles in transformation of the modern community.

Public art and socio-political transformations

Public art plays a significant role in driving socio-political transformations by promoting significant changes within the society. Firstly, public art installations strengthen cultural identity and foster a sense of belonging among community members (Kopiievska et al., 2023). This leads to a greater appreciation for diversity and a more inclusive society. Then, some public art projects empower residents to take ownership of their neighborhoods and advocate for positive change (Cheng at al., 2023). This helps to increase civic engagement and a stronger sense of community integration. Also, it was found that certain artworks address social justice issues, such as inequality, discrimination, or human rights abuses, can raise awareness and mobilize support for advocacy efforts (Topaz et al., 2022). Public art positively affects urban spaces, attract investment, and create economic opportunities (Demir Türközü & Caliskan, 2021).

Moreover, public art installations that challenge political norms or criticize government policies initiate the debates about important political issues and increase political awareness among citizens (Johnstone & O'Hare, 2023). Considering the importance of environmental protection and reduction in the anthropogenic load, public art installations often address the environmental issues, such as climate change or conservation, and they aim at raising the awareness about these issues and inspire action to protect the environment (Stoltz, 2023).

Scientifically, the socio-political impact of public art is studied using various methodologies to understand how public art influences individuals and whole communities. Above all, it was found that many scientific sources describe psychological influence that concerns how public art affects individuals' emotions, attitudes, and behaviors (Rietveld & Kiverstein, 2022). Husselman et al. (2024) mention that public art is an effective cognitive stimulus as well. Some findings indicate that public art shapes social interactions and community dynamics (Cheng at al., 2023). Form this point of view, public art installations influence the patterns of social behavior, such as community engagement, cooperation, and conflict resolution. Stoltz (2023) revealed that public art leads to significant behavioral changes in people.

It is important to mention that public art installations may have short-term and long-term effects (Blatt-Gross, 2023; Thompson & Day, 2020). Thus, short-term effect relates to immediate emotional impact and increased awareness about social, cultural, or political issues, making the viewers to engage with these topics more thoroughly. This leads to temporary changes in attitudes or behaviors. In this context some scholars state about enhanced aesthetic experience when public art provides a momentary escape from the routine and contributes to a sense of enjoyment. Also, long-term effect is associated with cultural impact and social change shifting the attitudes or behaviors over time (Thompson & Day, 2020). Some works describe the quality of public art to symbolize political ideals and aspirations, serving as a visual representation of a community's values (Katsambekis et al., 2022). Artworks that celebrate democracy, freedom, and equality can inspire people to strive for a better society and have profound long-term effect.

Understanding national identity through public art installations

Public art installations often serve as visual representations of a country's history, culture, and values (Cheng et al., 2023). That is why such artworks can play a significant role in promoting national identity (Grindon et al., 2023). According to the recent findings, public art installations belong to the historical narrative and contribute to the collective memory of the society through commemoration of historical events, representation of historical figures, reflection of community's cultural heritage and traditions ensuring that they are passed down to future generations (Mezzadri, 2021).



Public art installations can incorporate national symbols, such as flags, emblems, and anthems, which are important markers of national identity (Leahy, 2024). These symbols help to unify the population and create a sense of belonging to a larger national community. At the same time, reflecting and reinforcing the shared values and beliefs of a nation, such as freedom, democracy, and equality, public art installations not only represent the nation's major principles and ideals, but help to understand national identity (Wen & White, 2020).

A number of scholars studied the use of public art in schools to teach students to understand national identity and also foster their creativity, empathy, and a sense of community (Al-Zadjali, 2024). It was found that public art is integrated into the existing curriculum subjects such as history, social studies, and art (Huang & Zheng, 2023). Teachers use public art installations as case studies to explore historical events, cultural traditions, and artistic styles (Zhang et al., 2023). Other techniques include field trips and excursions, particularly museum visits (Pedroso et al., 2023). The special attention of educators is paid towards organization of art projects and workshops within the educational process (Mohd Hawari & Mohd Noor, 2020).

To perform tasks, students create their own artworks or express their attitudes towards the public art installation mentioned in the educational materials. Such tasks can be carried out individually or in groups. Some educators recommend to implement peer learning since it helps to strengthen community integration and associate themselves with the nation (Al-Zadjali, 2024). Importantly, various digital resources such as virtual tours, online exhibitions, and educational videos can be used to introduce students to public art from around the world (Young & Marshall, 2023). These resources can supplement the traditional educational materials and provide students with a broader information on the topic. Therefore, introducing public art within the educational process can enhance students' understanding of art, culture, and history, while also fostering a sense of community.

Public art installations in the time of war

War remains an important topic today due to its far-reaching impacts on societies, economies, and global politics. Despite efforts to promote peace and resolve conflicts through diplomatic means, many regions of the world continue to experience armed conflicts and warfare (Kot et al., 2024). As a result, public art installations play a significant role in the time of war being powerful symbols of resistance, remembrance, and resilience (Kuznetsova, 2021). Some findings insist that artworks provide the communities with a means to express their strength, creativity, and hope in the face of adversity (Leahy, 2024).

Also, they inspire courage and determination among people affected by war. Public art installations often serve as memorials to honor the lives lost during wartime (Demir Türközü & Caliskan, 2021). These artworks provide a space for reflection and remembrance, paying the tribute to those who sacrificed for their country. Many examples show that public art serves as a form of political attitudes towards war, critiquing its causes and consequences. Also, it is necessary to differentiate installations that promote peace, forgiveness, and understanding. Such objects help people overcome the post-war trauma and work towards a more peaceful future (Leahy, 2024).

Among post-war public art installations there should be mentioned the Memorial to the murdered Jews of Europe (Berlin, Germany), the Hiroshima Peace Memorial (Hiroshima, Japan), and the 9/11 Memorial and Museum (New York City, USA). In Ukraine which was affected by naval incidents, cyberwarfare, antiterrorist operation in the east since 2014, and further – by full-fledged Russo-Ukrainian war, there are many examples of such installation (Kuznetsova, 2021; Leahy, 2024). The Wall of Remembrance of the Fallen for Ukraine (Ukrainian: Стіна пам'яті загиблих за Україну) is one of the most well-known wartime public art installations. The wall serves as a memorial to those who have lost their lives and as a call for peace and reconciliation.

Presently, public art installations can be digital as well. They implement technology to create interactive, dynamic, and often immersive experiences in public spaces. These installations can range from digital projections and interactive screens to AR experiences (Young & Marshall, 2023). The Fallen 9000 is a powerful art installation created by Andy Moss and Jamie Wardley (UK). This project involved creating thousands of sand drawings on the beaches of Normandy, representing fallen soldiers. While the artwork was temporary, digital technology captured and shared the images widely online, creating a lasting digital memorial.

Symbolic boundaries of public art installations throughout the world

Definitely, public art installations possess symbols to create the socio-political impact since they are designed as powerful communicative tools to convey complex ideas and resonate deeply with the public (Bilozub et al., 2023). Symbols introduced in public art reflect the collective memories, historical events, cultural identities, and social movements, making them recognizable and emotionally engaging (Milne & Pojani, 2022). For instance, the use of a peace symbol in anti-war art instantly communicates a message of resistance and hope, evoking a strong emotional response. Provocative or ambiguous symbols challenge prevailing norms and invite diverse interpretations, sparking conversations and debates (Milani, 2022).

For example, Banksy's use of provocative imagery in street art often comments on political and social issues, prompting public discourse. Symbols also help create shared narratives, uniting communities around common histories, and enhancing the memorability of the art (Johnstone & O'Hare, 2023). Iconic symbols, such as the broken chains in memorials representing freedom from oppression, make the artwork easily recognizable and ensure its socio-political messages have a lasting impact (Smetzer, 2024). Thus, the integration of symbols in public art is essential for effectively conveying socio-political messages and engaging the public in meaningful ways. Table 1 represent symbolism used in various public art installations.

Table 1. *Socio-political symbolism of public art installations*

Continent	Country	Installation	Symbols
Europe	Germany	The Berlin Wall	Symbolizes the division between East and West Berlin during the Cold War; Depicts the themes of freedom, resistance, and the triumph of the human spirit over oppression or authoritarian regimes.
	France	The Great Arch of the Defense	Represents the country's progress and contemporary ambitions; Dedicated to humanitarian ideals and human rights, reflecting commitment to democratic values.
	Ukraine	The Holodomor Memorial	Symbolizes the tragedy of the Holodomor and serves as a reminder of the millions of Ukrainians who died as a result of Soviet policies.
North America	United States	Statue of Liberty	Represents the ideals of liberty, enlightenment, and opportunity.
Asia	Kazakhstan	Bayterek Tower	Demonstrates Kazakhstan's aspirations for the future, its openness to the world, and its desire to establish friendly relations with other nations; Symbolizes the unity and diversity of Kazakhstan's population.
	India	The Gateway of India	Symbolizes India's colonial past and its struggle for independence; serves as a symbol of the country's freedom and progress.
South America	Brazil	Christ the Redeemer	Symbolizes Brazil's predominant religion, Christianity; Represents peace and protection over the city.
	Urugway	La Mano (The Hand)	Symbolizes the power of the human spirit and the connection between humans and nature.
Africa	Nigeria	The African Renaissance Monument	Symbolizes Africa's renewal and rebirth; represents Nigeria's role as a leader in Africa and its commitment to progress and development.

Source: authors' own development.

Therefore, the findings prove that public art installations perform the significant socio-political impact within the society, including the formation of national identity, expressing political and social issues, improvement of education, informing the community over the past events, presenting ecological problem,



orientation towards strengthening of human rights, etc. Currently, public art installations have different representations and forms such as digital art, ecological art, sculptural installations, or murals. The assessment of socio-political impact of these installations shows that artwork is oriented towards the enrichment of cultural heritage of the people as well as the creation of meaningful and engaging experiences for the community.

At the same time, the research proves that public art often has subjective effects on different communities and individuals, making it difficult to quantify its influence. The research struggled to establish clear causal relationships between public art installations and specific socio-political outcomes, as these effects are often indirect and can be influenced by a number factors, such as media coverage, public policy, and pre-existing social movements. Besides, in some cases, the research focused on well-known and highly publicized installations, which could incline the findings toward more successful or well-discussed cases, while less visible works that also contribute to socio-political change, were not presented widely.

Conclusions

Public art is interpreted as a cultural phenomenon that contributes to the formation of collective memory, identity, and heritage within communities. Also, it is a form of cultural expression and communication or artistic expressions that are integrated into the settlement environment, typically in public spaces. The findings how that the functions of public art have evolved over time and have changed significantly. Currently, such artwork has increasingly been used as a form of social commentary and critique, addressing pressing issues such as politics, social justice, and the environment. Public art is used to provoke thought and stimulate debate on important issues in the society. Contemporary public art often emphasizes community engagement, urban regeneration, and environmental challenges. The types of public art include: monuments and memorials; sculptures and statues; and murals. At present, digital and multimedia art incorporating digital technologies has become popular and demonstrates new forms of creativity and expression.

The investigation revealed that there are three philosophical theories applied to study the impact of public art installations. They are the following: aesthetic theory, semiotics, and postmodernism. In this context, socio-political impact of public art installations is analyzed as fragmented and plural phenomenon of a heterogeneous nature. Considering philosophical theories, certain impact indicators of public art installations were distinguished, particularly community engagement, media coverage, cultural awareness and education, artistic innovation, visitor statistics, influence of the installation on urban planning and development, sustainability and changes in public behavior.

It was proved that public art plays a significant role in driving socio-political transformations by promoting significant changes within the society. Public art installations strengthen cultural identity, advocate for positive change, increase civic engagement, and address social justice issues. Also, public art positively affects urban spaces, attract investment, and create economic opportunities. The study demonstrated that public art installations have short-term and long-term effects. Thus, short-term effect relates to immediate emotional impact and increased awareness about social, cultural, or political issues, making the viewers to engage with these topics more thoroughly. Long-term effect is associated with cultural impact and social change.

According to the recent findings, public art installations belong to the historical narrative and contribute to the collective memory of the society through commemoration of historical events, representation of historical figures, reflection of community's cultural heritage and traditions. As a result, public art installations represent the nation's major principles and ideals, and help to understand national identity. It was stated that public art is actively used in schools to teach students to understand national identity as well as foster their creativity, empathy, and a sense of community.

Public art installations play a significant role in the time of war being powerful symbols of resistance, remembrance, and resilience. It was found that installations provide the communities with necessary instruments to express their strength, creativity, and hope in the face of adversity. Many examples show that public art serves as a form of political attitudes towards war and promoting peace in the war-torn communities. In the research different post-war public art installations were described. Therefore, public art installations possess symbols to create a socio-political impact since they are designed as powerful communicative tools to convey complex ideas and resonate deeply with the public.

