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THE POTENTIAL OF DIGITAL TECHNOLOGIES
FOR IMPROVING COMPLEX PERSONAL SKILLS

In the article, the author examines the features and potential of the digital online environment for improving the critical thinking of users as a significant factor in the formation of professional experience. Due to the use of digital technologies during training, we can witness the expansion of online communication field, assimilation of updated information on the profession, diversification of forms and strategies of educational activity, mastering of new professional programs. The development of personal skills in the field of professional activity is ensured by the organization of the educational process based on digital technologies, which, in turn, improves the individual cognitive characteristics of students, in particular, their critical thinking. The improvement of higher-order cognitive abilities of students occurs provided their activities are focused on the development of information, research, intellectual and creative skills. The analysis of scientific publications revealed a variety of interpretations of critical thinking, definitions of its characteristics, factors of formation and improvement, as well as the importance of this higher-order cognitive mechanism in the educational process by means of digital technologies. It was established that the dynamics of the formation of complex individual cognitive mechanisms of students in the process of educational activities by means of the digital environment is significantly determined by the introduced ICT. The assimilation of the online information in foreign language and social interaction in a virtual environment determines the development of critical thinking when learning foreign language. In the digital environment, there is a wide variety of online platforms designed to improve the individual comprehensive characteristics of students according to their cognitive levels. A study of the technological potential of online platforms proves that personal features, including critical thinking, can be enhanced through a range of activities, such as judgment-evaluation, online storytelling, web-based discussion forums, reflection etc.

Keywords: information and communication technologies; digital learning; digital technologies; digital environment; online platforms; critical thinking; higher order cognitive mechanisms.

Ref. 13.

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ПОТЕНЦІАЛ ЦИФРОВИХ ТЕХНОЛОГІЙ
ДЛЯ ВДОСКОНАЛЕННЯ КОМПЛЕКСНИХ НАВИЧОК ОСОБИСТОСТІ

У статті досліджуються особливості та потенційні можливості онлайн середовища для вдосконалення критичного мислення користувачів як суттєвого фактора формування професійного досвіду. Також аналізується вплив цифрових технологій на ефективність навчального процесу і соціальної взаємодії у віртуальному середовищі. Автор визначає умови вдосконалення індивідуальних когнітивних характеристик студентів. Теоретичний аналіз наукових праць виявив різноманітність тлумачень категорії критичного мислення, а також його особливостей. Засвоєння іншомовної онлайн-інформації та комунікативний підхід зумовлює розвиток критичного мислення студентів у процесі вивчення іноземної мови. У цифровому середовищі створено багато онлайн-платформ, призначених удосконалювати індивідуальні особливості відповідно до наявних когнітивних рівнів. Здійснений аналіз характеристик та технологічного потенціалу платформ доводить, що комплексні когнітивні навички, включаючи критичне мислення, можна розвивати за допомогою низки навчальних заходів у межах функцій зазначених онлайн-платформ.

THE POTENTIAL OF DIGITAL TECHNOLOGIES FOR IMPROVING COMPLEX PERSONAL SKILLS

Ключові слова: *інформаційно-комунікаційні технології; цифрове навчання; цифрові технології; цифрове середовище; онлайн-платформи; критичне мислення; когнітивні механізми вищого порядку.*

Statement of the problem. In the modern era of society's activity informatization, there is a need to define new tasks of the education system with the aim of developing and introducing digital technologies into the process of training and preparing specialists for full-fledged activity in the information society. This stipulates the revision of the purpose and content of the educational process, corresponding changes in the structure of education, the formation of non-traditional approaches to the development of new educational forms and methods based on the technical re-equipment of the educational process.

The requirements for the modern education system completely relate to the training of future competitive specialists with a high-quality command of a foreign language. The implementation of information and communication technologies (ICT), which are becoming fundamental in terms of social universality of applying, provide integral personal development during training by means of the Web.

In modern professional education, ICT are turning into a means of intensification of the educational process in all disciplines. The system of abilities and skills of modern specialists, which are formed as a result of the effective mastery of ICT, allows them to work in a high-tech society: to use a computer, information resources, modern software; use search engines and directories; purposefully find the necessary information; store and use the information found; process and provide information. The development of such skills provides a higher level of informational and intellectual capabilities.

