Integration Aspect of Training Teachers of Art Disciplines in Pedagogical Universities

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The aim of this study is to collect the latest data on changes in the teaching of art disciplines under the influence of the spread of the COVID-19 pandemic, as well as to trace how this revolution affects the emergence of innovations in teaching. The ultimate goal is to find an approach that will help future teachers solve problems related to the technologization of education and new requirements of the labor market. A promising way to solve this problem is to implement the principles of STEAM education in the training of future specialists. This will bridge the gap between technical and creative disciplines, theory and practice, and make it possible to integrate individual knowledge into creative innovative projects.

Keywords: technological innovation, online teaching of creative disciplines, STEAM education, innovative thinking

INTRODUCTION

In a highly competitive knowledge-based society, openness to innovation is a key factor in the long-term success of organizations and government agencies. At the same time, higher education is the main responsibility for training flexible, open to new technologies, creative specialists (Bystrova, 2015). However, universities are often criticized for their conservatism, lack of innovative educational programs that will meet the needs of the labor market, students, and society as a whole (Lambriex-Schmitz et al., 2020; Stukalenko et al., 2013). To solve this issue, higher education institutions are encouraged to create new educational and institutional strategies for training specialists, developing their innovative abilities,

and actively engaging in the development and implementation of innovations (Lambriex-Schmitz et al., 2020; Fedorov, 2021).

Under the influence of the pandemic, the development of new internet technologies has become a necessity for all members of the educational process, regardless of their readiness, desire, capabilities, or specialty specifics (Ankudinova et al., 2017; Yessengabylov et al., 2021). However, the focus on e-learning, according to experts, is not just a temporary tool, but a steady trend, which, most likely, will not lose its relevance in the near future (Burke, 2020). Although the teacher's workplace has long been heading to the internet space, the experience of mass transition to online education has shown that teachers are not ready to respond quickly to changes (Volgushev, 2021).

Pedagogical innovation can be considered novelty, which acts as a means, as well as the process of introducing this novelty into practice. In addition, innovation can be considered the result of the process of creating a new one, thanks to which positive changes occur and the set educational goal is achieved (Kryzhanovska, 2021). That is, innovations are purposeful changes that help to improve the methods and forms of training, and modify the educational process in accordance with the needs of the labor market. These can be non-standard approaches in organizing lectures, seminars, practical classes, independent work, electives, experimental training, development of new forms of assessment, and the use of computer technologies (Bystrova, 2015; Kalkeyeva et al., 2014).

The spread of the COVID-19 pandemic is, although it was caused by natural forces independent of humans, but systems for responding to the latest world events can be considered innovations **(**Ellis et al., 2020). Innovative changes taking place in Ukraine are based on the model of countries with more developed economies. However, under the influence of local traditions, innovative ideas acquire new features (Boychuk et al., 2019). The task of training teachers in our country should be to produce specialists who can not only effectively and quickly respond to innovations introduced or borrow foreign means of learning new things, but also have independent innovative thinking (Shunkov et al., 2019).

It should be noted that this mission has increased complexity in the field of teaching art disciplines, taking into account the need for personal interaction, various practical tasks that require a special workplace and materials, as well as physical interaction between teachers and students (Benjamin, 2019). The development of such types of art as painting, architecture, sculpture, music, theatre, choreography, cinema, etc. is based on traditional methods of knowledge transfer (Volgushev, 2021; Begalinov et al., 2018). Although specialists in these areas have special creativity and creative skills, finding answers to the requirements of teaching using innovative technologies may require more time and thorough research (Zhang et al., 2019).

The number of publications devoted to the specifics of online teaching in the art field is reduced to units. Therefore, future teachers today find themselves in a difficult situation, where traditional teaching methods are no longer relevant, and new tools have not yet been developed. Therefore, the goal of this study is to help future teachers find a way to respond to the technological changes of our time. Accordingly, the task was to analyze the domestic and foreign experience of teaching art disciplines online. To identify the main difficulties in responding to technological changes, as well as factors that contribute to or hinder online education and innovative teaching strategies.