The research can influence social and political discourse and be implied to guide the development of public art policies that are oriented towards the works promoting social justice and leading to positive change. Urban planners can use these outcomes to integrate public art into the urban landscape in ways that maximize its socio-political impact. Obviously, when the conditions under which public art drive changes are well understood, these professionals design spaces that encourage public interaction, dialogue, and reflection. Additionally, the research can inform artists about the socio-political impact of public art in the modern era and aspire them to create new projects within communities, ensuring that installations are not only aesthetical items but also socially meaningful and impactful works.

Further research should focus on the understanding of the impact of public art on various communities, individuals, and urban environments. This should include the analysis of its role in fostering cultural identity and promotion of social justice. The researchers should also concentrate on the investigation of innovative approaches to creating of public art objects, such as the use of digital technologies and interactive installations. Additionally, there is a need to examine the sustainability of artworks, especially those which are characterized by long-term effect. It is important to mention that addressing these areas will improve the practices in public art and ensures it is designed in a meaningful way for the community.

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How does globalization influence Ukrainian design? A critical analysis

Як глобалізація впливає на український дизайн? Критичний аналіз

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Abstract

The research problem is relevant given the subordination of all life processes to certain global trends (globalization), within which the development vectors of each individual country have recently been determined. The purpose of the study: to determine the features of design development in Ukraine, taking into account the general influences on globalization processes. Research task: to analyze literary sources and real projects. The research methodology involves systematization of the experience of domestic designers in the conditions of today's realities in order to identify the main challenges of the modern community and respond to them by means of design.

The study is divided into semantic blocks: analysis of approaches to the study of design based on literary sources; study of the features of the reflection of globalization processes on the development of the sphere of culture and art, which includes design; analysis of modern design

Анотація

Проблема дослідження є актуальною з огляду підпорядкування ycix процесів життєдіяльності певним загальносвітовим тенденціям (глобалізація), у межах яких останнім часом визначаються вектори розвитку кожної окремо узятої країни. Мета дослідження: визначення особливостей розвитку дизайну в Україні з урахуванням загальних впливів процесів глобалізації. дослідження: провести аналіз Завдання літературних джерел та реальних проєктів. Методика дослідження передбачає систематизацію досвіду роботи вітчизняних дизайнерів за умов сьогоднішніх реалій для визначення основних викликів сучасній спільноті та «відповіді» на них засобами дизайну. Дослідження поділено на смислові блоки: аналіз підходів до вивчення дизайну на основі літературних джерел; дослідження особливостей відбиття глобалізаційних процесів на розвитку сфери культури та

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practices in Ukraine, taking into account the trends of globalization and the peculiarities of Ukrainian culture. The choice of projects and initiatives for analysis is primarily due to their relevance in the cultural life of modern Ukraine. Then the task was set to consider those areas that are currently continuing to actively develop. It was found that the development of various design areas in Ukraine is in line with trends new global (implementation of digitalization, technologies, digitalization, sustainable development, finding one's own path). The economic component influences the choice of the potential audience of a design product, the principles of its positioning in the market. The concept of sustainable development is reflected in the priority of innovative technologies and materials for creating a design product, new methods and forms of design, and the development of a full "life" cycle. The socio-cultural component has activated the need for self-identification through design as a communication technology. Now the aspirations for the development of design in line with national traditions have become as relevant as possible. The need for physical renewal of the environment and the assistance of the world community have determined the possibility of more active use of technical and technological innovations in the field of design. Further studies involve covering the formation and use of national codes in various areas of design, as well as the implementation of innovative ideas in educational practices.

Keywords: cultural integration, visual communication, artistic trends, cross-cultural design, aesthetic changes.

мистецтва, до яких належать і дизайн; аналіз сучасних дизайнерських практик в Україні з урахуванням загальних тенденцій глобалізації та особливостей української культури Вибір проєктів та ініціатив для аналізу обумовлений насамперед їх актуальністю у культурному житті сучасної України. Далі було поставлено завдання розглянути ті напрямки, які зараз продовжують активно розвиватися. Було виявлено, що розвиток різних напрямів дизайну Україні В відбувається у руслі глобальних тенденцій (впровадження нових технологій. цифровізація, діджиталізація, сталий розвиток. пошук власного шляху). Економічна складова впливає на вибір потенційної аудиторії продукту дизайну, принципи позиціонування на ринку. Концепція сталого знайшла відображення розвитку пріоритетності інноваційних технологій матеріалів для створення дизайн-продукту, нових методах та формах проєктування, розробці повного «життєвого» Соціокультурна активізувала складова необхідність самоідентифікації за допомогою дизайну як комунікаційної технології. Зараз максимально актуалізувалися прагнення розвитку дизайну у руслі національних традицій. Необхідність фізичного відновлювання довкілля та допомога світової спільноти зумовили можливість більш активного використання технічних технологічних інновацій у сфері дизайну. дослідження передбачають Подальші висвітлення формування та використання національних кодів у різних галузях дизайну, а також реалізацію інноваційних ідей у освітніх практиках.

Ключові слова: культурна інтеграція, візуальна комунікація, художні тенденції, крос-культурний дизайн, естетичні зміни.

Introduction

In the modern world, globalization manifests itself in various spheres of society; it has covered the global processes of trade and production, commodity and financial markets, media and communication systems, transport systems and computer programs, fashion and, of course, design (González-Zamar & Abad-Segura, 2021; Ozdemir, 2022).

Modern humanitarian studies in the field of culture analyze it through the concept of cultural globalization, which includes a wide range of global trends and processes (the desire to establish a global ideology and order; limiting the independence of national states; creating powerful media networks) (Hu, 2023; Bian & Ji, 2021; Dehtiar, 2020; Pasko & Chernikov, 2023). The problem becomes the spread of cultural models of the most developed countries to the entire world community, stimulation of migration processes, which as a result lead to the formation of multicultural communities. This paper examines the influence of these trends on the development of design in the artistic space of Ukraine. Understanding this process is necessary for a conscious choice of development vectors, rather than formally following general trends, which leads

to a loss of identity, depersonalizes the bearers of culture and deprives them of opportunities to realize national potential.

The temporal scope of the study covers the events of the twentieth century and reaches the present day. This is due to the need to consider basic concepts and the processes of their development over time.

The geographical scope of the study covers the entire world community, with special emphasis on Ukraine, as stated in the title of the article. Issues of globalization influences through world experience are comprehended within the artistic space of Ukraine.

The concept of "globalization" was formed in the last quarter of the twentieth century and today is considered as the dominant concept of world development. It refers to global economic, political, social and cultural integration (Braw, 2024; Srivastava, 2019).

Design as a field of activity aimed at organizing the surrounding subject environment is often identified as one of the factors in the development of cultural globalization. This is due to the idea of design as a tool for creating a more comfortable life, and in this case the designed subject environment loses connection with a certain ethnocultural space and forms its own value categories (Guan & Wang, 2022). Design supports life processes by assigning certain aesthetic qualities to them and to space (Pidlisna et al., 2023). This causes the emergence of new behavioral models, orienting a person towards new cultural values and preferences.

Design initially emerged as an international phenomenon. This is clearly seen in the activities of teachers and students from different countries at the Bauhaus art and educational institution (Germany) at the beginning of the twentieth century. The so-called "international style" was formed here, marking the beginning of the globalization of modern culture. The next step was the movement of teachers and students to America in the 30s of the twentieth century. Here we can already talk about a dialogue of cultures based on the interaction of traditional (national) cultures with the universal principles of creativity (Kostiuchenko, 2020).

Since the end of the Second World War, globalization trends have swept the entire world. This concerned the spheres of economics (the creation of the International Monetary Fund and the World Bank) and law (the establishment of the United Nations, the adoption of the Declaration of Human Rights), which laid the foundations of the world economy and global political philosophy.

The response to globalization was the appearance in design of local features associated with the manifestation of national identity (Botvyn et al, 2022). An example is the emphasis on Scandinavian design, followed by Japanese design. It was these two cultures that were able to form their own unique tradition in design, stand out from the general background, and then again reach the international level, while maintaining their originality.

Ukraine also has long-standing cultural traditions, which allows it to form its own cultural code in response to global trends in the development of various design trends in the world. Globalization processes (technology, communications) can work for the benefit of building our own vector of development.

A review of the literature allows us to draw conclusions about the need for a more detailed consideration of the influence of globalization processes on the development of design in Ukraine, since our country has its own characteristics of the formation of artistic practices, national traditions and priorities, and difficult living conditions in a state of war. Researchers highlight general trends in the development of design practices in Ukraine and the world, and pay attention to individual areas. But the works lack an analysis of the patterns of modern design development in the situation of globalization of all world processes.

The article has the following structure, which is due to the peculiarities of the chosen research topic: the first part examines approaches to the study of design, which makes it possible to approach the analysis of the current situation of its development in Ukraine as correctly as possible; the second part is aimed at studying the features of the reflection of globalization processes on the development of the sphere of culture and art, which includes design; the third part is devoted to the analysis of modern design practices in Ukraine, taking into account the general trends of globalization and the peculiarities of Ukrainian culture.



The purpose of the study is to determine the features of design development in Ukraine, taking into account the general effects of globalization processes. Based on this, the following tasks were defined: to conduct an analysis of literary sources; consider real projects, focusing on their reflection of the impact of globalization both in general concepts and directly in design details.

The sphere of contemporary design in Ukraine as a whole is poorly researched. This is especially true for issues of global development, which is the focus of this article. An attempt is made to identify the vectors of development of different areas of design in the context of globalization trends based on projects and initiatives that are currently being implemented in Ukraine. The analysis of unique creative experience in the modern conditions of Ukraine's existence is valuable.

Literature Review

The topic of globalization has been touched upon in many studies, which suggests a significant degree of study of this issue. Researchers have identified the reasons for the emergence of globalization processes, the spheres of life affected by globalization, and analyzed its consequences. Of particular interest are works devoted to cultural globalization, since design can be considered as one of the manifestations of culture (Cîrstea & Mutebi, 2022; Derman, 2020; Rawashdekh, 2019).

Researchers are studying the features of the interaction between globalization and culture in the modern world, identifying the positive and negative aspects of this process (Makarova, 2022).

Some publications are focused on examining various trends in design from the perspective of modern social processes in society and global technical progress. Multimedia design, as one of the most technologically advanced, is studied taking into account the innovations used by practicing designers (Pasko & Chernikov, 2023).

General works are reviews with an analysis of changing trends over time, highlighting different authors, their contribution to the development of a particular direction, and determining regional specifics.

Environmental issues in design are also raised quite often, regardless of its focus. All aspects are analyzed, from the development of a design product (concept and design stage), to its implementation in material, production and operation stages (Lahoda et al., 2023; Nebesnyk et al., 2023).

Attention is paid to the study of Ukrainian design in works of both a general nature and narrowly focused ones (Bondar, 2021; Yakovets & Chuhai, 2022). Artistic practices are separately considered as a symbiosis of fine art and design (Lozhkina, 2019), based on significant events, the history of development, their originality in Ukraine, and the influence of external processes on them are highlighted.

Various projects related to the field of design were analyzed separately (Kryvetska et al., 2019). They highlighted current problems and possible ways to solve them. A significant part of the projects was aimed at identifying regional characteristics, which automatically indicates the need to highlight a unique sociocultural component when determining the vectors of development of a particular design direction.

In works devoted to Ukrainian object design, an attempt was made to classify it, highlight the most relevant directions, and main characteristics (Maznichenko, 2021). Separately, attempts to catalog object design objects should be considered; they contain a large amount of graphic and factual information, as well as analysis of the presented works from the standpoint of aesthetics, relevance, uniqueness and author's style, reflection of time trends, etc. (Bezuhla & Honcharenko, 2022; Bondar, 2021).

Narrowly focused research concerns specific issues in different areas of design. Among them, attention is paid to ornamentation as one of the aspects of the manifestation of identity in modern images, the use of traditional ornamental elements in textiles, ceramics, graphics, etc. (Chystikov, 2021). General problems are highlighted, namely, formal copying of elements, lack of meaning of composition, disharmony of color schemes, etc., which are characteristic of different countries and regions in the conditions of globalization leveling – the transition to universal symbols and forms (Kryvetska et al., 2019). Recommendations are also given for further study and use of patterns when constructing a pattern, its stylization, and analysis of the context of use of the pattern.

The field of advertising design is highly influenced by the external environment and modern requirements of society (Martynenko et al., 2023). Researchers are exploring the possibility of using tools from the field of marketing, which is one of the manifestations of globalization in design - the active use of technological approaches and solutions in related fields (Dew et al., 2022; Liang, 2022).

Some of the work is devoted to determining modern priorities in Ukrainian design, prospects for development in a full-scale war, preserving one's identity in the context of globalization processes and external aggression (Chekal, 2021a, 2021b; Gula et al., 2023; Pragmatika.media, 2023).