In the information age, modern digital technologies are used to evaluate large-scale information databases and resources, which are used when searching for relevant and necessary information, and to separate false and questionable ones. Carrying out research online and developing professional skills require the formation of such a cognitive quality of any competitive specialist as critical thinking. Therefore, for highly effective professional activity in modern society, it is necessary to develop the skills of independent thinking and argumentation of one's own beliefs. Such complex cognitive skills of a modern competitive specialist are formed by means of highly developed digital technologies and online platforms.

Therefore, a comprehensive study of the parameters and capabilities of digital technologies, social networks, modern online platforms for the formation of critical thinking is necessary in order to improve the cognitive abilities of modern users of web resources during their professional growth.

Analysis of recent research and publications. For the purpose of lifelong learning and successful interaction with the local and international community in the digital environment, information literacy is an essential attribute of virtual community participants.

According to Schmidt and Keats [1], the virtual educational environment deepens its socio-political properties due to the interactive modern technologies of the global Web network. Thus, students are provided with additional prerequisites for the development of their critical thinking. According to Mayer and Clark [2], a condition for high-quality online education is appropriate and rational planning, as well as the presentation of educational material, tasks, and timely feedback.

A number of scientists, namely Norris and Ennis [3], Schwartz and Perkins [4], have so far focused their research on the general nature of critical thinking skills or their determination by a separate subject. It was in a problematic educational situation that he saw the formation and improvement of critical thinking.

According to Chiu [5], critical thinking is "a skill of potential value to those who must objectively evaluate what they can and do, digging from the ocean of online information now available on the Internet". According to Paul and Scriven [6], one of the basic mechanisms for the formation of critical thinking is the improvement and practical application of analytical abilities, as opposed to the simple construction of knowledge or the development of information processing abilities. Therefore, the goal of online education should be the development of students' critical thinking by means of the virtual environment.

According to G. Kwon, D. Parsons, and Lee Hyunyong, mobile learning itself significantly contributes to the development of critical thinking [7].

In addition to the recognition of the positive impact of ICT on various aspects of the learning process by scientists, they emphasize the need to build a favorable educational environment aimed at the implementation of these technologies. The analysis of numerous scientific works and research results made it possible to conclude on the need for further study of the theoretical and methodological aspects of the use of digital technologies, in particular, modern online platforms in the educational process for the development of individual characteristics of students, namely, their higher-level cognitive skills, including critical thinking.

The purpose of the article is to substantiate the importance of digital technologies and analyze a number of online platforms in terms of the development of individual complex higher-order cognitive mechanisms of students, in particular, critical thinking, as well as to determine the capabilities and piculiarities of applying digital technologies in the educational process.

Presentation of the main material. Modern higher education, due to advanced information technologies, faces the challenges of their influence on the formation

of students' individual characteristics during their educational activities in a virtual educational environment.

The global Internet hosts huge arrays of various information, and ICT, in turn, improve the methods of teaching students to process various information resources. ICT can be effectively used if: they are based on various information resources, have a clear purpose, provide a set of various ways and methods of searching, selecting, structuring and using information to solve educational tasks.

Due to the use of digital technologies in the educational process, we can witness the expansion of the audience of online communication with colleagues, professionals by means of computer tools and various sources of information; creation of opportunities to update information from different regions of the world regarding issues of professional interests; provision of access to the software for professional computers; diversification of educational activity forms through participation in electronic seminars, conferences, symposia.

The introduction of digital technologies into the educational process allows to realize their potential by mastering the methods and techniques of personal professional development through various forms of educational activities (participation in the work of virtual research laboratories, remote seminars and conferences, online business games), actualizing critical thinking as a factor of increasing personal interest and desire for self-development. The effectiveness of this activity largely depends on the students' responsibility for learning outcomes in situations where they are authorized to choose the forms and methods of educational activities, various sources of information.

During the use of ICT in the educational process, it is possible to increase their effectiveness provided they are used as a subject of study, i.e. mastering the methods of searching, processing and using information, realizing their specificity in creating an educational environment and stimulating opportunities for self-development and self-expression in the professional field; means of interaction with information resources, which optimizes the process of new knowledge assimilation and the formation of an individual learning style; a tool for solving educational tasks that ensure the professional growth of future specialists in the information environment.