MATERIALS AND METHODS

At the first stage of the work, the analysis of recent publications covering the topics of innovative changes and educational methodology was carried out. During the analysis of such works as “Innovative Teaching Methods in Higher Education of Ukraine” (Bystrova, 2015), “Innovations in Education: Development Prospects” (Kryzhanovska, 2021), “Training of Future Teachers of Art Disciplines With the Help of Innovative Technologies in Education” (Boychuk et al., 2021) the concepts of “innovation”, “pedagogical innovation”, “STEM” and “STEAM education”, “information and communication technologies” (or ICT), “communicativeness” and so on were defined.

The second stage is marked by involving the method of comparison, which was used to get a broad picture of the introduction of innovations in the training of teachers of artistic disciplines in various higher

educational institutions. Namely, the experience of teachers of Eastern and Western European universities who faced challenges in transferring knowledge from art, music, sculpture, design and other arts online was compared. In addition, the difference in the attitude of teachers of creative subjects from different countries to the transition to e-learning and to technological change in general, as well as their propensity for innovative thinking, was highlighted.

The generalization method was applied in order to illustrate general answers to current teaching problems from examples of teaching methods of individual teachers, as well as common ways to overcome the difficulties of distance education and original ways to compensate for the lack of full practical communication between teacher and student. Concretization has helped to support the stated theses with concrete examples and data collected by researchers in recent years. The article specified the tools used by teachers of creative disciplines in the process of online learning, such as video conferences, chats, websites, blogs, and virtual galleries. The analogy method was used to explain individual innovation trends. These research methods constituted the third stage of the article and helped to provide a generalized assessment of educational processes in universities.

At the final stage of the work, preference was given to the synthesis method to obtain general ideas about the possibilities of innovative implementations in teaching methods, technical support of the educational process, as well as conditions for training future specialists who will be able to form new original tools and approaches to learning, as well as respond to innovations in education. All these methods led to the search for solutions to stimulate innovative thinking in future teachers of art disciplines. Through the analysis of methodological literature, the STEAM education approach was identified as the best direction for teachers' orientation. As a result, it was concluded that it is necessary to introduce elements of the STEAM approach into the educational process of higher educational institutions.

It should be noted that in the future, the development of this topic will also require empirical research methods, such as sociological observation of a specific sample of teachers. It is also advisable to use the method of interviewing, questionnaires or testing to get more accurate data on the innovation of Ukrainian education. This work was aimed at determining the concepts, general patterns and vectors of higher education development in Ukraine.

RESULTS AND DISCUSSION

Today, there is no doubt that informatization is radically changing the process of knowledge exchange. Digital technologies, or information and communication technologies (ICTs), have significantly accelerated educational processes. Information and communication technology is a set of methods, tools for searching, storing, processing, presenting and transmitting graphic, text, digital, audio and video data based on personal computers (PCs), computer networks and communication tools (Boychuk et al., 2021; Aizstrauta et al., 2013; Aizstrauts et al., 2013). ICTs allow combining the process of studying, generalizing, consolidating and controlling the assimilation of educational material by higher education applicants. ICTs also make it possible to individualize the educational process (Boychuk et al., 2021).

Transformation of the educational process in accordance with technological innovations implies, first of all, awareness of modern technologies, features of information transmission via the internet. The transition to online education is a key innovative trend associated with changes not only in technical, but also in methodological and pedagogical nature. Distance learning is a challenge for teachers, especially those whose subjects are related to creativity and practice. This form of training, although it stimulates the innovation of participants in the educational process, forms new skills and knowledge in them, is associated with a number of limitations. This can be seen in the example of such subjects as choreographic art or sculpture, where tactile contact between participants in the educational process is necessary. Therefore, not all occupations are subject to change equally (Gavran et al., 2021; Shankina and Shankin, 2021). Online art classes will differ in duration, intensity, content, organization, and so on. However, first of all, it makes sense to consider the general principles of the educational process online.