You should also pay attention to the projects of Ukrainian designers during the full-scale war. Indicative is the inclusion of the Ukrainian project "Kyiv Vibes. What Matters" into the main program of Vienna Design Week. The design of two Ukrainian rooms demonstrated "new optimism" (Elle, 2023). The Ukrainian project became a new experience of transformation and overcoming borders to unite people.

Methodology

The research methodology is based on an integrated approach, since the work examines categories and concepts related to various types of activities. Critical analysis is necessary to study and systematize sources. The historical method was used to analyze globalization processes over time. Analytical and structural methods were used in structuring and presenting the factual material.

The research sources are represented by scientific articles, monographs, as well as factual material that represents the subject of the study, i.e. works of designers of the last five years. The works relate to different areas of design and allow us to talk about certain trends in the development of these areas both in the world and in individual countries. Separately, socio-cultural processes and demands of society, both aesthetic and mental, are studied, which are determined by the level of development of society and the situation in the world as a whole. Globalization influences are traced at a general level in terms of the life of the world community. The issue of the development of design in Ukraine in a difficult situation, which is also to a certain extent a consequence of the desire for globalization in its negative direction, has been separately studied.

Thus, having identified common globalization influences based on research and publications, we evaluate them as applied to the field of design at the global level, and then in Ukraine.

The choice of projects and initiatives for analysis is primarily due to their relevance in the cultural life of modern Ukraine. Then there was a task to consider those areas that are currently actively developing. All data on projects are taken from open sources, have links, which is an important principle of compliance with ethical standards.

For the analysis, general scientific methods of comparison and generalization were used, as well as special methods adopted directly in the design: visual, verbal, subject.

The objectivity of the analysis results was ensured by clearly defined criteria for comparing projects, and a formal and logical approach to their description.

Results and Discussion

Design research uses various approaches, the choice of which is determined by the specific aspect of its consideration. Design as a cultural phenomenon is studied using a cultural approach. Design as an art form requires art historical interpretation. New directions in design: web design, media design, etc. - belong to the field of communications, although in general the entire subject area of design has such characteristics. This is where the semiotic approach arises. The technological focus, which distinguishes design from art, requires technical approaches that make it possible to record the physical characteristics of the object of study (Bondar, 2022; Chen, 2022; Ekkert et al., 2019; Wang & Zhang, 2020; Zhu, 2020). A block diagram of approaches to studying design is presented in Fig. 1.



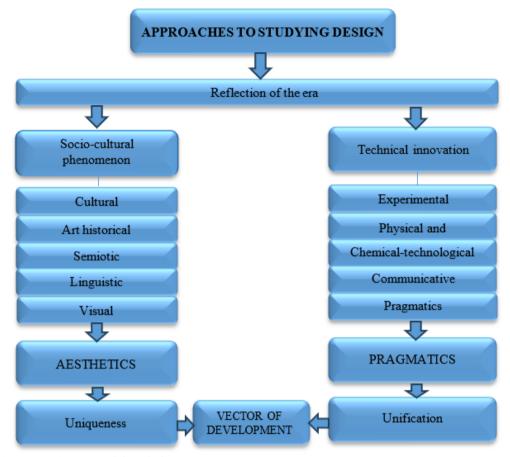


Fig. 1. Approaches to studying design.

There are many definitions of globalization in the world and Ukrainian scientific literature, but due to the versatility and complexity of this process, none of them gives a complete picture. Most experts understand globalization as «... an objective socio-economic process, the content of which is the growth of interconnection and interdependence of national economies, national political and social systems, national cultures, as well as the interaction of man and the environment» (Sytnyk, 2020).

Among the concepts of the emergence of globalism, the concept of Attali (1992) is actively discussed, who identified three stages in the history of human development: religious (the cult of God and the figure of the priest), aggressive (the cult of power and the figure of the king, emperor) and commercial (the cult of money with the figures of financiers, merchants). Attali (1992) considers the first two stages to be unsuccessful attempts at globalization, since they did not ensure the complete erasure of the boundaries between nation states, because the globalization potential of religion and armed force is not capable of uniting humanity. Attali (1992) entrusts the mission of complete globalization of humanity to the speakers of the world financial elite - the "new nomads", who are visionaries of the newest form of the trading system and world order, full-fledged citizens of the world, free from national and cultural prejudices (Sytnyk, 2020).

Sytnyk (2020) believes that finance will never conquer identity, therefore, the third attempt at globalization, which is the most powerful and aggressive, also fails. National identity and freedom come to the fore in all types of activities, not excluding design as an artistic practice.

The globalization of society has become a characteristic feature of the beginning of the 21st century. The information space (including visual) has expanded significantly, and it has become more difficult to navigate. However, at the same time, globalization processes have necessitated the development of uniform standards and created opportunities for expanding communication links (Basii et al., 2023; Diadiukh-Bohatko, 2021; Kuzmenko et al., 2022). In design, we can also observe the adoption of standard means and formal design techniques, monitoring of economic feasibility for the implementation of a mass product (Dehtiar, 2020; Zhang & Zheng, 2022), on the basis of which there was a danger of the development of uniformity. However, design in such a situation can take on the role of self-identification of various

images in an environment striving for unification. Such trends can be traced through the example of the active development of various areas of domestic design. They are associated with globalization and sociocultural transformations directly in Ukraine.

Design as an artistic practice belongs to the field of culture. Therefore, one should refer to the message of Makarova (2022) regarding the interaction of globalization and culture. She points out the positive aspects of the influence of globalization on the development of contemporary art, which are manifested in the inclusion of individual national cultures in the international context, additional means of stimulating the financing of various initiatives, and increasing interest in creativity. Cultural globalization, on the one hand, has provided opportunities for the exchange of cultural values and traditions, their popularization, on the other hand, it can lead to the establishment of the predominant role of the most powerfully represented cultures, absorbing all others. In this case, a significant part of theorists regard this as a loss of cultural values, which encourages the revival of national culture (Al-Qudah & Al Shari, 2020; Bondar, 2020; Feby & Fahmy, 2022).

Chekal (2021a; 2021b), a professional graphic designer and calligrapher, researcher, has his own unique author's style and philosophy, which is reflected in his works and discussed in his interviews and publications. The geography of his work is very wide - this is also inherent in his approach to work, the perception of design as a universal communicative tool that does not accept boundaries. But with such a globalization approach, the "Ukrainian" trace is clearly visible in his work. With his creativity, he contributes to the promotion of all domestic graphic design as recognizable and in demand on the world market (Udris-Borodavko, 2023).

That is, in general, we can talk about the revival of traditions as a response to the formation of a modern universal cultural environment, in which the concept of universal design is also present. Unification as a shift towards industrial production of designer products is opposed to the presence in them of certain features of a particular culture, and these are usually associated with ethnicity (Fedoryshyn et al., 2023; Kardashov et al., 2022).

Lopukhova (2021) also emphasizes the presence of its own line of development in Ukrainian graphic design, despite all external influences. She notes that national Ukrainian design is based on the values of traditional culture, while taking into account modern technologies and the needs of social development.

The close connection between globalization processes and design can be seen in the constant improvement of methods of transmitting information. The basis was the unification of the design of texts in the first printed books of the Renaissance: standard page size, the presence of a font base, the arrangement of text and illustrations, the use of color in books of a specific purpose and content - all this made it more international than national. Since the mid-19th century, newspaper printing has worked in a similar way. Next, a unified visual system for presenting information on TV and computer monitors was formed. Currently, the era of digital art has arrived, which has been intensively developing since the turn of the 20th – 21st centuries and is international in its technological basis (Bilozub et al., 2023).

This is where the issue of technology comes into play. They are the ones who set the global trend in modern design, being an important attribute of social development, which opens up opportunities for innovation and transformation in various fields, including design (Kyselova, 2022). Artificial intelligence plays a significant role in the connections between technology and society (CASES, 2022; Shandrenko & Dubas, 2019; Storozhyk, 2024). From a purely technical point of view, it simplifies the solution of routine tasks: tracking and analyzing the latest trends in real time, comparing solution options, finding ways to optimize space. But the main tasks of creating a design product are solved by the designer, he sets the optimal parameters, formulates the operating conditions of the AI, which ensures the individualization of each solution and avoids possible templates.

Lopukhova (2021) notes that understanding design technologies has made it possible to assess the degree of influence of graphic design on modern society. In the context of a radical revision of existing values, the activities of graphic designers contribute to the formation of a new construct of social reality.

Bondar (2021) points to the active and successful participation of Ukrainian designers in international exhibitions, which makes it possible for this trend to move from the local to the global level. It stands out



on the world stage due to the use of national cultural traditions and unique Ukrainian craft techniques (Diachenko, 2020).

O. Chekal actively participates in various cultural projects, for example one of the latest "A Brush with Silence", where calligraphers from all over the world wrote texts in support of Ukraine. In his reports, publications, and creativity, the designer demonstrates that "...Ukrainian design modern thinking can be useful for other cultures and scripts" (Tysiachna, 2022). Thus, O. Chekal uses globalization as a universal means of communication to disseminate the creative experience of Ukrainian calligraphic designers.

Experts also focus on the professional training of future designers, during which it is possible to develop and implement relevant ideas. A group of teachers, relying on environmental concepts, proposed an original methodology for continuous environmental education, in which professional training is supplemented by environmental training. The methodology of integrated teaching has been tested in several universities and has shown high results (Calavia et al., 2023). Ecodesign as a modern trend in Ukraine is additionally supported by the introduction of traditional materials and technologies that have come down to us from ancient times. An example is the development of the Zhorna Workshop (https://www.instagram.com/archaic_ukraine/). In their activities, designers combined an environmental approach with the traditions of Ukrainian folk culture - both at the symbolic and subject levels. Their products have become a modern trend, one of the markers of Ukrainian identity at international festivals.

In modern Ukrainian design there is a return to authentic means of artistic expression, which allows it to take a serious place in the international arena. The emphasis is on the development of new means and techniques based on the creative rethinking of ethnic material, that is, the achievements of folk culture and understanding of the original mentality of Ukrainians (Lopukhova, 2021; Katsevych, 2021; Kotubei-Herutska, 2023). Maznichenko (2021) regarding object design, he notes a pronounced need for self-identification, turning to roots, and searching for a national code (Fig. 2).

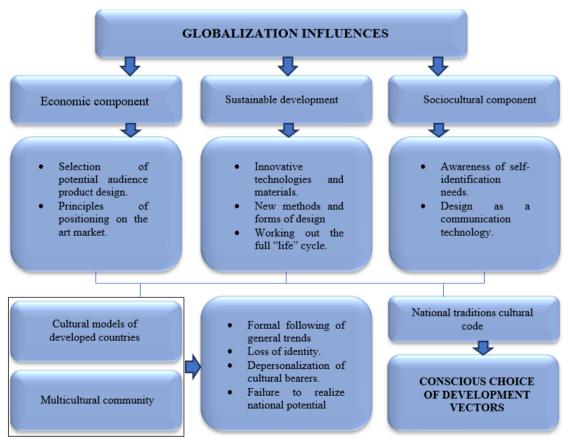


Fig. 2. Results of globalization influences on the development of design.

Globalization has contributed to the entry of Ukrainian design into the international arena by simplifying communication processes and simplifying access to innovative technologies. At the same time, she stimulated a conceptual definition of the direction of design development in the context of the search for one's identity. Expanding borders required self-determination and the search for our own basic principles of development to strengthen competitiveness.

Conclusions

Globalization in relation to cultural processes in society is one of the current topics of recent research, since it concerns the independent development of various communities in a common context. The degree and nature of influences, the persistence and formalization of national culture and traditions in this case allow us to form our own specific vector or dissolve in the flow of global trends dictated by developed countries. The influence of globalization processes on culture has positive and negative consequences, which are manifested in the traits it has acquired in the modern world. The danger of leveling traditions is a global problem, where manufacturability and versatility are becoming a priority. This also applies to the design field.

Design as a process is characterized by a constant presence in the life of modern society; it is implemented in various spheres and is constantly changing, sensitively responding to the development of technological progress, cultural and social life of society.

Among the main trends in its development are:

- In terms of stylistics a certain eclecticism in relation to the choice of style (appeal to different historical periods, national, ethnic traditions);
- Following generally recognized "icons" of style;
- Desire to implement the formula for sustainable development;
- Individualization due to the desire for self-identification.

Design as a cultural process is based on general trends set by leading world-class designers. They, in turn, form their own vision of the line of design development, which allows each direction to be individualized, despite their global nature as a response to pressing problems of modern society.

Thus, at present we can talk about a rather unique situation when common problems relating to different spheres of society are being formed at the global level. This, in turn, finds a response in design (images, stylistics, materials, technologies, etc.), but in quite diverse manifestations. In addition, globalization, on the one hand, neutralizes the manifestation of individual traits and provokes the copying of popular trends, which is due to the economic feasibility of mass production. On the other hand, it stimulates the development of new unique directions, pushes us to search for completely different forms of self-expression and experiments. This is what drives the continuous development of design in all industries.

