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REMOTE PLATFORMS FOR DEVELOPING THE DIGITAL COMPETENCE OF FUTURE TEACHERS

The article reveals the conceptual principles of the formation of digital competence of future teachers using remote platforms. In achieving the goals set, theoretical research methods were used, such as general scientific and special research methods, particularly analysis and synthesis, comparison, generalization, and system-structural analysis. It has been established that the process of forming the digital competence of future teachers is aimed at improving the assimilation of theoretical material by applicants for education using modern digital platforms. The components of the formation of digital competence of future teachers are considered. It was revealed that the conditions for the formation of digital competence of future teachers occur with the help of remote platforms since mandatory distance learning is a challenge for everyone involved in the educational process. Some virtual and augmented reality applications are highlighted, which can be used in training future teachers to form digital competence. It has been determined that using Microsoft Teams, Google Meet, Skype, Zoom, and Google Drive platforms is essential during future teachers' distance learning to develop their digital competence. The leading digital competencies of future teachers, which are formed through remote platforms in the educational process of higher educational institutions, are reflected. It has been revealed that the use of digital products in the conditions of distance learning for the formation of digital competence of future specialists allows to improve the goals, content, methods, organizational forms, techniques and means of training and is one of the indicators of the effectiveness of the educational process. The practical significance of the study is that the conclusions and recommendations developed by the authors and proposed in the article can be used to avoid obstacles in the implementation of distance platforms in the educational process of higher education. A promising direction for further research on this issue is the improvement of the educational process in the course of the formation of future teachers' digital competence based on the use of augmented reality technology in the educational process of higher educational institutions, which will stimulate the educational sphere and will improve teaching activities in the educational digital space.

Key words: *distance learning, educational process, higher education, higher educational establishments, distance platforms, digital competence.*

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ДИСТАНЦІЙНІ ПЛАТФОРМИ ДЛЯ ФОРМУВАННЯ ЦИФРОВОЇ КОМПЕТЕНТНОСТІ МАЙБУТНІХ ВИКЛАДАЧІВ

У статті розкриті концептуальні засади формування цифрової компетентності майбутніх викладачів за допомогою дистанційних платформ. У процесі досягнення поставленої мети було використано теоретичні методи дослідження, а саме: загальнонаукові й спеціальні методи дослідження, зокрема аналіз і синтез, порівняння, узагальнення, системно-структурний аналіз. Виявлено, що процес формування цифрової компетентності майбутніх викладачів спрямований на покращення засвоєння здобувачами освіти теоретичного матеріалу із використанням сучасних цифрових платформ. Розглянуто компоненти формування цифрової компетентності майбутніх викладачів. Виявлено, що в умовах сьогодення формування цифрової компетентності майбутніх викладачів відбувається за допомогою дистанційних платформ, оскільки обов'язкове дистанційне навчання є викликом для всіх, хто залучений до освітнього процесу. Висвітлено деякі додатки віртуальної та доповненої реальності, які можна використовувати в процесі навчання майбутніх викладачів для формування у них цифрової компетентності. Визначено, що використання платформ Microsoft Teams, Google Meet, Skype, Zoom, Google Диск є особливо важливим під час дистанційного навчання майбутніх викладачів з метою формування у них цифрової компетентності. Відображено основні цифрові компетенції майбутніх викладачів, які формуються за допомогою дистанційних платформ в освітньому процесі ЗВО. Виявлено, що використання цифрових продуктів в умовах дистанційного навчання для формування цифрової компетентності майбутніх фахівців дає можливість удосконалити цілі, зміст, методи, організаційні форми, прийоми та засоби навчання і виступає одним із показників ефективності освітнього процесу. Практичне значення проведеного дослідження полягає в тому, що висновки та рекомендації, розроблені авторами та запропоновані в статті, можуть бути використані для уникнення перешкод під час впровадження дистанційних платформ в освітньому процесі ЗВО. Перспективним напрямом подальших досліджень з даної проблематики є вдосконалення освітнього процесу в ході формування цифрової компетентності майбутніх викладачів на базі використання технології доповненої реальності в освітньому процесі ЗВО, що дасть змогу стимулювати освітню сферу і сприятиме покращенню викладацької діяльності у освітньому цифровому просторі.