The main global trends that are used in online education include the following (Kryzhanovska, 2021): the use of distance learning system management programs. LMS (Learning System Management);

gamification of knowledge; cloud technologies that share schedules, homework, documents; Augmented / Virtual Reality: AR / VR, which helps students immerse themselves in a certain space and be an actor in it with the help of gadgets; artificial intelligence, AI – a creation of the personalized learning space. These are biometric gadgets that recognize voice, sensors, and "smart" classrooms. Most of these technologies are not available to Ukrainian students, but it makes sense to study the mechanisms of their device and use, because they have special prospects for distribution in the educational process.

Universities typically use two forms of online classes: chat classes - classes that are conducted through simultaneous correspondence in chat, to which all participants have access at the same time. As well as web classes, i.e. remote conferences, seminars, laboratory work, workshops, etc. Many teachers arrange live broadcasts via Instagram, Facebook, Telegram, WhatsApp, Viber, Zoom, Skype, etc. (Shankina and Shankin, 2021). The most popular form of conducting is a video conference in Zoom, since this program allows performing many tasks even in the free version, provides good communication quality, and has a user-friendly interface (Shankina and Shankin, 2021). So, teachers today should not only be knowledgeable in their subject, but also be able to transform their courses in accordance with available technologies, apply them competently and in a timely manner.

Several communication strategies can be traced in the European experience of teaching creative subjects in higher education institutions (Burke, 2020). First of all, teachers realized the need to use new pedagogy, which is at the stage of experimentation. Many of them saw the pandemic and the transition to e-learning as an opportunity to try something new, focusing more on analytical than physical concepts. For example, analyze and discuss existing art samples (Burke and Cleaver, 2019). The most common forms of overcoming the problem of practical training were:

1. Evaluation of extracurricular activities performed. Some teachers tried to attract students to active work through weekly tasks that students performed in their free time. This form of work really interested students, because it did not provide for restrictions in time and space. On the other hand, it required more time than during normal classes. In addition, such tasks are followed by technical difficulties: access to audio or video files, poor image or audio quality, and so on. Teachers also expressed their uncertainty about whether students practiced properly, because observation and interaction in the process of work is also an important part of the educational process. But in general, this format of work can be an example of successfully overcoming the restrictions associated with online communication (Burke, 2020).
2. Most teachers offered their students online lessons that they recorded or conducted directly with students. Students were given access to platforms with advanced features such as two-way video, screen sharing capabilities, chat, a whiteboard feature that allowed them to interact with the screen using drawing tools, and discussion and group work rooms. However, although online classes provided opportunities for active participation and interaction, they were not always popular among students. For example, if a teacher left notes, students lost the motivation to attend the class. Therefore, the opportunity to attract students and actively participate in lessons was lost. Therefore, some teachers simply created videos with practical instructions for their students and stimulated their self-education skills.
3. More creative teachers created blogs, websites, and virtual galleries together with students to demonstrate their activities. This had a positive impact on student engagement and motivation, but required additional effort and time resources from the teacher (Burke, 2020).

As it turned out, online teaching of art disciplines involves a radically different pedagogical approach than face-to-face classes. Teachers have to pay more attention to communication, make more efforts to improve the dialogue with students, and involve them in active self-expression in the classroom. An important role here is played by the interest, interactivity of the teacher, their emotional connection with students (Tokatligil et al., 2021). Some specialists were really willing to do this, while others recognized the freedom of their students who "fell out" of the educational process.

Most teachers used chat rooms or discussion boards as an additional means of stimulating social or cognitive interaction in the community. So, establishing the communication process was an important part of the interaction of participants in the educational process. That is, communication skills should be

considered as a significant component of teaching methods. Most Ukrainian scientists agree with this and define communicativeness as "a professional and personal quality of a teacher, characterized by the need for communication, the ability to easily come into contact, evoke positive emotions in interlocutors, experience pleasure from communication" (Zyazyun et al., 2013). Whatever means of teaching the teacher chooses, the basis of their professional implementation will always be the ability to communicate, that is, to establish an atmosphere of trust, calm, equality, etc. (Zyazyun et al., 2013).