The ways of improving innovative technologies in the educational process are revealed by modern foreign and domestic methodologists and researchers. Handoyo Puji Widodo and Reni Puspitasari Dwi Lestariyana emphasize that today's students have a rich experience of active use of digital technologies, including the use of such online platforms as Facebook, Instagram, blogs and WhatsApp [8]. The digital environment is becoming an integral, mandatory field of activity of modern youth. Thus, it should be noted that education based on modern technologies is an available global means of spreading ideas, innovations and education. According to a number of scientists, the wide range and diversity of information search methods provide a wide range of forms and strategies of learning, as well as the creation of virtual classes and other online digital educational platforms. As noted by R. Chartrand, modern technologies should and are able to provide unlimited access to educational materials for all interested participants. This significantly contributes to the improvement of the educational process and creates conditions for the development of continuous education available to a wide range of people. Naderan Tanyeli [9] claims that using the virtual environment of the Internet turns the learning process into an interesting process, especially for foreign language learners.

So far, research of the issue of new education forms' influence on the motivation of students' cognitive activity has become widespread. Scientists have proven that the level of educational motivation of students has increased. In particular, they began to study more intensively after completing game tests on the free online platform Quizizz [10]. The modern digital environment provides an educational process based on the introduction of innovative educational technologies, mainly using ICT with remote or fully mediated interaction between the student and the teacher [11].

In our research, we analyzed the capabilities of the virtual educational environment in terms of improving students' critical thinking by means of various information sources, converted interactive databases, online tests, resources for transfer, consolidation and self-control of knowledge, taking into account various learning conditions.

Our analysis of the pedagogical experience of using ICT proves that they effectively contribute to the formation of students' critical thinking skills, if their actions are aimed at the development of: information skills (perception, collection, selection, systematization, analysis, structuring, generalization of information); research skills (statement of the problem, formulation of the goal and precise tasks, definition of the object, subject, research hypothesis, development of the experiment program and its implementation, processing of results, formulation of conclusions); creative skills (imagination, schematization, typification, emphasis, globalization, construction); intellectual skills (systematization, generalization, analysis, synthesization, classification, comparison, comprehension, goal setting, reflection).

Creating a developed and complex system of cognitive skills as a foundation for improving critical thinking requires complex questions and tasks with ambiguous answers, taking into account the conditions of the virtual learning environment. Therefore, the effectiveness of the online course is largely determined by its structural components and their system construction.

The ways of solving educational tasks when mastering foreign language are determined as a result of analyzing information in foreign language obtained from various

Internet resources, as well as during synchronous or asynchronous online communication and the use of information during the simulation of communication situations. Mechanisms for improving critical thinking are formed by activating it in communicative situations, applying students' communicative skills, and coordinating group work.

As for today, the interpretation of critical thinking has been sufficiently elaborated, however, a wide range of problems remain for further research regarding this complex concept. In our opinion, taking into account a number of other important factors of the formation and development of critical thinking is essential for the development of scientific ideas about such a cognitive concept – the peculiarities of information perception by students, their initial preparation, personal attitude to processes and facts, beliefs, methods of using ICT and the peculiarities of implementation in educational process. Formation of high-quality study skills of students will ensure effective training in their further professional activities. Understanding, perception, and practical implementation of knowledge require the determination of certain learning strategies, various metacognitive abilities, and motivation for their use. Critical thinking is a crucial factor necessary for successful learning and further professional growth of students.

By developing critical thinking skills used in digital environments, students can combine and evaluate a variety of information resources, as well as gain experience in social networking. Therefore, special attention should be paid to the creation of online learning platforms for the purpose of developing critical thinking as a basis for lifelong learning and online communication.

Because of developed critical thinking, a person is able to distinguish between logical reasoning of others and personal opinion. It is generally known that personal beliefs and worldview determine the critical thinking of an individual. The main purpose of using such a complex cognitive mechanism as critical thinking in evaluating other people's opinions is to take into account one's own life experience, to make one's own judgements regardless of other external factors. The goal is to perform reasonable actions based on well-considered decisions that take into account facts and various experiences for further development.

Some scientists interpret critical thinking as an orderly intellectual process of active and effective conceptualization, application, analysis, synthesis and/or evaluation of information accumulated or constructed through observation, accumulation of experience, reflection, justification, communication, with its use in further actions [12]. This is consistent with Limbach, Duron and Waugh [13], who see evaluation and reflection as important components of high-level critical thinking. These high-level thinking abilities can be developed unevenly at different stages of training, even at each stage of training within the same discipline.

