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VISUALIZATION TECHNOLOGIES IN THE TEACHING PROFESSIONAL DISCIPLINES' PROCESS

ТЕХНОЛОГІЇ ВІЗУАЛІЗАЦІЇ В ПРОЦЕСІ ВИКЛАДАННЯ ФАХОВИХ ДИСЦИПЛІН

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ABSTRACT

The article considers the using video materials' problem in the professional training of future engineers-teachers, in particular, the visualization of didactic materials in the professional training of future specialists in computer technology. It is proved that it is necessary to change the paradigm of teaching computer disciplines in the context of didactic materials' visualization as a basis for material abstraction. It is established that teaching computer disciplines is carried out in a very variable subject area and a large number of different methods and tools. One of the main principles of student learning is a high level of educational material abstraction. The classical methods of teaching the discipline "Content Management Systems" are considered, which provide a lecture-practical form of teaching with mostly textual didactic materials It is proved that classical teaching methods have a low level of abstraction compared to the video materials using. It is shown that the quality and efficiency of the educational process improve due to the using video materials' technical advantages. Such advantages include speed, maneuverability, efficiency, ability to view and listen to fragments and other multimedia functions; didactic – interactivity (creating the effect of presence, authenticity, the reality of events, interest, desire to learn, and see more). The didactic bases of video materials application in teaching students of content management systems are determined. Video materials have been developed for students to use content management systems and introduced into the training of future engineers-teachers. It is established that the educational videos using has significant potential, increases the efficiency of education, and guarantees quality professional training of students.

Key words: *higher education, professional training, future engineers-teachers, information technologies, content management systems, video materials.*

Problem formulation. The world practice of development and use of information and communication technologies (ICT) in the system of engineering and pedagogical education demonstrates the tendency to change the traditional forms of the educational process' organization in the information society. Teaching computer science disciplines is carried out in a very variable subject area and a large number of different methods and tools. The high level of educational materials abstraction becomes one of the main teaching principles. Classical methods of teaching students of content management systems provide a lecture-practical learning form with mostly text didactic materials (Berezovska, 2020), which have a low level of abstraction compared to the video materials using (Kravchenko, 2010). Given this, the problem of developing science-based methods of teaching students content management systems using video is relevant. The very study of this problem has devoted the article.

Analysis of basic research and publications. Ukrainian scientists have sufficiently covered the conceptual foundations of the education system informatization process. The training future engineers-teachers issues in the context of education informatization are revealed in the works of G. Alieksieieva (Alyeksyeyeva, 2014), G. Buchkivska (Buchkivska, 2018), S. Hunko, Yu. Zhuk, N. Kravchenko (Kravchenko, 2010), A. Maiboroda, I. Smyrnova, S. Tadiian, A. Trofymova, O. Shyman. The professional skills' formation problem of engineers-teachers was investigated in works N. Apatov, A. Asherov (Asherov, 2008), V. Bykov, L. Babenko, L. Bilousova,

L. Horbatiuk (Asherov, 2008), Yu. Doroshenko, A. Yershov, B. Zhytomyrskyi, N. Lazarev, V. Monakhov, A. Pikhota and etc.

The works of A. Aleksanian, Yu. Bykov, S. Voitovych, O. Zhuhastrov, P. Ivannikov, M. Spirin, V. Tryus are devoted to the study of state and prospects using Web-technologies in education. Today the using visualization technologies' methodology in studying the discipline "Content Management Systems" is in the formation's process. So, the study of its use in the training of future engineers-teachers is an urgent scientific and practical task.

Analysis of this problem's state shows that in Ukraine, unfortunately, the issue of visualization technologies' effective application in the training of future engineers-teachers in the field of development and use of video materials for information support of disciplines is insufficiently paid (Doronina, 2019; Lysenkova, 2018). Because of this, the professional training problem of future engineers-teachers with the information and communication technologies using, in particular for the development of video lessons on the example of the discipline "Content Management Systems" becomes relevant.

The aim of the study is to develop technology for teaching students content management systems using video materials in the training of future engineers-teachers on the example of teaching the discipline "Content Management Systems" for students – future teachers.

Presenting main material. In modern conditions of increasing social requirements for the professionalism and competitiveness level of future professionals, questions arise about the modern higher education system. In this regard, the search for new approaches to the modern educational process becomes an urgent and important pedagogical task (Petina, 2009). One of the alternative directions of its solution is to change the approach to the professional training of future engineers-teachers in the universities (including pedagogical ones) in the context of teaching students of content management systems (Nyshchak, 2017; Nyshchak, 2007).