Separately, it should be noted the results of the influence of the socio-political situation on the choice of directions in the development of design in different countries, and directly in Ukraine. The need for a clear establishment of the state in the world community requires the formation of self-identification and its bright, expressive demonstration. In fact, design as a means of communication is a translator of current national ideas and messages, which we can observe in the example of the participation of Ukrainian designers in world-class professional cultural events. Here, an appeal to the spiritual traditions of the Ukrainian people, cultural foundations, and folk art comes to the fore.

A promising development of this research topic, in our opinion, is a more detailed examination of the "responses" of designers of different directions to the global challenges of modern social development. How do they manifest themselves, what unique features does this or that design product receive due to increased manufacturability, environmental safety requirements, updated aesthetics and social issues.

The practical significance of the study is that it sets global vectors for the development of design in Ukraine in the near future, focuses on the most significant achievements of today and the prospects for the development of its various areas, taking into account their specifics. The training of professional personnel in the field of design should be based on existing experience and take into account the trends in the development of design in general, and its features due to the regional context. The key points identified in



the work related to the manifestation of national identity can be used as basic guidelines in promoting Ukraine in the world cultural space, determining its place in it. This is also important in terms of the political status of the country in the international arena, since it increases its recognition, demonstrates independence and uniqueness in terms of cultural development, and allows it to become a full-fledged member of the European community.

Further research should be aimed at the process of introducing successful design practices into the educational process, since this is where future creative professionals are formed. An important point is the establishment of communications between students and design practitioners both in Ukraine and abroad. A relevant topic for further research, in our opinion, is the analysis of the participation of Ukrainian designers in international competitions: author's ideas and themes, presentation format, features of Ukraine's positioning, opinions of international experts. All this will contribute to the inclusion of Ukrainian designers in the professional international community and the emergence of Ukraine as a whole in significant positions in this area.

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Transformation of the content of the category of 'artist' in the modern era in philosophical and art historical discourse

Трансформація змісту категорії митця в добу нового часу у філософсько-мистецтвознавчому дискурсі

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Abstract

The article aims to explore the evolution of the concept of the artist from the Renaissance to the modern era, focusing on how cultural, philosophical, and socio-economic factors have redefined the artist's role in Western society. The study examines the shift from viewing artists as artisans or servants of religion and power to recognizing them as autonomous creators embodying individualism, creativity, and genius. To achieve this, a multidisciplinary methodology was employed, integrating historical analysis, philosophical examination, and socio-cultural contextualization. The research draws on primary sources such as archival documents, artistic manifestos, and philosophical texts, alongside secondary sources including critical essays and historical analyses. The study's theoretical

Анотація

Стаття присвячена дослідженню проблеми трансформації філософсько-мистецтвознавчої категорії «митець» в історичній ретроспективі. Автор аналізує еволюцію концепції митця в контексті культурних та інтелектуальних змін епохи Нового часу, визначаючи соціально-економічних, політичних культурних чинників на місце та статус митця в системі суспільних зв'язків. Досліджується, як філософські ідеї та мистецькі практики взаємодіяли та впливали на розуміння ролі та сутності митця. Зокрема, увага приділяється тому, як нові ідеї про індивідуалізм, творчість та геній, що виникли в цей період, трансформували традиційні уявлення про митця як ремісника або служителя релігії та влади. Стаття також розглядає, як ці зміни

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framework is grounded in concepts from art philosophy, socio-cultural theory, and intellectual history.

The results highlight significant transformations in the artist's status and self-perception, emphasizing the impact of Enlightenment ideas on creativity and individualism, the influence of socioeconomic changes on artistic autonomy, and the evolving relationship between artists and their patrons. The article concludes that these shifts have had a profound and lasting impact on Western art philosophy and contemporary understandings of art and the artist.

Keywords: aesthetics, culture, patronage, art, artist, personality, creativity, philosophy, artistic creativity, New Age.

відобразилися в практиках і самосвідомості самих митців, а також у їхніх стосунках з суспільством та патронами. Підкреслюється значення цих змін для подальшого розвитку західної культури та філософії мистецтва, а також вплив на сучасні уявлення про мистецтво та митців.

Ключові слова: естетика, культура, меценатство, мистецтво, митець, особистість, творчість, філософія, художня творчість, Новий час.

Introduction

In the study of art history and philosophy, the category of the "artist" holds a special place, as its analysis allows us to better understand the essence of the creative process and the role of the individual in culture.

The concept of the "artist" encompasses various aspects of artistic activity, and its transformation over the centuries reflects changes in society, worldviews, and artistic forms. Throughout different historical periods, from antiquity to modernity, the status of the artist has evolved, incorporating new functions and roles. Thus, studying the evolution of the concept of the "artist" is key to understanding not only art but also the socio-cultural processes of different eras.

The eternal and most challenging problem that has always faced humanity is the problem of knowing oneself, one's creative capabilities, and their realization. "Know thyself," said the wisest philosopher of all time, Socrates. However, it is even more difficult to study the factors and conditions under which an ordinary person becomes a creative person, commonly called an artist. The meaning of the concept of "artist" has changed throughout human history. New types of creative activity have emerged, the human worldview has acquired new content, and new forms and genres of art have been formed. With each new historical stage, the meaning of the concept of "artist" expanded, its social status in society changed, new social roles were added, and the number of functions increased. In today's era of globalization, internationalization of the world and culture, widespread use of scientific technologies, artificial intelligence, and the transformation of humanity, the question arises with renewed vigor: who is an artist, what role does he or she play today, and what are the ways to preserve the creative personality in the technogenic post-industrial information age? The answers to these questions can only be found through the reconstruction of the process of transformation of the concept of the artist in the history of philosophical, aesthetic, and musicological thought.

The study of the concept of the "artist" is particularly relevant and directly connected to contemporary debates about the role of the creative personality within the context of modern socio-cultural transformations driven by globalization, digitalization, and the use of advanced computer technologies. In this era, where artificial intelligence, robots, or machines increasingly participate in the creative process in place of human artists, the question of preserving the artist's individuality becomes critical for both scholars and practitioners in the arts. This heightens the significance of examining the historical evolution of this concept.

Therefore, the issue of creative expression is gaining importance in a world where technological progress is reshaping traditional art forms and altering perceptions of creativity. Consequently, there is a need for a detailed analysis of the essence of the "artist", its transformation, and its evolution throughout human history. This study makes a significant contribution to the field, as it not only traces the evolution of the concept of the 'artist' across historical epochs but also illustrates how societal changes influence creative processes and the status of the artist within culture.



The purpose of this article is to analyze the prerequisites for the transformation of the concept of "artist" in the modern period of the seventeenth to nineteenth centuries, which originated in the Renaissance with the works of Leonardo da Vinci; to identify the peculiarities of the interpretation of this concept; and to determine the factors influencing the change in the status of the artist in society, as well as the reasons for the change and expansion of their functions, we examine examples of manifestations in various forms of art.

The article consists of several key sections. The first section discusses the prerequisites for the transformation of the concept of the 'artist' within the philosophical and art historical context of the modern era. The second section focuses on the socio-economic and political factors that influenced changes in the status of the artist and their role in society. The third section analyzes the expansion of the artist's functions across various art forms. The final section summarizes and draws conclusions about the evolution of the concept of the artist and its significance in the contemporary world.

Literature Review

The categories of "artist," "painter," and "creative personality" have long been reflected in studies of philosophy and aesthetics. The first attempts to study this topic can be traced to the works of Aristotle, Leonardo da Vinci, M. Montaigne, I. Kant, G. W. Hegel, and F. Schiller, in which the foundations of the problem were formulated. Philosophers and art historians began to take a deeper interest in the role of the creative personality in the existence of society in the nineteenth and twentieth centuries. This topic was addressed in the works of M. Bakhtin, A. Bergson, E. Husserl, M. Kagan, S. Rappoport, M. Sumtsov, I. Franko, C. Jung, and others. A significant contribution to the development of the concept of "artist" in the context of socio-cultural phenomena was made by L. Smorzh (2001; 2005). A more detailed interpretation of the role and significance of the artist in the musical culture of the Renaissance is provided in the work of O. Komenda (2016). Interesting ideas on this topic are found in the works of M. Bird (2019), M. Vaskiv (2022), M. Kalashnyk & Novikov (2017), N. Opolska (2017), and I. Sitnikova (2021).

In the study of art and the transformation of the concept of the artist, the works of prominent twentieth-century philosophers play an important role. These philosophers examined new trends in the development of art and discussed this topic within the framework of their own concepts, which emerged in the new historical context of the second half of the twentieth century.

For example, Morris Weitz (1956) proposed the idea of an 'open concept' of art. He argued that attempts to define art within rigid frameworks are destined to fail, as art is constantly evolving and expanding its boundaries. Consequently, the concept of the 'artist' also lacks clear characteristics and should be considered within the broadest artistic context. Arthur Danto (1997) expanded on this idea, suggesting that art has reached a stage where it no longer adheres to specific styles or canons. He introduced the concept of the "end of art," positing that art has ceased to be merely an aesthetic object and has become a subject of philosophical reflection.

Umberto Eco (2020) viewed art as part of the broader cultural process, with a focus on semiotics and symbolism. For him, art was not only an aesthetic phenomenon but also a means of communication closely linked to other cultural forms. He believed that the artist serves as a bridge between art and society. Robert Paul Ziff (1951), like Morris Weitz, was interested in defining art and exploring its aesthetic concepts. He considered art to be a complex and multifaceted category that extends beyond traditional definitions.

William Elmer Kennick (1979) examined the relationship between art and philosophy, viewing art as a means of cognition and philosophical dialogue, where artistic creativity serves as a way of understanding life and the world. Graham Gordon (2005) also contributed to this discourse with his work on the philosophy of the arts, emphasizing the importance of aesthetics in understanding art.

Thus, it is possible to observe a broad discussion in the academic field about the future of not only global art but also the role and fate of the artist.

The works of Ukrainian researchers Bogutskyi et al. (2013) are important in studying the role and place of the artist in the twenty-first century. In their monograph, they analyze new forms of cultural expression and

the artist's role within the context of modern socio-cultural transformations. They emphasize that the artist, under current conditions, becomes a conduit for social change and reflects new societal trends.

Rogotchenko, in his work Art History: Reflections and Life (2018), highlights the significant transformation of the artist's role in the face of modern socio-cultural changes. He views the artist as a subject who evolves under the influence of globalization and technological progress. Similarly, the studies of Horbatiuk et al. (2015) explore the place and role of creative individuals within the changing context of modern civilization. The issue of the artist's freedom in the twenty-first century is examined by Tabachkovskyi et al. (2005) in the collective monograph Man in the Civilization of the XXI Century: The Problem of Freedom. Although their work does not directly address the individual artist, it considers the broader context of the artist's place in contemporary cultural and artistic processes.

All these scholars have made valuable contributions to understanding the artist's role, emphasizing various aspects of their transformation in response to changing socio-cultural realities. The artist is portrayed as a creator, philosopher, symbolic communicator, and active participant in social processes.

Thus, despite the significant contributions of these researchers to our understanding of the artist's phenomenon, modernity requires a renewed perspective on their ideas. The current era of global change and technological progress raises new questions for researchers, demanding that art respond to contemporary challenges. Today, the artist is not only a creator but also an active participant in social transformations, a role that requires constant rethinking and exploration. However, the roots of the modern understanding of the artist lie in the historical past, making it crucial to study the formation of this important philosophical and artistic category during the modern era, when the process of shaping modern civilization was just beginning.

The problem of transforming the content of the category of "artist" and changing its status and role in public life in the modern era has not yet received comprehensive coverage in scientific research. Understanding the philosophical and art historical category of "artist" has for the first time become the subject of a comprehensive scientific study. The prerequisites for changes in the interpretation of this concept, which appeared in the humanistic culture of Renaissance Italy and were described by Leonardo da Vinci, have been analyzed. The source of this information is the analysis of the monograph "Leonardo da Vinci" by M. Sumtsov (1907), which is little-known to modern researchers and aims to revive scholars' interest in the outstanding works of the past. For the first time, the author analyzes the impact of socio-economic and political changes in society on the understanding of the artist's role, characteristics, forms of activity, and influence on contemporaries.

Methodology

This study employs a comprehensive and multidisciplinary approach, integrating methodologies from art history, philosophy, and socio-cultural analysis to investigate the transformation of the concept of the "artist" from the Renaissance to the modern era. The research is qualitative in nature, with a strong emphasis on historical, philosophical, and socio-economic analysis. The methodology is designed to achieve a nuanced understanding of the evolving role and perception of artists within Western culture, with specific attention to the factors that have influenced these changes.

The study is guided by a theoretical framework that draws on concepts from cultural history, art philosophy, and socio-economic theory.