Ключові слова: *дистанційне навчання, освітній процес, заклад вищої освіти, дистанційні платформи, цифрова компетентність.*

Introduction. The computerization of modern society and the active introduction of information and communication technologies in all spheres of human activity require specific changes and updating approaches to training educational personnel in our country. This is due to the need to train a new generation of teachers who can quickly and competently apply the results of scientific and technological progress in professional and educational activities, primarily web technologies, cloud services, smartphones, the Internet and artificial intelligence, electronic educational resources, digital educational platforms and other modern devices.

The relevance of teacher training and the formation of their digital competence is due to the active use of distance and blended learning in Ukraine through educational reforms and unprecedented security measures. The formation of digital competence of future teachers is a chronic problem, the solution of which is to build a quality educational environment that can provide opportunities to meet the educational needs and development of higher education applicants.

Theoretical substantiation of the problem. I. Hrebenyk, Yu. Zaporozhtseva, V. Kovalenko, M. Mariienko, O. Sukhykh, S. Tolochko and others study specific aspects of the formation of digital competence of future teachers.

At the same time, considering scientists' research, it should be noted that the issues of the formation of digital competence of future teachers through remote platforms have yet to be thoroughly studied and require a more in-depth analysis.

Methodology and methods. The purpose of the article is to reveal the conceptual foundations for the formation of digital competence of future teachers using remote platforms.

In achieving the goals set, theoretical research methods were used as general scientific and special research methods, in particular analysis and synthesis, comparison, generalization, and system-structural analysis.

Results and discussions. The process of forming the digital competence of future teachers is aimed at improving the assimilation of theoretical material by applicants for education using modern digital platforms. It should be noted that higher education applicants are often better equipped with information and communication technologies than teachers, which usually contributes to the effective perception of information.

Among the principles for the formation of digital competence of future teachers, it is advisable to single out (Hrebenyk, 2019: 22) the principle of consistency (reflects the holistic, systematic nature of building the components of digital competence); the principle of continuity (characterizes the continuous improvement of the components of digital competence); the principle of activity (reflects self-transforming activity);

the principle of self-development (characterizes the need for the implementation of the acquired experience, professional self-development throughout life).

At the same time, the components of the formation of digital competence of future teachers are (Tolochko, 2021: 31): information and media literacy (involves processing, searching, and storing materials using digital resources for this); communication component (characterizes online communication through social networks, blogs, chat, e-mail, etc.); technological component (characterizing the use of digital technologies to solve complicated problems); consumer component (provides for the performance of routine professional tasks).

In today's conditions, the formation of digital competence of future teachers occurs with the help of remote platforms since mandatory distance learning is a challenge for everyone involved in the educational process. Distance learning, which involves the use of remote platforms, requires access to the Internet.

Distance learning uses unique computer-centric learning technologies, such as network and case technologies. The key features of distance learning are

- temporal and spatial distance between teachers and applicants for higher education in the learning process,
- use of various means of exchange of educational information,
- ensuring two-way communication between participants in the educational process.

The emergence of new technology learning tools, such as mobile devices, smart boards, MOOCs (Massive Open Online Courses), tablets, laptops, dynamic visualization technologies and virtual laboratories, has led to the improved educational process in institutions of higher education. Due to modern reality, distance learning platforms in education are becoming increasingly popular and widespread. This, first of all, is manifested in the fact that these technologies can bring learning to a fundamentally new qualitative level. Of the modern digital tools used for distance learning of future teachers, it is also advisable to highlight virtual and augmented reality applications.