In the modern sense, information educational technology is a pedagogical technology that uses special methods, software, and hardware (film, video, audio, computers, telecommunications networks) to work with information. Various information technologies are used in the teaching process. These technologies can be broadly divided into three categories: interactive (audio-visual media); computer training (including multimedia); telecommunications (video conferencing, forums, etc.) (Lavrik, 2014).

This will increase motivation to learn, develop creative thinking, save learning time, combining interactivity and multimedia visualization. Ultimately, this will contribute to the better presentation and, consequently, better information assimilation (Liu, 2016). For example, among the means of education, multimedia ones occupy an important place in the future professionals training. Multimedia learning tools are a set of hardware and software that allow the user to communicate with a computer using a variety of natural environments: graphics, hypertext, sound, animation, video.

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Multimedia learning tools are a set of hardware and software that allow the user to communicate with a computer using a variety of natural environments: graphics, hypertext, sound, animation, video (Ostenda, 2018). They provide the user with the following information types: text; image; animated pictures; audio comments; digital video. Technologies that allow a computer to integrate, process, and simultaneously reproduce different types of signals, different environments, tools, and ways to exchange information are called multimedia (Glazunova, 2003).

Let's consider various ways of multimedia means an application in the educational process. We can note electronic lecturers' using, simulators, textbooks, encyclopedias; development of situational role-playing and intellectual games using artificial intelligence; modeling of processes and phenomena; providing distance learning; conducting interactive educational teleconferences; construction of control systems and testing of knowledge and skills of students (use of control programs-tests); creation and maintenance of websites of educational institutions; creation of educational material presentations; implementation of projective and research students' activities among them (Havrysh, 2021; Nestorenko, 2015).

It should be emphasized that the use of multimedia, in particular, video materials in the educational process helps to increase students' motivation to learn; realization of the social purpose (namely – informatization of a society); the learning process intensification; student personality development; skills development of independent work with educational material; increasing the training effectiveness through its individualization.

The analysis of the educational process quality and efficiency with the video materials using was carried out in the study of H. Alyeksyeyeva. This study used data on the stimulus's effect on human electroencephalography. It was reliably established that the actual lecturer's presence in the audience significantly increases the efficiency of mastering the proposed video lecture content. Classes with the video materials using in lectures can be of two types:

1. Students watch a study video of 5 to 15 minutes, where they are first told a theory (usually new material, possibly introducing new vocabulary on the topic, etc.), and then examples are given. In this video basic tasks aimed at controlling the assimilation of seen and heard material can be given.

2. During the lesson, students watch small videos (fragments from cartoons, feature and documentary films, TV series, scientific and cognitive programs), which are cognitive (new material on the topic, expansion of material, consolidation, repetition). After watching the videos, students perform several communicative tasks (Alyeksyeyeva, 2015).

The video materials use in lectures form the student's ability to convert oral and written information into a visual form while highlighting the most significant and essential elements (Alyeksyeyeva, 2014). The lecture is reduced to a coherent detailed commentary by the teacher of the prepared visual aids (Dzhedzhula, 2007).

Thus, although the video materials use is only a lesson fragment, during which students receive this or that information via digital media, learn to perceive it, and apply it in practice, the video materials use increases interest in studying the subject and allows qualitatively increase the professional training level of future specialists.

Let's describe in more detail the experience of teaching the discipline "Content Management Systems" for future engineers-teachers of Berdyansk State Pedagogical University using the teaching techniques of students of content management systems using video materials.

The purpose of video materials use in the professional training of engineers-teachers is to improve the education quality by intensifying the educational process, individualization and differentiation, student work intensification; implementation of such pedagogical principles as scientific and accessible, systematic and consistent, individual, differentiated, personality-oriented approach (Fedorov, 2015; Stupak, 2016; Taranukha, 2017).

Let's consider the main forms of the educational process organization using video materials. The lecture is the methodological and organizational basis for all educational activities, including independent ones (methodological, because it introduces the student to science in general, gives the course conceptual; organizational, because other training forms in one way or another "tied" to the lecture, often logically planned after it, rely on it meaningfully and thematically). Its main didactic purpose is the oriented theoretical base formation for further mastering of educational material by students. It serves to explain a difficult and complex topic. Its typical features are the introduction and characterization of new concepts, disclosure and detailing of the material, the teacher's conclusions, answers to questions (these are the points that we will use in the video). This is a learning theoretical form, the main method is an oral one, consistent presentation of content. The lecture is characterized by a large amount of educational material, fundamentality, the complexity of logical constructions, proofs, and generalizations. Students receive the installation and direction for further independent work at the lecture (Kravchenko, 2018).