To summarize, the key to a successful online learning process in the field of art is: adaptation and use of innovative technologies, programs and approaches; well-established interaction between the teacher and the student, high motivation of the teacher to find the best forms of knowledge transfer. According to those who have experience teaching online, such education is a qualitatively different type of training, and not just a transfer of full-time classes to Zoom (Scull et al., 2020). In addition, distance learning requires special skills of self-regulation and time management not only from teachers, but also from students. Innovations require additional technical support and time to adapt. For example, creating online libraries with free access to the necessary literature, as well as distributing special software that will help representatives of creative specialties optimize the educational process. It should be said that teachers' acceptance of technology depends on various factors. In this context, not only external factors are important, but also the internal innovation of the teacher. In order to increase the innovation of teachers, examples of advanced innovative methods can be presented at separate seminars, without interrupting teaching (Mazman Akar, 2019; Ermekova et al., 2013).

Contrary to the opinion and mood of European teachers, in the Ukrainian discourse, innovations in the field of teaching art disciplines are treated with greater distrust and caution. In 2013, Ukrainian teachers in the monograph "Teacher of art disciplines in the discourse of pedagogical skill" expressed their radical position on the technologization of education: "humanity corrupted by progress, faced with a choice, chooses what is easier, simpler, faster, does not cause the slightest tension, thus sliding into the abyss of spiritual primitivism. As we meet new technologies, we return to the times of barbarism. However, we live in the third millennium and are forced to emphasize that for pedagogical science and practice it is important to understand that the inner essence of communication is the processes of formation and development of social and individual consciousness, which develops in philosophy and psychology" (Zyazyun et al., 2013).

According to the authors, communication between the teacher and the student, which takes place within a certain culture, a specific university environment, cannot be replaced by formal distance relationships (Zyazyun et al., 2013; Seitkazy et al., 2015). It is interesting that even after the improvement of communication technologies, the transition of the whole world to online education and its actual transformation into everyday life, Ukrainian teachers generally express a negative attitude to innovation and nostalgia for classroom work. For example, in the article "Problems of Distance Teaching of Creative Disciplines", the main idea is that cooperation between a teacher and a student in the classroom cannot be replaceable. The authors emphasize that the level of student work has significantly decreased compared to previous years, the communication process has become more complicated, students and teachers have found themselves in a state of technical, social, and psychological confusion (Duan and Zhao, 2021). Obviously, teaching the arts is best suited to the classroom form of teaching, at most a mixed form of teaching, but under no circumstances can distance learning become the norm of teaching for the long term (Shalamova et al., 2021).

The same tendency not to accept innovation is also characteristic of the post-Soviet space. For example, the Russian teacher and scientist A.E. Volgushev (2021) shares his observations in the article "From the Experience of Teaching Fine Arts in Higher Education (Distance Format)". He notes that for most disciplines, switching to online courses has not changed the essence of teaching. Students have access to timely, effective classes and complete tasks efficiently. However, for teachers of art disciplines, the issue of distance education is particularly acute. According to the author, the student's artistic work must meet certain qualitative criteria: skill, uniqueness, technicality, and so on. However, the electronic educational environment does not allow to fully evaluate the work in all parameters, but only records the fact of having a job. For example, in the fine arts, evaluating works through photography does not make it possible to evaluate color, color scheme, contrasts, etc. due to the objective shortcomings of technical means. That is,

an objective remote assessment of the work becomes impossible (Volgushev, 2021). At the same time, in educational practice, a significant role in the learning process is played by the final assessment, when the grades from the current work of students are almost insignificant on the exam, especially at the final certification. The introduction of a cumulative or rating assessment system is also ineffective if the explanatory and illustrative teaching method dominates (Boychuk et al., 2019).