Primary sources are central to the study's historical analysis. These include: letters, contracts, and patronage records from historical archives provide firsthand insights into the relationships between artists, patrons, and society. These documents were selected based on their relevance to key historical periods and their potential to illuminate changes in the artist's social status and role. Texts written by artists and art theorists during the Renaissance, Enlightenment, and modern periods were analyzed to capture the evolving selfconception of artists. Selection criteria focused on influential works that articulated significant shifts in artistic philosophy and practice. Works by philosophers who addressed art, creativity, and the role of the individual in society were scrutinized to understand the intellectual underpinnings of the artist's transformation. Texts were selected based on their impact on contemporary and subsequent artistic movements. Academic books and journal articles on the history of art and culture were used to contextualize primary data. Selection was guided by the credibility of the sources, their relevance to the study's temporal



and geographical scope, and their contribution to understanding the broader socio-economic and political conditions. Scholarly critiques and interpretations of philosophical texts were utilized to deepen the analysis of primary philosophical sources. These were chosen based on their scholarly rigor and alignment with the study's theoretical framework.

The historical analysis follows a chronological approach, tracing the evolution of the artist's role from the Renaissance to the modern era, specifically focusing on Western Europe. The study identifies key historical junctures where significant shifts occurred, such as the rise of humanism during the Renaissance, the Enlightenment's emphasis on individualism, and the impact of industrialization on artistic production. Archival research was conducted to gather data on artists' social status, patronage systems, and economic conditions. This information was systematically organized and analyzed to identify patterns of change over time. The chronological approach allows for a clear delineation of how specific historical events and trends influenced the artist's role, making it possible to trace the continuity and rupture in the concept of the artist across different eras.

Philosophical texts were analyzed to explore how ideas about creativity, genius, and individualism contributed to the transformation of the artist's role. The analysis involved close reading and critical interpretation of philosophical works, focusing on their implications for artistic practice and self-perception. The study employed textual analysis techniques to deconstruct and interpret the philosophical arguments. This included identifying key themes, concepts, and rhetorical strategies used by philosophers to discuss art and artists. Philosophical analysis was essential for understanding the intellectual currents that redefined the artist's role. It provided a deeper, more abstract perspective on the changes observed in the historical data

The study examines the influence of socio-economic and political factors on the artist's status and practice, focusing on how changes in these areas affected artistic production and patronage. Socio-economic data were analyzed to understand the broader context in which artists operated. This included examining economic records related to art markets, taxation, and patronage systems, as well as political treatises that influenced cultural policies. Understanding the socio-economic and political context is crucial for explaining the material conditions that shaped the artist's role. This approach highlights the external forces that impacted artists' autonomy and societal position.

The study employs a comparative analysis of artistic practices across different historical periods and geographic locations within Western Europe. This method is used to illustrate how philosophical ideas were manifested in the work and self-perception of artists. Case studies of individual artists and art movements were selected to exemplify the transition from traditional artisans to modern artists. The selection criteria included the representativeness of the artists and movements in illustrating broader trends and shifts. Comparative analysis allows for the identification of both common patterns and unique divergences in the artist's role, providing a more nuanced understanding of the transformation process.

Results and Discussion

In philosophical and artistic discourse, complex categories such as "artist," "painter," "creator," "creative personality," and "master" are used. In our opinion, the broadest category is "artist." The other aforementioned terms expand and complement the concept of "artist" and can be used as synonyms.

According to contemporary art researcher Michael Byrd, the oldest meaning of the word "artist" can be found in the Latin language – actor, literally translated as an artist, which originally meant a skilled practitioner not only in art but also in all spheres of society (Bird, 2019).

The Encyclopedia of Modern Ukraine defines the term "artist" as "a generalized name for a person whose main professional occupation is one or more types of art; a creator, painter, author of a work of art" (Bereziuk, 2018). Based on this definition, it can be said that, in principle, every person who has a penchant for artistic creativity and certain skills and abilities can be considered an artist.

The content of the concept of "artist" has been formed throughout the history of mankind, as people realized themselves, discovered their creative potential, and developed certain practical skills. Each historical era added to the characteristics of the artist as a creative personality and defined new statuses and roles. Gradually, the term "artist" was supplemented by such characteristics as genius, giftedness, and talent,

which are manifested in an original view of the world and the ability to reflect it in their own way in artistic creation.

The conceptual foundations for interpreting the artist's image in the modern era began to be formed by the prominent Renaissance figure Leonardo da Vinci. This was first pointed out by a notable Ukrainian scientist of the second half of the nineteenth and early twentieth centuries, academician of the Ukrainian and Czech Academies of Sciences, professor at Kharkiv University, author of over 1,500 scientific works, art historian, philologist, historian, philosopher, and museum historian Mykola Fedorovych Sumtsov (1854-1922) in his thorough but unfortunately almost forgotten 200-page monograph on Leonardo da Vinci, published in Kharkiv in 1900. M. F. Sumtsov himself belonged to the category of artists and went down in the history of world culture as a multidisciplinary scholar and encyclopedist. For Sumtsov, interdisciplinarity was not just borrowing a combination of methods and tools from different sciences, but a special plasticity of relations between history and linguistics, ethnography and philosophy, museum studies and art history, and ethnology and cultural studies. The uniqueness of the scientist lies in the fact that he did not distinguish between sciences in his research and in his search for his own path in science – all this characterizes Sumtsov as an outstanding scientist of the modern era.

Like most artists of the time, Sumtsov was never a dogmatic scientist; he was in constant search of his own and national identity, the roots of which he found in Slavic mythology, of which he was an outstanding expert. Sumtsov can be considered an artist, and his scientific and popular science works are vivid examples of the personification of the features of a true artist in the understanding of the second half of the nineteenth and early twentieth centuries. Sumtsov is an artist who brought knowledge about the world and art to people through his words (Khirina & Filippenko, 2020). For M. F. Sumtsov, the ideal artist was the Renaissance titan Leonardo da Vinci. Sumtsov wrote his monograph about this outstanding artist after several trips to Italy, where he studied the artist's paintings and frescoes. Being fluent in Italian, Sumtsov managed to collect a huge amount of material on Leonardo da Vinci's biography and his unique artistic method, to study in detail Vinci's manuscripts, and to analyze a significant number of his artistic works. All of this unique information was presented by Sumtsov in two works on Leonardo da Vinci: "Research by Professor N. F. Sumtsov" (Sumtsov, 1900) and a short popular version of this work, "Leonardo da Vinci" (Sumtsov, 1907), which was intended for popular reading. These became the first studies of the outstanding artist in Ukrainian.

Sumtsov identifies the prerequisites for changes in the development of art history in modern times as stemming from the internal growth of culture and education in society during the fifteenth and sixteenth centuries. For the development of creativity in society, appropriate conditions must be created. The first step on this path was the creation of the first art schools in Italy in Venice, Umbria, Tuscany, and Lombardy, each of which was an independent organization that established its own artistic tradition. The combination of different schools resulted in new creative forms and trends in art.

Leonardo da Vinci himself made a significant contribution to the formation of a new image of the artist during the transition from the Renaissance to the New Age. Sumtsov emphasizes that the changes began with Leonardo da Vinci's humanism, which can be considered its highest and most complete form, providing the next step forward in the development of an understanding of the role of the creative personality and his place in society. Leonardo da Vinci reworked the ideals of humanism, embodied them in his artistic creations, spread them in the field of applied sciences, and made an unprecedented step forward toward the new scientific thinking of the nineteenth century (Sumtsov, 1907). Renaissance Humanism began the introduction of criticism into scientific and artistic activity. The merit of Renaissance humanism was the rejection of the medieval ascetic philosophy of mortification of the flesh; Renaissance artists showed the world high examples of physical health and human beauty. Humanism highlighted individuality, the cult of the artist's fame, and the desire for versatility, which was reflected in the personality and work of Leonardo da Vinci himself. The great artist was one of the first to understand the significance of the realism of antiquity and put forward the problem of studying the experience of ancient artists. Sumtsov draws attention to the fact that Leonardo da Vinci was the first to recognize the inner world of man, which originates from the heart and feelings, as an object of creativity.

The foundations of an indifferent attitude toward religion, which in the modern era turned into the secularization of culture and art, were laid by Italian humanists Antonio Lochi, Leonardo Bruni, and Leonardo da Vinci. The principle of imitation of nature as the highest manifestation of morality, which became dominant in the modern era, was also first described in the manuscripts of Leonardo da Vinci. A



transitional link between the Renaissance and the New Age was the recognition of the independence and freedom of science; the secularization of thought and humanistic criticism contributed to the development of scientific methods and their use in artistic creation.

Leonardo da Vinci, unlike other humanists, was the first to study external nature, thus bringing natural science into the circle of artists' interests. He was an example of an artist who organically combined creative and scientific principles, which turned into encyclopedism. The combination of genius, vast and versatile knowledge, creative skill, rationalism, and criticism is a model of an ideal artist, formed in the image of Leonardo da Vinci, who entered the New Age.

Leonardo da Vinci's ideas about the initial stage of the artist's formation are original, can be extended to the category of "artist" in a broader sense, and remain relevant to this day. Vinci emphasizes that an artist should be universal and not be bound by one motive, should correct mistakes before the public demonstration of the work, should work patiently and always complete the work he or she has started, should listen to outside opinions, carefully study reality, first study theory and then move on to practice, and should never copy other artists.

The topic of the artist and patronage is raised by M. F. Sumtsov in his research. Patronage as a cultural phenomenon began to develop in the Renaissance and contributed to the concentration and development of humanistic ideas and forces. Patrons, usually representatives of the government and the church, enabled artists (painters and poets) from small towns to create in big cities, where there were more opportunities for self-expression. Patrons provided brilliant artists the means to embody their ideas in churches, paintings, and statues, and encouraged them to create with their own education and wise advice. However, according to M. F. Sumtsov, patronage can also have negative features that manifest themselves in eulogy, flattery, and begging, which in turn do not contribute to the objectivity of artistic works (Sumtsov, 1907).

Interesting is the thesis of M. F. Sumtsov, who stated that patronage was for a long time an exclusively private initiative, and only in the second half of the sixteenth century did it gradually begin to receive a formal form of state care in the form of the establishment of academies and the granting of scholarships. This, in turn, contributed to more generous patronage from private individuals. Sumtsov gives an example of such a patron, Baldasar Turini from Rome, whose friend was Raphael. Francia painted the Madonna for him, Leonardo da Vinci painted two paintings for him in 1514, and Giulio Romano (Sumtsov, 1907) built him a villa and decorated it with frescoes. Patronage contributed to the new social status of the artist, who became more popular and influential in society. Although patronage did not exclude artists' personal independence, it was often based on personal respect, a sense of affection, and sincere friendship. Artists were liked, and society did not pay attention to their sins or difficult character; talent was placed above the artist's personal qualities. Leonardo da Vinci combined genius with spiritual beauty, for which his contemporaries appreciated and loved him. He knew how to please the sovereigns by arranging theatrical performances with scientific tricks for them and his students, for whom he became not just a mentor but also a creative father. A new image of the artist emerged with Leonardo da Vinci, an artist who was loved and respected for his talent, genius, knowledge, kindness, sincerity, and high professional skills. All of these trends, which were initiated by the great Master of World Art Leonardo da Vinci, developed and gained a new significance in the culture and art of the New Age.

A qualitatively new stage in the development of the category of "artist" dates back to the seventeenth and nineteenth centuries, known in world history as the New Age. The seventeenth century opened a new chapter in the history of world culture and art; it was the time of the birth and development of a new worldview paradigm in Europe, the formation of a new bourgeois mode of production with its inherent new socio-cultural ties, the emergence of pan-European artistic styles, and a new philosophical interpretation of nature, society, and man.

The seventeenth century marked a pivotal moment in human history with the decline of feudal relations and the emergence of qualitatively new bourgeois relations, spurred by significant geographical discoveries that expanded human knowledge of our planet and formed a scientific heliocentric view of the world. The ancient way of life, characterized by contemplation, corporeality, and impersonality, became a thing of the past. In the struggle between the old feudal and new bourgeois systems, not only was the subsistence economy, the basis of medieval civilization with its strict hierarchical organization, destroyed, but also the dominance of religion and the church in all aspects of society. An active process of secularization in culture, education, and art unfolded, elevating the individual and creative abilities of each person.

Against the backdrop of the Reformation, Counter-Reformation, Inquisition, and intense ideological struggles within European society, a new bourgeois morality emerged. This morality emphasized the cult of labor and private property, as well as respect for the personal qualities of professionals who possessed not only creative abilities, talent, and giftedness, but also specific knowledge and professional skills.

In modern times, a new type of artist emerged—a pragmatic and rationalistic personality with inherent individualism. The artist's spirituality gradually freed itself from the excessive mysticism and religious fanaticism of the Middle Ages. The eschatological and ascetic worldview of the medieval period gave way to anthropocentrism, hedonism, and optimistic attitudes reminiscent of antiquity and the Renaissance. A new baroque worldview gained prominence, shaping the transformation of the status and role of the artist in the culture of the New Age, encapsulating the complexity of this era.