Consider some applications of virtual and augmented reality that can be used in the process of training future teachers to develop their digital competence (Kovalenko, 2021):

1. Google Expeditions is a learning tool that allows one to travel through the virtual world and explore objects in augmented reality. The application has modes for studying historic monuments, objects at the atomic level, etc. In Google Expeditions, the teacher becomes a guide who goes on a video tour with a group of higher education applicants or shows augmented reality objects. This technology allows special tools for the detailed study of individual subjects.

2. EON-XR is an augmented or virtual reality program with features of distance learning and hands-on learning. Classes can be held in virtual reality mode, individually and in groups, providing all the educational process requirements. With EON-XR, users can quickly create compelling content on their phones, tablets, computers and headsets using the EON Reality library of over 1 million digital data.

In the conditions prevailing in society, teachers have to master the primary forms of online communication, such as meetings, forums, chats, blogs, emails, and questionnaires. Social networks, instant messaging, and mobile communication services such as Viber allow one to create private groups, communities and chats to discuss topics, tasks, questions, and information. Video conferencing can also be done through Microsoft Teams, Google Meet, Skype, or Zoom. Given the popularity, simplicity and freedom of a 40-minute broadcast, in the context of distance learning for future teachers, it is advisable to use the Zoom remote platform (https://zoom.us/download). The advantage is that the application can be used for individual and group work, installed and used on computers, laptops, tablets and smartphones. One can download it from the official Zoom website. Using the Zoom platform, everyone can organize scheduled and recurring meetings, send meeting links and IDs, use waiting rooms and chat rooms for one-on-one work, and use meeting recordings, screen sharing, and interactive whiteboards.

Another widely used platform for distance learning is Google Drive. Google Drive is a cloud storage for searching and saving various types of files. Various files are stored here, for example, lectures, laboratory instructions, presentations, electronic versions of pedagogical and methodological literature, popular science films, and screencasts of own production. The disadvantage of this application is the relatively small size of the free cloud storage (15 GB), but you can create multiple disks with different accounts (different subjects or specialities).

Figure 1 reflects the main digital competencies of future teachers, which are formed through remote platforms in the educational process of higher educational institutions.

According to the Concept for the Development of Digital Competences (2021), the formation and development of digital skills and digital competencies in society occur through:

1) receiving digital education by those who use information resources, new educational technologies and digital educational resources to improve digital technologies and digital opportunities;