In the modern studies considered by us, we singled out the most common signs of critical thinking: the implementation of effective research methods, diagnosing problems and their causes, predicting the behavior of others' and personal actions, adaptive use of reasoning, interpretation of information, effective evaluation of hypotheses, facts and results.

In our opinion, signs of a high degree critical thinking can also include: comprehensibility (a person is easy to understand, his thoughts are interpreted unambiguously), correctness (absence of errors, distortion of facts, compliance with certain standards), relevance (direct connection with the problem), depth (systematic analysis of all components of the problem), logicality (correct justification, according to a certain system of principles, rules, concepts and assumptions that are the basis of the scientific field, activity, as well as rational justification of any beliefs or solutions to problems), objectivity (equivalent analysis of all aspects regardless of personal views and interests), comprehensiveness (considering the problem from different points of view).

This corresponds to the opinion of Michael Scriven and Richard Paul [6], who perceive critical thinking as an intellectually disciplined process of active and skillful conceptualization, application, analysis, synthesis, and/or evaluation of information gathered or generated by observation, experience, reflection, reasoning, or communication, as a guide to faith and action.

Some scholars consider critical thinking as the ability to operate with complex ideas, which leads to the provision of convincing evidence by a person to substantiate a logical judgment. The evidence, and therefore the conclusions, will take more appropriate account of the context. In addition, more complex cognitive levels, reflection and assessment are updated.

Among the advantages of digital technologies, we can single out the following: visibility, quality of tests, interactivity, remote participation in scientific research events (online conferences, student Olympiads, etc.), the possibility of differentiated and individual learning for all students, the justification of using audio and video materials. Practical experience of speaking and listening is effectively practiced in an online environment that provides various opportunities for organizing a video lesson, namely: possibility to see a student, send files to students, use a "virtual" board, divide the group into subgroups to practice dialogues, monologues, organize student chats.

The process of teaching students in a digital environment based on modern online platforms covers a number of separate stages. According to Bloom's digital taxonomy of critical thinking, the latter includes a number of components: perceiving information from various sources, understanding information taking into account a personal point of view, comparing it with others' ideas, finding arguments to support one's point of view, making decisions based on facts, evaluating the decision

made. The goals of authentic learning process in the digital environment from the perspective of the cognitive sphere as the basis of critical thinking include the following components: memorization, understanding, applying, analysis, evaluation, creation.

Today's students can activate the mentioned components using online tools and collective learning methods. Thanks to its ICT capabilities, students are encouraged to take advantage of the digital environment and implement all stages of the Bloom's taxonomy of authentic learning in order to develop critical thinking skills based on the best methods of using information technology.

A wide range of available online tools allow improving students' cognitive memorization skills. Using YouTube, students feel comfortable, which contributes to more effective memorization and perception of lectures created by teachers at the time available for that. Different types of lectures can be easily created using online tools such as EdTED, Clarisketch, and others.

Mind mapping is one of the common ways to improve information assimilation skills during online student collaboration. In addition, the Internet provides students with widely used tools such as Mindmaple, MindNode, etc. Another platform, MindMeister, is a comprehensive online tool that enables comprehensive analysis of problems, subjects or learning objectives using mind maps. This process develops the skills of critical evaluation of problems in general. Online platform, Puzzlemaker, offers opportunities to improve the experience of analyzing learning tasks combined with higher-level cognitive skills. Also, this online application allows you to organize collective work putting together puzzles by means of learned words and phrases in English.

The "Google fusion tables" online platform allows students to filter and summarize large-scale information tables, as well as create maps and graphs, thereby developing their critical thinking skills. In addition, the capabilities of the program include the exchange of information and the organization of cooperation with online partners. Another example of the online resource Newsela provides a powerful tool for learning English, which is to read texts about the latest news and then critically evaluate them. This platform offers a wide range of tasks for working with texts – evaluating information, following open quidelines, writing annotations to check understanding of the text, conducting quizzes, working together to evaluate the articles read.

One of the important stages in the development of students' critical thinking is practicing their analytical skills. Examples of online platforms used to develop analysis skills include Creately and Lucidchart. They provide possibilities for visualization and graphing during the analysis procedure. Programs such as OneNote, Toodledo, Google Docs should come in handy for structuring and conveying the main content from the array of information. These platforms are useful for developing projects, presentations and designing procedures.