The Modern period in human history is characterized, on one hand, by cruelty associated with wars, famine, plague, and violence. On the other hand, the culture of this period can be described as optimistic, with a certain majesty. Artists of the New Age believed in the possibility of reforming a cruel and unjust society through the dissemination of correct humanistic ideas, educational endeavors, and the promotion of lofty human ideals. They believed in the power of their own talent, reason, and science. This humanistic dominance of seventeenth-century social consciousness inherited European culture from the ideals and values of the Renaissance.

The quest for the ideal artist continues in modern times under the influence of new factors and circumstances. A pivotal factor in transforming the concept of the artist in the modern era was the development of natural sciences and the scientific revolution. Initially focused on mathematics and mechanics, these defined two areas of scientific knowledge: rational and deductive, and empirical and experimental. Science extended beyond the confines of individual scholars' studies, leading to the integration of scientific knowledge with art. During this period, artists began to incorporate not only emotional and experiential principles but also the rational and later technological components into their artistic creativity, necessitating specialized professional training.

Amidst the seventeenth-century separation of science from theology and other forms of spiritual activity, including philosophy, a new philosophy emerged, further secularizing culture and shaping a new worldview. Despite this, the process of disentangling art from theology, science, and philosophy was ongoing. Thus, in keeping with Renaissance traditions, artists could simultaneously engage in philosophical or theological inquiry alongside their creative pursuits. In the Modern period, artistic creativity became a distinct sphere of activity as the differentiation of human endeavors progressed.

European scientists and artists in the Modern period collaborated not only to establish the scientific foundations of a new worldview but also to cultivate a new secularized culture and art capable of influencing the world. Central to understanding the transformation of the artist's concept during this era is the reinterpretation of the pivotal concept of "nature." According to this new interpretation, "nature" encompasses everything that exists and can be experimentally tested and rationally explained. Consequently, the artist is viewed as a part of nature—a small segment of the grand, diverse, and dynamic universe. The artist's role is to study nature, portray it in their works as a value, a model, an ideal, and harness it for practical purposes.

Rationalism gradually permeated the worldview of the artist in the New Age, albeit intertwined with Christian beliefs in the rationality and perfection of God's created world. Rationalism in the artist's approach to portraying nature began to supersede dogmatism and medieval mysticism, which manifested in pantheism (identifying God with nature) and deism (viewing God as the creator of nature with limited subsequent involvement). Despite these shifts, religion continued to influence all aspects of culture and art in the modern era, which were not yet atheistic. The emergence of atheism as a phenomenon in spiritual culture would follow in the eighteenth century.

In the modern era, the artist is perceived by society as an individual with specific physical attributes, abilities, tastes, character, and a unique psychological makeup. Modern times, with its emphasis on rationalistic and empirical approaches to understanding human essence, have elevated the concept of 'vocation' as a defining characteristic of an artist. The term 'vocation' originated in ancient times, from the Latin word 'vocatio', meaning an invitation to a feast or vacation. In the Middle Ages, it took on a religious connotation, signifying God's call to believe and participate in religious rituals. In the modern era, the



concept of an artist's vocation expanded to encompass their creative activity, which fully expresses their individual creative abilities and personality. The artist evolved from being seen as a mere instrument of God or fate to becoming a source of new ideas, infused with powerful energy that drives their creative pursuits and defines their value orientations.

For artists, vocation becomes a profound quality that serves as the inner foundation of their individuality and is essential for realizing their creative potential. In modern times, there is a recognition that vocation represents an informal right of artists to express themselves and fulfill their artistic endeavors. An artist who possesses a natural vocation for a particular form of creativity is both gifted and destined by fate to diligently pursue their calling and talents. Unlike previous historical periods where such work was often disregarded by society and rarely brought fame or wealth during an artist's lifetime, the New Age changed this perception.

During the Reformation, a new Protestant morality emerged in Europe, which formed the basis of modern bourgeois ethics. Central to this new morality was a profound respect for human labor, which elevated work not only as a divine duty but also as a celebration of individuals contributing to society's welfare. Since the modern era, artists have held a distinctive place in society, earning respect, enjoying a dignified status, and playing significant and honorable roles.

The concept of vocation became a philosophical topic explored by German classical philosophers like Immanuel Kant and Georg Wilhelm Hegel (Smorzh, 2005).

From its inception, the concept of an artist blended mysticism with specific skills and abilities. In ancient civilizations, craftsmanship was synonymous with artistry, where artisans infused new ideas into their creations. However, it was in Ancient Greece that the artist emerged as an innovator who reshaped nature and human existence through new forms of expression. Despite this evolution, the medieval and Renaissance periods maintained a view of the artist as primarily a craftsman. It wasn't until the fifteenth century that Italian humanist philosophers began to differentiate between art as practical activity and rational discourse.

Leonardo da Vinci, a renowned theorist and practitioner of art, advocated for artists to study optics, mathematics, anatomy, and literature. By the early sixteenth century, this broader intellectual engagement transformed artists from craftsmen into thinkers, evident in the works of Titian and Giorgione.

An artist is a personality who, by the late sixteenth and early seventeenth centuries, had largely separated from the craftsman of the Middle Ages. By the turn of the eighteenth and nineteenth centuries, during the era of pre-Romanticism and Romanticism, this distinction between craftsman and artist became formalized. While a craftsman primarily relies on experience, an artist embodies a free creative personality and a genius who sets their own rules of behavior. In this era, genius emerged as a defining characteristic that distinguished artists in public life from others. By the nineteenth century, the concept of genius was complemented by virtuosity, emphasizing the artist's mastery.

Since ancient times, it has been recognized that an artist's creative output depends directly on attributes such as vocation, talent, giftedness, feelings, imagination, inspiration, emotionality, and sometimes even the rejection of rationality and utility—qualities that the prominent German philosopher Immanuel Kant encapsulated in the term "genius". According to Kant, an artist must possess innate inclinations of the soul and originality of thought to create something unconventional, diverging from established rules and canons, yet their works should serve as ideal examples—a measure of evaluation.

Eighteenth-century philosophers asserted that talent finds its expression uniquely in art, not science, through aesthetic ideas and imagery rather than scientific formulas. In the modern era, genius was understood as the exceptional originality of a gifted individual, freely employing their cognitive and creative faculties. Classical German philosophers like Kant and Friedrich Schiller perceived the artist as a product of nature, likening their psychology to that of a child's naive perception of the world. For these thinkers, genius was divorced from rationality.

Georg Wilhelm Friedrich Hegel, a leading figure in objective idealism, pushed further in exploring the concept of the artist-genius, viewing them as a "master of God" whose creativity should be untethered from subjective and contingent influences, instead linked with technology and external mechanical techniques

(Smorzh, 2005). However, philosophical theorizing did not always align with the practical realities of artistic creation.

For instance, in the seventeenth century, the notion of authorship of artistic works emerged in Europe, solidifying the artist's identity as a concrete, recognizable figure deserving of public recognition and a distinct social status.

The professionalization of the artist marked a new phase in their status. This was bolstered by the establishment of the first art schools during this period (such as the Jena or Mannheim music schools in Germany). Although training for artistic professions had existed since ancient times, it became highly specialized in the modern era with the advent of dedicated art education. An artist now not only embodies talent but also possesses professional expertise in specific creative fields, mastering artistic techniques through rigorous training. In music, for example, this involves learning from seasoned professionals and mastering music theory.

This era also saw the emergence of the art school, led by a founder who serves as both a leader and mentor to students. The status and role of the artist in society were further complicated by the passing down of skills through inheritance—an aspect absent in Antiquity or the Renaissance—establishing a lineage of artists comprising teachers, students, and subsequent generations. Consequently, the modern artist simultaneously assumes leadership within their professional artistic community, acts as a mentor to aspiring artists, and excels as a performer.

An artist is a personality who, by the late sixteenth and early seventeenth centuries, had almost completely separated from the artisan (as seen in the Middle Ages). By the turn of the eighteenth and nineteenth centuries, during the era of pre-Romanticism and Romanticism, the distinction between artisan and artist was formalized. Whereas an artisan primarily relies on experience, an artist embodies a free creative personality—a genius who sets their own rules of behavior. In this era, genius emerged as a defining characteristic that distinguished artists in public life from others. By the 19th century, the concept of genius was complemented by the notion of virtuosity, elevating the artist to the status of a virtuoso.

It has long been recognized that an artist's creativity directly depends on qualities such as vocation, talent, giftedness, feelings, imagination, inspiration, emotionality, and sometimes even a rejection of rationality and utility—all of which the prominent German philosopher Immanuel Kant unified under the term "genius". According to Kant, an artist should possess innate inclinations of the soul and originality of thought, enabling the creation of something unconventional, diverging from established rules and canons, with their works serving as ideal exemplars—a standard of evaluation.

Eighteenth-century philosophers asserted that talent is uniquely expressed in art, not science, through aesthetic ideas and imagery rather than scientific formulas. In modern times, genius came to be understood as the exceptional originality of a gifted individual, freely employing their cognitive and creative faculties. Classical German philosophers like Kant and Friedrich Schiller did not perceive the artist's genius as influenced by society; they viewed the artist as a product of nature, akin to a child's naive perception of the world. For these thinkers, genius was divorced from rationality.

Georg Wilhelm Friedrich Hegel, a prominent figure in objective idealism, further developed the concept of the artist-genius, regarding them as akin to a 'god' whose creativity should be detached from subjective and accidental influences, instead aligned with technology and external mechanical techniques (Smorzh, 2005). However, philosophical theorizing did not always align with the practical realities of artistic creativity.

For instance, in the seventeenth century, the concept of authorship of artistic works emerged in Europe, solidifying the artist's identity as a concrete, rather than abstract, personality deserving of public recognition and a distinct social status.

A notable development in the artist's status is the professionalization of their craft. This was facilitated by the emergence of the first art schools during this period, such as the Jena or Mannheim music schools in Germany. While training for artistic professions has existed since ancient times, it became highly specialized in modern times due to the establishment of dedicated art education.



Today, an artist is not merely a talented individual but also a professional specializing in a particular field of creativity. This professionalism involves mastering specific artistic techniques and technologies. For instance, in music, it entails learning to play musical instruments from experienced professionals and gaining proficiency in music theory. This evolution has given rise to the concept of art schools, led by founders who serve as both leaders and mentor-teachers.

The role and status of artists in society have become complex. They now pass on their skills through inheritance, a practice absent in Antiquity or the Renaissance, fostering intergenerational relationships among artists—spanning from teacher to student to subsequent generations of students. This lineage ensures not only the continuity of artistic traditions but also the advancement and evolution of art schools themselves.

Thus, today's artist fulfills multiple roles concurrently: they are leaders within professional artistic associations, mentors to aspiring artists, and practitioners of their craft.

Conclusions

Thus, the artist, as interpreted by the philosophical inquiries of the New Age, is a creative and self-sufficient personality, a high-level professional capable of integrating their talent, genius, and creative inspiration with scientific achievements and developments. In terms of social status, artists occupy a relatively high and respectable place, enjoying authority, respect, and popularity in society, and they become carriers of progressive ideas and leaders of public opinion.

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Impact of executives, foreign experience on environmental, social and governmental (ESG) performance of Saudi market

Video Oyunlarında Grafik Tasarım Sanatı: Görselliğin Ötesinde

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فلاصة فلاصة

This study empirically explores the potential role executives with overseas experience can play in ESG performance. The study also explores the effect of foreign experience on single aspects of ESG including environmental, social, and governmental performance. Employing a sample of Saudi-listed firms from 2015 to 2021, the findings document that companies with high foreign experience executives have higher ESG performance. The results also show that the foreign experience of executives positively influences the components of ESG such as environmental, social, and governmental aspects. These findings suggest that foreign experience increases the awareness of executives about the importance of ESG performance in enhancing the link between the firm and its stakeholders. These findings are robust to alternative measurements of executives' foreign experience. This study offers various theoretical and practical implications and highlights the role of executives' overseas experience in higher ESG performance.

Keywords: Executives, foreign experience, ESG performance, Saudi Arabia.

تستكشف هذه الدراسة بشكل تجريبي الدور المحتمل الذي يمكن أن يلعبه المديرون التنفيذيون ذوو الخبرة الخارجية فى الأداء المستدام (ESG). كما تستكشف الدراسة تأثير الخبرة الخارجية على جوانب فردية من للاستدامة والتي تشمل الأداء البيئي والاجتماعي والحكومي. باستخدام عينة منَّ الشركات المدرجة فيَّ السعودية من عام 2015 إلى عام 2021، توثق نتائج الدراسة أنّ الشركات التي لديها مديرون تنفيذيون ذوو خبرة أجنبية عالية لديها أداء مستدام أعلى ESG. تظهر النتائج أيضًا أن الخبرة الخارجية للمديرين التنفيذيين تؤثر بشكل إيجابى على مكونات الاستدامة والتي تشمل الجوانب البيئية والاجتماعية والحكومية. تشير هذه النتائج إلى أن الخبرة الخارجية تزيد من وعى المديرين التنفيذيين بأهمية أداء ESG في تعزيز الارتباط بين الشركة وأصحاب المصلحة فيها. هذه النتائج تبقى نفسها باستخدام مقياس بديل للخبرة الخارجية للمديرين التنفيذيين. تقدم هذه الدراسة العديد من الأثار النظرية والعملية وتسلط الضوء على دور الخبرة الخارجية للمديرين التنفيذيين في تحسين الأداء المستدام ESG.