As well as foreign researchers (Scull et al., 2020), Ukrainian teachers (Kiuru et al., 2020) pay attention to communication issues. Students were found to be less motivated during online learning. This can be caused by psychological factors: they feel more isolated, unproductive. Therefore, the teacher should make efforts to build reliable educational relationships with students and give feedback. In this case, the load on the teacher increases, the number of reports and preparatory materials burdens them. Thus, they have a limited time resource for establishing individual contact with students. In addition, students lose the opportunity for interpersonal communication, which also contributes to the loss of interest in the educational process. They cannot compare works with each other, discuss the learning process, learn skills, or analyze other people's mistakes (Volgushev, 2021).

Pedagogical problems also include the inability of the teacher to correct, direct the student in the process, correct their movements, and individually work out their mistakes. They see the student's work only from one perspective. Methodological issues include the lack of professional video tools and distance learning programs created specifically for teachers of art disciplines (Shankina and Shankin, 2021). Music teachers also have a technical problem with asynchronous sound in communication programs. Teachers' distrust of technology should also be noted. Kiuru et al. (2020) emphasize the limited technical capabilities of networks, the inability to efficiently transmit the characteristics of real objects, the high cost of equipment and software (especially those related to art and creativity). Indeed, modern programs make it possible to transfer theoretical knowledge quite well, but practical exercises largely lose their quality, and, ultimately, the meaning of the remote format.

As can be seen, most teachers of creative disciplines are critical of introducing innovations in the educational process (Stukalenko et al., 2016). But should students of pedagogical universities and future teachers of art disciplines use this position? It should be noted, that the possibility of online education to remain only a temporary means is very low. Even if the pandemic no longer bothers the world community, educational institutions will leave the distance learning format (at least partially) for reasons of saving fees for the maintenance of premises, providing it with the necessary equipment, and so on. Naturally, there is a great danger of losing the quality of education. To prevent this from happening, future teachers should be more open and creative, and develop innovative thinking.

The way to develop innovation in teaching is the STEM education strategy, which in recent years has attracted the attention of experts both in the world and in Ukraine (Boychuk et al., 2021). For modern man, the ability to timely monitor scientific changes, comprehensively perceive information, properly structure it and apply it in practice – vital skills that make one competitive in the labor market. In the near future, the public education system is unlikely to be able to respond to such rapid global changes, so the idea of continuing education, as well as independent training and organization of work tasks, will come to the fore. (Boychuk et al., 2021).

The appeal to STEM is driven by the fact that we live in a time when economic, environmental, and social factors affect the world in ways that endanger individual security, public health, and economic stability in the state. Therefore, education cannot return to the old forms that are relevant for previous historical stages. The modern solution to reforming the education system is the concept of STEM education, that is, education that includes such disciplines as science, technology, engineering and mathematics. Skills in these areas are called skills of the 21st century. At the same time, education based on this principle should be carried out comprehensively, holistically, and not as individual subjects (Liu, 2020). Adding Arts to STEM to create STEAM involves incorporating creative thinking and applied arts into real-world situations. Art is not just about working in a studio. Art is about discovering and creating ways to solve problems, integrate principles, or present information. For example, architecture combines engineering, mathematics, and technologies that are used to create structures. From this point of view, the traditional

teaching of art disciplines makes sense in synthesis with their applied significance, the ability to perform modern functions, and respond to world events.

Integration is a key component of STEM and STEAM. Instead of teaching subjects as independent subjects, this principle is based on project work and solving everyday tasks. STEM provides skills that will be used in the workforce and in the real world. Rarely does a job require only one set of skills, such as math or painting, so everything should be taught in a complex way.