Effective development of critical thinking skills cannot occur without an assessment procedure. In contrast to the analysis, the evaluation procedure is carried out collectively. For this, such online tools as Snopes and FactCheck are used to impartially check numerous sources of information. Students can develop their reflection skills rather effectively on the basis of the Edmondo online platform. It offers a wide range of functions: posting of information, exchange of comments, questions, tasks, monitoring interaction between teachers and students.

Applying a number of online programs, in particular, Canvas, Google Doc, and Slideshare presentations, it is possible to carry out a wide range of reflective activities for students to evaluate their own progress, where they can register their achievements, methods and web tools used. The importance of this procedure is stipulated by its effect on the development of higher-level thinking and the internalization of students' learning content. Also, for creating their own brands, students can resort to such well-known online tools as WordPress and Ghost.

Online resources provide researchers with a wide range of tools to develop their creativity through the integration of technology into learning. Based on the integration of such platforms as Google Class, Mahara, Moodle, students can upload their files, movies and other content, organize forums on various learning issues in the digital environment. Teachers are given the opportunity to monitor and motivate the process of both individual and collective learning activities of students. Based on the opportunities provided by digital technologies, students improve their critical thinking skills and evaluate their own progress. Examples of other online platforms that enrich creative skills are VoiceThread, Audacity, Google Sites, Evertone, Podbean. Piculiarities of such Web-tools as Storybird, Shorthand are technological possibilities to visualize ideas and concepts. In particular, WeVideo, Jahshaka provide students with video technologies, Xtranormal, Adobe Spark with animation tools.

Analyzing their own progress in learning based on digital technologies, students can respond to the dynamics of their partners in a virtual group, check the information received during the virtual group discussion, consider alternative ways of solving a problem situation and, as a result, improve their communication skills. Due to the anonymity offered by online platforms, students feel more confident in the process.

An online tool like Digital Storytelling allows students to create and publish their personal stories, documentaries, and a variety of educational information online. As a result, the participants of educational activities have the opportunity to independently evaluate and research the content of their own education.

Students' critical thinking skills can be improved during discussion and analysis of various topics within

a wide variety of Web discussion forums. Forum participants, having received information from videos or texts, can use facts to substantiate their ideas, express rational new ideas and assumptions, evaluate the opinion of others during communication with partners. During an asynchronous discussion or live chat, participants are encouraged to recognize the diversity of ideas and assumptions about the discussed problem, to look at the problems under consideration from different points of view.

Therefore, analyzing the technological capabilities of modern online platforms, it can be argued that on the basis of online technologies, modern students can improve their higher-level cognitive skills, in particular, critical thinking, by implementing various forms and strategies of educational activities.

Conclusions. In the modern information society, in order to ensure their own competitiveness, specialists need the formation of personal skills, in particular critical thinking, for continuous professional improvement throughout their life. Self-learning activities using the digital environment ensure development of critical thinking. Modern ICT effectively help implement flexible and individual learning strategies.

Application and improvement of individual learning skills, including critical thinking. in the digital environment within the educational process occur due to the diversification of forms of education, the increase of the audience of online communication, and the processing of information from the global network. As for the dynamics of higher-level cognitive processes as a basis for critical thinking, it is worth noting that it is determined by the methods of implementing ICT in the educational process, as well as the individual characteristics of students' perception and assessment of the educational content.

The technological capabilities of modern online platforms make it possible to implement a wide range of educational methods and strategies that contribute to the gradual improvement of students' critical thinking online during forums, video conferences, online presentations, etc. Various forms of educational activities in the virtual environment contribute to the deepening of students' motivation for research work in the information environment, as well as to the development of their critical thinking. The variety of forms and methods of educational activity, taking into account the individual characteristics and needs of students in the conditions of a modern digital environment, contributes to the transformation and improvement of their thinking, the process of cognitive activity, as well as strengthening their desire to solve educational tasks in a new and effective way.

The information age of society requires further research in the field of applying online platforms and digital technologies in order to deepen subject knowledge and professional skills, namely, the following problems: 1) research on the theory and methodology of using online platforms as a tool for professional education of future specialists; 2) determining the level of critical thinking by means of digital technologies; 3) training and motivation of students to use online platforms in independent and self-educational work aimed at improving individual learning skills in the process of professional development; 4) diagnosis of levels of proficiency and improvement of foreign language abilities based on digital technologies.

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