الكلمات المفتاحية: المديرون التنفيذيون، الخبرة الأجنبية؛ أداء الاستدامة ESG ؛ المملكة العربية السعودية.

Introduction

Sustainability issues affect every facet of our society, from the individual to the national and worldwide institutions. The primary causes of ecological or social disasters are the overuse of natural resources and rising levels of inequality on a local and global scale (Kuznetsova et al., 2024). In response to economic challenges such as the worldwide financial crisis and the rising risk of climate change, organizations worldwide are increasingly adopting Economic, Social, and Governance (ESG) factors as integral components of their strategic frameworks to optimize resource management (Hąbek, 2014; Al-Absy et al., 2024). ESG integration is perceived to augment corporate reputation and cultivate a favorable market

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image, potentially attracting a broader customer base and driving sales growth and overall performance (Dhaliwal et al., 2014). Enterprises must forge strong connections with their stakeholders and embrace ESG practices to establish legitimacy and attain competitive advantages (Al-Duais et al., 2021; Qasem et al., 2022), ultimately translating into enhanced financial performance (Ying, Tikuye, & Shan, 2021).

ESG factors have the potential to influence financial accessibility through various direct and indirect pathways (Citterio, & King, 2023). From a stakeholder viewpoint, a strong commitment to ESG principles may signify enhanced bank transparency and greater support for stakeholders, whereas poor ESG performance could indicate a lack of dedication to minority stakeholders, including bondholders (Azmi, Hassan, & Karim, 2021). These signals are crucial from a reputational standpoint, potentially enabling banks with robust ESG credentials to attract more deposits and loans compared to their counterparts with lower ESG commitments (Boubaker, Cellier, & Saeed, 2020). Supporting this notion, Citterio & King (2023) highlighted a positive correlation between ESG performance and financial accessibility. Notably, it is argued that these reputational effects operate through two primary channels: the cost of capital and cash flows (Azmi et al., 2021).

The presence of executives with foreign experience can become an important antecedent of the extent of firms' financial success and their successful implementation of social and environmental strategies. The upper-echelon theory views that top executives with foreign education and working experience are likely to assist a firm in achieving legitimacy, securing access to financial resources, and thus improving its performance by spending more on ESG activities (Lau, Lu, & Liang, 2016; Shahab et al., 2020). Moreover, Liu, Ju, Bai, & Yu (2021) pointed out that firms run by executives with foreign experience or knowledge will be more attractive to capital providers to provide more competitive services. These eventually assist a firm in decreasing the cost of capital increasing its financial performance and maximizing its market value. Many talented individuals in Saudi Arabia are sent to developed countries to further their studies or gain work experience, most of whom would return to join Saudi Arabian companies. These executives who have been exposed to and trained in an environment emphasising ESG practices will become familiar with the practice and try to adopt it in the new workplace.

This study is motivated to be conducted in the Saudi market since firms in Saudi Arabia recently started to accept and integrate ESG practices in their operations to meet Saudi Vision 2030, which imposes certain environmental and societal requirements (Omair Alotaibi & Hussainey, 2016). Saudi Arabia is the second among Middle East and North Africa (MENA) countries in adopting and implementing ESG concepts (Ghardallou, 2022). Further, Saudi Arabia is also a member of the G20 and has vast economic prominence in the Arab region, representing 25% of the total Arab's gross domestic product. (Bamahros et al., 2022). However, the practices and reporting of ESG in Saudi Arabia still discernibly lag behind those of the developed countries. Alotaibi, Edum-Fotwe, & Price (2019) have identified the following obstacles to accepting ESG in Saudi Arabia-listed companies: the perceived high cost of ESG projects, lack of knowledge and awareness for ESG, lack of guidelines, lack of enforcement, and lack of training. Second, since Saudi Arabia is one of the world's largest oil producers (Habbash, Hussainey, & Awad, 2016), excessive oil production would deteriorate environmental conditions and create drastic climate change.

This study makes multiple contributions to the body of current literature. First, there is a clear disparity in the impact of executives' international experience on ESG performance. An exception is a Chinese study conducted in 2018 by Shahab, Ntim, Chengang, Ullah, & Fosu, which suggests that environmental performance is greatly influenced by top management characteristics. In the case of Middle Eastern markets, we still don't fully understand whether CSR companies run by executives with overseas experience are more or less likely to face default. This research tries to fill this gap and add to the study of Shahab et al. (2018) by using a comprehensive measure that includes different aspects of sustainability management. This research also explores the influence of the foreign experience of executives on the individual effect of ESG factors, namely (a) environmental performance, (b) social performance, and (c) governance structure, and provides empirical evidence showing that both aggregated and individual components of ESG. The findings of this research offer significant insights to policymakers, corporate practitioners, and other interested parties concerning the role of executives with foreign experience in enhancing the companies to pay more attention to ESG performance as well as the ability of ESG practices as a good business strategy.

This paper is structured as follows. Section 2 discusses the development of hypotheses relating to ESG, executives' foreign experience, and financial distress risk. Section 3 describes the research design, and



Section 4 discusses the main results. Section 5 discusses the supplementary analyses, while Section 6 concludes the paper.

Study Objectives

The current study objectives are:

- 1. To investigate the impact of foreign experience of executies in ESG Performance.
- 2. To explore the effect of executives, foreign experience on single factors of ESG including environmental, social, and governmental performance.

Literature Review

In addition to embracing ESG initiatives, market observers consider various factors when evaluating a company's sustainability as a going concern. One such factor is the characteristics of its executive leadership. According to upper-echelon theory, the attributes of top executives significantly influence the strategic decisions that impact firm performance and long-term growth (Yuan & Wen, 2018). A critical characteristic identified in the literature is international experience among top executives, which has been associated with enhancing a firm's legitimacy, facilitating access to financial resources, and thereby improving overall performance through the adoption of ESG practices (Lau et al., 2016; Shahab et al., 2020).

Le & Kroll (2017) suggested that executives with international work experience or education often leverage their global perspectives and social networks to influence strategic thinking within their organizations. Furthermore, executives with exposure to advanced financial markets are expected to integrate ESG practices and maximize the benefits of corporate social responsibility (He et al., 2022; Shahab et al., 2018). Research by Saini & Singhania (2019) indicated that international backgrounds are more inclined towards social responsibility initiatives. Shahab et al. (2020) found that CEOs with international experience are more likely to implement practices that enhance sustainability and environmental ratings compared to their counterparts without such experience. Wu, Zhang, & Li (2024) found empirical evidence that returnee executives' foreign experience enhances the initiatives of firms' CSR in the Chinese workplace. Shahab et al. (2018) provided empirical evidence that firms with executives experienced abroad show improved environmental performance, which correlates with reduced financial distress.

Overall, existing literature supports the view that firms led by executives with international experience tend to have higher levels of innovation (Quan et al., 2021), exhibit better financial performance (Samara, & Yousef, 2023), and enhance CSR disclosure (Aini, Harymawan, & Kamarudin, 2024). Accordingly, this research argues that the inclusion of individuals with international exposure in senior management positions enhances a company's ESG performance since firms led by executives with global experience and crosscultural competence are more appealing to capital providers, who are inclined to offer competitive terms that bolster a firm's resilience. This study proposes the following hypothesis:

- H1: The existence of executives with overseas experience improves Environmental performance.
- H2: The existence of executives with overseas experience improves social performance.
- H3: The existence of executives with overseas experience improves governmental performance.
- H4: The existence of executives with overseas experience improves weighted ESG performance.

Methodology

A quantitative research method was implemented to accomplish the research goals. Now we explain the research components, including the sampling, data gathering methods, variables, regression model, and analytic approaches.

Sampling

The initial dataset for this study comprises 328 firm-year observations on ESG ratings sourced from the Bloomberg database, covering Saudi-listed firms over the period from 2015 to 2021. After excluding observations with missing data for control variables (17 observations), the final sample consists of 311



firm-years. The inclusion of the financial sector in this analysis aligns with prior research such as Shahab et al. (2018), as this sector significantly impacts society and undergoes rigorous scrutiny from diverse stakeholders. Notably, compared to other sectors, Saudi Arabia's financial sector demonstrates a higher commitment to disclosing both qualitative and quantitative information regarding its Corporate Social Responsibility (CSR) initiatives to stakeholders.

Information regarding executives' international experience was manually collected from the annual reports of the sampled firms. Control variables were sourced from the DataStream database of Thomson Financial Services Group. Detailed descriptions of the sample selection process are provided in Panel A of Table 1, while the distribution of sampled firms across industries is presented in Panel C.

Table 1. *Sample selection and distribution*

Panel A: Sample selection procedure (2015-2021)							
		ESG ratings available from Bloomberg)					
328							
Less: firm observations with missing data 17							
Final sample 311							
	Panel B: Distributi	on by year					
Years	Observations	% Observations					
2015	42	0.135					
2016	42	0.135					
2017	42	0.135					
2018	44	0.141					
2019	45	0.145					
2020	48	0.154					
2021	48 0.154						
Total	311 100.00						
	Panel C: Industry d	listribution					
Sector	Observations	% Observations					
Banks	48	0.15					
Energy	27	0.09					
Food & Beverages	21	0.07					
Food & Staples Retailing	24	0.08					
Health Care Equipment & Svc	17	0.05					
Insurance	25	0.08					
Materials	34	0.11					
Real State	23	0.07					
Retailing	etailing 19 0.06						
Telecommunications Services	29	0.09					
Transportation	16	0.05					
Utilities	28	0.09					
Total	311	100.00					

Variables

Dependent variable: ESG performance

This study investigates whether the executives' foreign experience influences Saudi Arabian firms' allocating a company's resources towards Environmental, Social, and Governance (ESG) activities. Following prior studies such as Naseer et al. (2024), this study used Bloomberg's data of overall ESG scores and sub-scores of the three ESG components, i.e., environmental, social, and governance activities, as proxies for ESG performance. Bloomberg's ESG scoring methodology is proprietary and not disclosed in detail. It involves both quantitative and qualitative factors from diverse sources, including public filings, corporate reports, regulatory agencies, news articles, NGOs, and third-party ESG data providers. The ESG index covers environmental, social, and governance activities. The Bloomberg database offers advantages over manual CSR data compilation by operating independently and following professional protocols for data collection.



Independent variable: executives' foreign experience

An executive who has studied and worked abroad, both professionally and educationally, is considered a foreign executive. Considering the long-lasting influence of past experiences on an individual's framework for making decisions, this analysis did not distinguish between returning executives according to how long it took them to reintegrate into the Saudi setting. Following Yuan & Wen's (2018) and Wu, Zhang, & Li's (2024) methodology, this first measure of executives' foreign experience is calculated as the fraction of executives with foreign training or employment history relative to the total number of executives working for companies (FOREXPRT). In the robust analysis, A binary (dummy) variable (FOREXPRTD), assumes a value of one if a company retains at least one executive with foreign education or work experience, and zero otherwise.

Control variables

This study's analysis considers several variables that have been demonstrated to affect the ESG performance of businesses (Shahab et al., 2018; Wu et al., 2024). The board of directors' independence (IND), for example, is determined by dividing the number of independent directors by the total number of directors on the board. The size of the firm is determined by using the natural logarithm of its total assets (SIZE). Leverage ratio measurement (LEV) is calculated by dividing the book value of all debts by the book value of all assets. Cash is the proportion of cash and cash equivalents to the total assets of a company. The division of total assets by the amount of cash and marketable securities yields cash holdings (CASH).

The ratio of net income before exceptional items to total assets is known as return on assets (ROA).