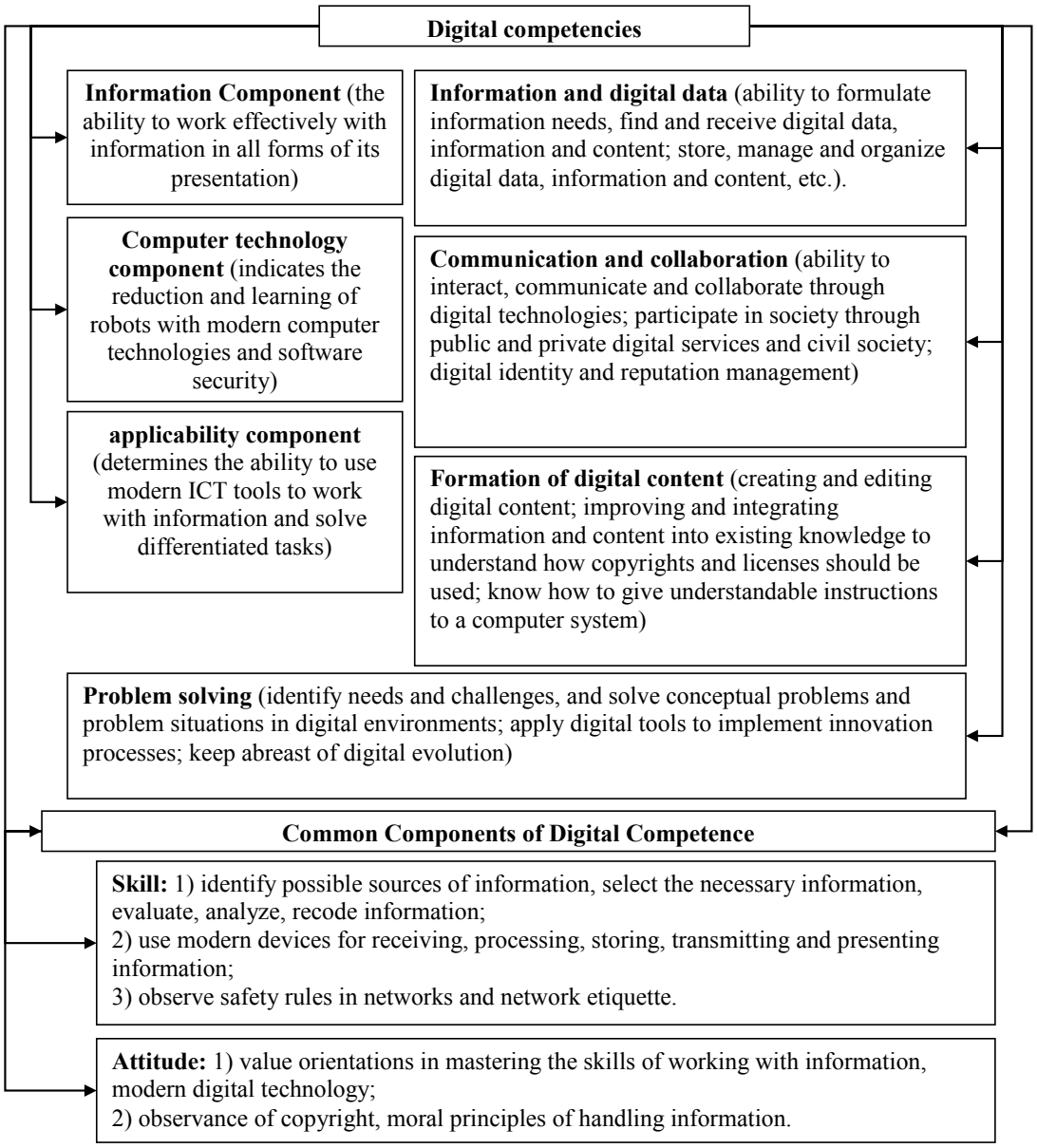

Fig. 1. The main digital competencies of future teachers, which are formed using remote platforms in the educational process

Source: based on (Zaporozhtseva, 2019)

2) ensuring the continuous development of professional digital skills in the system of additional education;

3) developing measures for the implementation of digital confirmation of information.

Digital competencies of future teachers include media literacy, processing and critical evaluation of information data, security and cooperation on the Internet, knowledge of various digital technologies and devices, and the ability to use open resources and technologies for professional development. Therefore, using digital products within distance learning to form the digital competence of future specialists allows us to improve the goals, content, methods, organizational forms, methods and means of training and is one of the indicators of the effectiveness of the educational process. The formation of digital competence of future teachers in the context of distance learning through digital products requires a systematic study of experience and the development of criteria and performance indicators for using various digital products in educational activities.

Conclusions. Based on the research results, it was found that the use of remote platforms in the educational process is a means of developing the digital competence of future teachers. Digital devices and mobile technologies are indispensable attributes of education for today's higher education applicants. In order to effectively assimilate the educational material, applicants for higher education

(future teachers) must know the capabilities of computer technology and mobile devices, understand the role of the digital educational environment, analyze information, be able to design and create their educational environment, work in an online educational community, etc.

The study's practical significance is that the conclusions and recommendations developed by the authors and proposed in the article can be used to avoid obstacles in the implementation of distance platforms in the educational process of institutions of higher education. A promising direction for further research on this issue is the improvement of the educational process in the course of the formation of digital competence of future teachers based on the use of augmented reality technology in the educational process of institutions of higher education, which will stimulate the educational sphere and will improve teaching activities in the educational digital space.

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