Real-world work is interdisciplinary. Teachers should teach children how subjects integrate and work together. Children should develop a variety of skills and passion for research. Learning is no longer about memorizing facts. Instead, it's about learning to think critically and evaluate information. How to apply knowledge, research, and skills to solve a problem. Different subjects should be taught in an applied way, as part of a larger whole, rather than the traditional approach of individual subjects. As a result, the method provides a close connection with the real world, setting tasks in the form of a challenge, high motivation and encouragement to cooperate with young people to carry out a project that has a common goal for them (Boychuk et al., 2019). Most importantly, by incorporating query-based principles and a highly adaptive framework to meet students with different needs, STEM helps foster a love of learning among students and children.

Ukrainian researchers emphasize: “the penetration of the artistic and aesthetic component in all spheres of human life (production, construction and services) and the significant influence of the structural properties of manufactured products on their competitiveness generates new trends and directions for the development of the education system based on the humanization of the educational process. Integration of mathematical, natural, technical and professionally oriented disciplines with humanitarian, aesthetic, cultural and artistic” (Boychuk et al., 2021).

Thus, the principles of training new specialists should change significantly: teachers should focus on practice, a combination of skills, adaptive knowledge, and so on. The crisis of teaching creative subjects during the pandemic just showed the need to change the structure of work plans and approaches to teaching. After all, technical innovations will only become more complex and a modern teacher should be able to respond to these complications at the expense of technical and scientific awareness. At the same time, they should develop their creative abilities and the ability to build the structure of their courses in an original way. Also, the teacher of the future should be able to maintain a high level of personal communication, be able to establish contact with students, understand the psychology of their behavior, and inspire confidence, since the issue of online communication is really a task of increased complexity.

In addition, time management skills, which are already considered the key to success today, will require even more attention and improvement in the future. Individual motivation, the ability to manage one's time, to moderate discussions and practical sessions, and to allocate time to each of the students are what the future will require of art teachers. Therefore, the above-mentioned directions and skills should be taken into account in the innovative training of art teachers at universities. According to the study, the innovativeness of teachers is a key factor in the successful employment and professional realization of students. As a result, the prosperity of enterprises and government organizations that need creative, savvy, flexible specialists.

CONCLUSIONS

Organizing an innovative environment at the university is one of the priority tasks of modern education. As it was found, in Ukraine, teachers of art disciplines are conservative about teaching their subjects, do not perceive online learning as the main form of teaching in the future. Their concern is caused by the difficulties of joint action, practice, physical and verbal communication that arise when trying to conduct remote classes. In addition, there is distrust of technology, and the inability of electronic means to fully convey the aspects of reality necessary for transferring experience and evaluating the skills acquired by students is emphasized. Most teachers hope to eventually return to the usual format of teaching art subjects. Although criticism of online learning is fair and justified, such unwillingness of teachers to use new technical means, meet the conditions and requirements of our time is evidence of low adaptability and lack of innovative thinking. Students of pedagogical universities who find themselves in a crisis of old methods

of teaching creative disciplines and the lack of new guidelines need to develop innovative abilities and creative thinking more than anyone else. When training new professionals, it is necessary to create mechanisms that will stimulate their research spirit, ability to generate new ideas and ways out of problems.

A promising method that can be used both in the training of teachers today and implanted in their future professional activities is STEAM education (stands for the synthesis of Science, Technology, Engineering, the Arts and Mathematics). A course on the integration of science and art can be an approach that will promote the graduation of specialists with an active position and readiness for technological changes. It should develop a creative and imaginative perception of the world, which will allow a person to be an innovator and create something new. STEAM education involves interdisciplinary connections between different disciplines in different areas of knowledge, as well as active application of acquired skills in practice. New integrative programs can already be implemented in the educational process. Especially considering the dynamics of social and technological change, which requires a prompt response. Students of the 21st century need such skills that will help them meet the challenges of our time and solve global problems. Therefore, the reformation of educational programs in pedagogical universities should be carried out in the direction of STEAM. This applies to future teachers of art disciplines, who must change the conservative vector in the direction of innovation in order to enable graduates of creative schools and universities to adapt to modern realities.

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