Table 2. *Variable Definitions*

Variables	Symbols	Details				
Dependent variables						
Overall ESG	Overall ESG	Overall ESG, Environmental, social, and governmental scores as taken from				
performance		the Bloomberg Database, calculating ESG scores by using both quantitative				
Environmental	ENVRON	and qualitative aspects sourced from a multitude of origins, such as public				
Performance	Perform	filings, corporate reports, regulatory bodies, news media, non-governmental				
Social	SOCIAL	organizations, and third-party ESG data providers. Compared to manual				
Performance	Perform	CSR data compilation, the Bloomberg database presents several benefits, as				
Governmental	GOVNCE	it functions autonomously and adheres to established professional standards				
Performance	Perform	for information collection.				
		Explanatory variables				
Executives'	Executives' FOREXPRT The ratio of executives having foreign exposure, work experience,					
foreign	foreign education to all executives					
experience	FOREXPRTD	A binary variable that equals 1 for a firm with at least one executive with				
	foreign exposure, work experience, or education and 0 otherwise					
		Control Variables				
Board	IND	The ratio of Independent members serving in the board of directors to the				
Independency		entire board members.				
Firm size	SIZE	Natural log of the firms' total assets				
Leverage ratio	LEV	Percentage of total debt to total assets				
Cash holding	CASH	Cash and marketable securities scaled by total assets				
Return on assets	ROA	The percentage of net income before exceptional items to total assets				

Study Models

Following is an estimation of this basic OLS regression model, which we used to investigate the relationship between executive overseas experience and ESG performance:

ENVRON Perform = $\beta 0+ \beta 1$ FOREXPRT + $\beta 2$ IND+ $\beta 3$ SIZE+ $\beta 4$ LEV+ $\beta 5$ CASH + $\beta 6$ ROA+ error terms (1)

SOCIAL Perform = $\beta 0+ \beta 1$ FOREXPRT + $\beta 2$ IND+ $\beta 3$ SIZE+ $\beta 4$ LEV+ $\beta 5$ CASH + $\beta 6$ ROA + error terms (2)



GOVNCE Perform = $\beta 0+ \beta 1$ FOREXPRT + $\beta 2$ INDit+ $\beta 3$ SIZE+ $\beta 4$ LEV+ $\beta 5$ CASH + $\beta 6$ ROA + error terms

Overall ESG = $\beta 0+ \beta 1$ FOREXPRT + $\beta 2$ IND+ $\beta 3$ SIZE+ $\beta 4$ LEV+ $\beta 5$ CASH + $\beta 6$ ROA + error terms

Where,

ENVRON Perform – environmental performance

SOCIAL Perform – social performance

GOVNCE Perform – governmental performance

Overall ESG – the Weighted ESG Performance Score,

EXECFOR – the proportion of executives with foreign experience;

IND – the proportion of independent directors to all directors.

SIZE – the natural logarithm of total assets.

LEV – the ratio of short-term and long-term debt to total assets;

CASH – cash held by the firm, calculated as the sum of cash and marketable securities divided by total assets.

ROA - return on assets.

Data Analysis Method

Ordinary least squares (OLS) regression analysis was utilized in this study to evaluate the impact of CEOs' overseas experiences on ESG performance in the Saudi market. The main goal of OLS regression analysis is to estimate the linear regression coefficient, which has the effect of minimizing the difference between estimated and actual values (Hosman et al, 2010). The OLS regression approach was employed in this empirical study due to its effective alignment with the examination's aims.

Analyses and Results

Descriptive Data and Correlation

The descriptive statistics of the study's employed variables are presented in Table 3. The mean value of FOREXPRT is 51.2 percent, implying that about half of the top executives serving in Saudi-selected firms had foreign experience, either from education or work outside Saudia Arabia. The weighted ESG score shows a median of 33.13 and a mean of 31.88. For the factors of ESG namely environmental, social, and governmental Aspects, the means are 22.36, 27.01, and 44.32 respectively. This indicates that the aggregated average ESG score as well as its factors have a normal distribution as both mean and median are very close. For control variables, the table shows that, on average, 43.2 percent of board directors are independent. The mean values of SIZE and LEV are 19.34 and 0.548, respectively. CASH has mean values of 0.218 and 0.612, implying that the ability of firms to pay their short-term obligations depends highly on liquid current assets. The mean of ROA is 0.063 with a median value of 0.034.

Table 3. Descriptive Statistics

Variable	Mean	SD	P50	P25	P75	Min	Max
Overall ESG	32.23	18.37	29.65	17.82	45.61	0.755	73.41
ENVRON Perform	22.36	21.72	16.68	0	37.86	0	89.21
SOCIAL Perform	27.01	18.69	23.93	10.13	42.14	0.423	71.76
GOVNCE Perform	44.32	19.53	42.43	24.97	66.46	2.650	92.81
FOREXPRT	0.523	0.189	0.475	0.486	0.724	0	1
FOREXPRTD	0.401	0.470	0	0	1	0	1
IND	0.432	0.067	0.416	0.383	0.457	0.275	0.643
SIZE (log)	19.34	1.710	17.35	16.232	19.019	14.45	21.488
LEV	0.548	0.265	0.612	0.421	0.827	0.036	0.912
CASH	0.223	0.172	0.153	0.088	0.342	0.029	0.519
ROA	0.063	0.068	0.034	0.015	0.084	-0.141	0.598



The findings shown in Table 4 indicate that the foreign experience of executives is positive and significantly correlated with all the variables of ESG performance. The results show that firms that have more executives with foreign experience spend more money on ESG activities. In general, there are no correlations of more than 50 percent between all the variables of the study's models, implying that multicollinearity is not a serious issue.

Table 4. *Pairwise correlations*

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Overall ESG	1.000									
(2) ENVRON Perform	0.438***	1.000								
(3) SOCIAL Perform	0.523***	0.584***	1.000							
(4) GOVNCE Perform	0.489***	0.241***	0.435***	1.000						
(5) FOREXPRT	0.297***	0.183***	0.234***	0.261***	1.000					
(6) IND	0.187***	0.098*	0.239***	0.172**	0.096	1.000				
(7) SIZE	0.335***	0.339***	0.326***	0.427***	0.495***	0.192**	1.000			
(8) LEV	-0.212***	0.042	-0.208***	0.233***	-0.135**	0.215***	0.412***	1.000		
(9) CASH	0.112	-0.256***	0.081	0.207***	0.128**	0.183***	0.198***	0.484***	1.000	
(10) ROA	-0.275***	-0.078	-0.282***	-0.216***	0.318***	-0.168***	-0.231***	-0.436***	-0.287***	1.000

^{***} *p*<0.01, ** *p*<0.05, * *p*<0.1

Hypotheses Testing Analyses and Discussion

Table 5 shows the findings for Equations 1,2,3 and 4, which investigate the effects of the foreign experience of executives on ESG performance. The study used the proportion of executives with foreign experience (FOREXPRT), The definition of these variables is previously discussed in Section 3.2.3. The analysis process begins by testing the three ESG dimensions before moving on to the ESG composite weighted score, as recorded in the Bloomberg database. According to the results for Models 1,2 and 4, the environmental, social, and weighted ESG, the coefficients of FOREXPRT are (β = 2.962), (β = 1.841), and (β = 0.942), respectively, and all of them are positive and statistically significant at p< 0.01. in addition, Model 3, the governmental factor, score coefficient (β = 1.627) which is positive and statistically significant at p< 0.01. These results support H1, H2, H3, and H4, suggesting that a greater percentage of executives with foreign experience serving in firm's top management exhibit a higher ESG performance. The results imply that executives with high foreign experience could increase the awareness of ESG activities' importance in enhancing the relations of forms with their stakeholders, indicating that foreign experience executives assist in allocating more financial resources to engage in more ESG activities.

The overall results reflected in Models 1 to 4 designate that firms that employ more executives with foreign experience have a greater tendency to invest more in ESG activities to develop a sustainable relationship with stakeholders. These findings support previous research showing that executives with global experience are more likely to support social responsibility programs, including Wu et al. (2024). In addition, the findings align with the claims put forth by Citterio & King (2023) regarding the ease of financial resource access for a company's CSR investment. Furthermore, these results support the argument of Le & Kroll (2017) suggested that executives with international experience often leverage their global perspectives and social networks to influence strategic thinking to allocate firms, resources for initiatives like ESG activities.

Consequently, this could optimize the wealth of the shareholders.

Table 5. *OLS regression of the impact of foreign experience of executives on ESG performance*

ESG Perform	Predic t Sign	Model (1)	Model (2)	Model (3)	Model (4)
	t bigii	ENVRON Perform	SOCIAL Perform	GOVNCE Perform	Overall ESG
Constant	?	5.313***	4.467***	3.975***	5.842***
		(2.656)	(2.214)	(2.761)	(3.543)
FOREXPRT	+	4.16***	3.71 ***	2.59**	3.82***
		(2.962)	(1.841)	(1.627)	(0.942)
IND	+	1.02	0.76	0.926	1.109
		(0.033)	(0.776)	(0.136)	(0.384)
SIZE	+	2.92***	3.27 ***	4.219***	3.132***
		(1.754)	(1.955)	(0.9173)	(2.084)
LEV	-	1.24	-1.968*	1.020	-1.69*
		(0.386)	(-1.030)	(1.065)	(-2.712)
CASH	+	3.94***	4.20***	3.12***	2. 38***
		(2.52)	(1.631)	(1.246)	(3.162)
ROA	+	3.25***	2.47**	1.68*	3.24***
		(0.952)	(1.132)	(0.745)	(1.021)
Observations		311	311	311	311
Adj. R ²		0.351	0.334	0.298	0.372
YEAR Dummies		Yes	Yes	Yes	Yes
Sector Dummies		Yes	Yes	Yes	Yes

Notes: All variables are defined in Table 2. coefficients are shown in brackets below the T-Values. ***, ** and * indicate significance at the p< 1%, 5% and 10%, respectively.

Robustness Tests and Additional Analyses

I use the binary variable that's used to gauge the executives' foreign experience (FOREXPRTD) in the robustness section. When a company retains at least one executive with international expertise, the binary variable FOREXPRTD assumes a value of one; otherwise, it assumes a value of zero. The control variables utilized for models 1 through 4 are the same ones as are listed in Table 5 of the main regression model. The results align with the primary findings, which indicate that executives with overseas experience significantly boost investment in environmental, social, and governance initiatives. Furthermore, except for IND which performs significant results at a confidence level of 90 percent on models 1 and 3, none of the control variables differ significantly from the main model.

Table 6. Logistic regression of foreign experience of executives as a dummy value and ESG performance

	Predict	Model (1)	Model (2)	Model (3)	Model (4)
ESG Perform	Sign	ENVRON Perform	SOCIAL Perform	GOVNCE Perform	Overall ESG
Constant	?	4.561***	3.212***	4.811***	3.972***
		(3.456)	(4.843)	(3.381)	(5.194)
FOREXPRTD	+	2.92***	3.27 ***	4.219***	3.132***
		(0.213)	(0.657)	(2.350)	(1.289)
IND	+	1.72*	0.783	1.897*	0.201
		(0.934)	(1.262)	(0.537)	(2.021)
SIZE	+	3.56***	3.71 ***	4.59**	5.82***
		(0.056)	(2.054)	(1.803)	(1.348)
LEV	-	0.76	-2.71**	-0.975	-1.57*
		(0.658)	(-0.964)	(-0.838)	(-1.097)
CASH	+	3.23***	4.36***	3.902***	4. 08***
		(1.581)	(0.750)	(0.682)	(0.287)
ROA	+				
		(0.354)	(0.678)	(0.729)	(0.487)
Observations		311	311	311	311
Chi-square		423.098	479.676	548.374	509.365
Prob>chi2		0.000	0.000	0.000	0.000
YEAR Dummies		Yes	Yes	Yes	Yes
Sector Dummies		Yes	Yes	Yes	Yes

Notes: All variables are defined in Table 2. coefficients are shown in brackets below the T-Values. ***, ** and * indicate significance at the p< 1%, 5% and 10%, respectively.



Conclusions

Several studies investigated the effects of executive characteristics on ESG performance; nevertheless, the impact of foreign experienced executives is still not well recognized. Therefore, using a dataset of 311 firm-year observations of Saudi-listed firms from 2015 to 2021, this study examines the impact of executives' foreign experiences on ESG performance. The results highlight how overseas experience is important for top management teams to have a global perspective and cross-cultural competencies to effectively leverage ESG activities. These results are robust across different metrics used to measure executives' foreign experience.

The implications of these findings suggest that investors should consider ESG policies and executive characteristics when making investment decisions, emphasizing the strategic importance of decisions such as investment in ESG activities and the international experience of executives. This study contributes significantly to the ESG literature by integrating stakeholder perspectives and shedding light on the relationship between executives' foreign experience and ESG ratings. Policy implications suggest that Saudi Arabian authorities should continue to encourage public firms to adopt ESG initiatives. Embracing and capitalizing on ESG initiatives can enhance organizations' social and environmental impact while strengthening their financial resilience in an increasingly interconnected global business environment. These initiatives may enable firms to allocate resources towards investment opportunities that enhance financial performance and shareholder value.

Moreover, these results underscore the strategic significance of executives acquiring international experience. Encouraging executives to gain exposure abroad could facilitate the effective integration of ESG initiatives into core business practices, particularly beneficial for companies led by executives with diverse international backgrounds. While the current study contributes to understanding these dynamics, it is not without limitations. Future research should extend these findings to encompass all Gulf countries or comparable markets. Additionally, while financial firms are typically excluded in similar studies, this inclusion of firms invites future research to critically evaluate these assumptions and findings within this context.

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