On the example of studying the discipline "Content Management Systems" from our experience, a lecture was chosen using video materials, which can be both classic and problematic. In the classical form of the lecture, video materials can be used to activate the goals, motives, desires, and interests of students. When conducting a problem lecture with the help of video materials, students are invited to think and answer problem questions. The problem statement methodology activates students, promotes analytical thinking development.

Let's consider the practical aspect of our study. We don't have to have a camcorder to create videos today. All we have to do is use the free computer programs that can be found on the Internet. The process of their creation consists of the following stages: search, collection, and preparation of materials for the video material creation; program selection; structuring video (Park, 2015).

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Today, there are many special tools for recording video monitor screens. The competition of such programs in the software market encourages developers to improve and simplify their products. Therefore, this type of programs use doesn't involve any difficulties and doesn't require special knowledge from the user. The tools choice that will be used to create videos depends solely on the convenience concept and the computer system capabilities. Another important component of the software choice is the using paid versions feasibility. Of course, software products that are distributed for free may have some limitations, such as limited video recording time, fixed file size, inability to change the video format, and others. But among the free programs, we can find the option that can best meet our needs.

The free program Synfig studio was chosen to study the discipline "Content Management Systems". Compared to other software products, it is easy to use, but quite functional: creating and editing animations in real-time (brushes, morph effects, graphics editor tools, etc.).

The discipline "Content Management Systems" purpose is to teach students the technology of creating, maintaining websites in the form of video screensavers or entire videos on various topics. The course consists of ten video topics that demonstrate the work stages in the program Synfig studio and after the first viewing allows students to quickly create their online store using the latest technologies, namely PHP programming language for website development and database management system. To develop an online store, there are videos for using one of the most popular CMS – WordPress. Each video lasts no more than fifteen minutes and is accompanied by text material. The videos content is as follows: 1. Installing the program Denwer (https://youtu.be/W4-lXic5Nbg), 2. Installing CMS WordPress (https://youtu.be/tCEiltn6vlA), 3. Design installation (pattern) (https://youtu.be/pLB_0pVJ_Po), 4. Installing add-ons (https://youtu.be/Ay06-hUIJgA), 5. Site visualization and recommended plugins (https://youtu.be/LJLDWvXI3us)

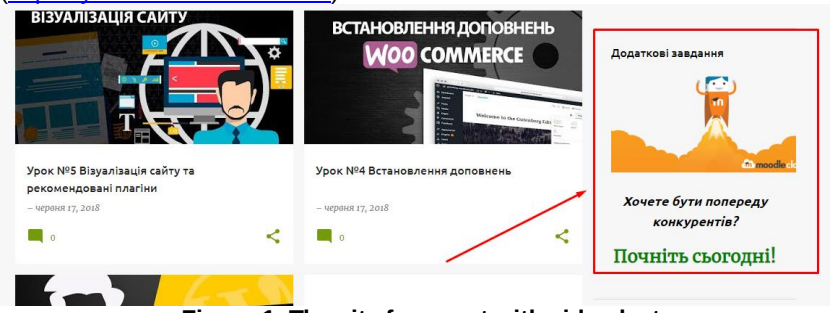

Figure 1. The site fragment with video lectures

The developed videos can be used for demonstration directly in the classroom, to consolidate the material studied, and for self-study of the program Synfig studio.

Conclusions from this study and prospects for further

exploration in this direction. Thus, ensuring the quality of future engineers-teachers professional training in modern higher education is largely due to the choice of modern educational technologies using computer technology. This actualizes the reorientation of traditional learning to fundamentally new learning associated with the creative development of the individual, with a change in the role of the student, where he becomes an active participant in the educational process.

The developed videos are the basis for the technology of teaching computer animation in the training of future engineers-teachers on the example of the discipline "Content Management Systems" for students of Berdyansk State Pedagogical University, which improve the education quality and provide additional emotional and intellectual incentives for education.

In the future the research results are planned to be used in teaching lectures on the course "Algebra and Geometry" for students of specialties "Computer Science" and "Vocational Education (Digital Technologies)" at Zhytomyr Ivan Franko State University, as well as the course "Teaching disciplines methods in higher school" for students of the specialty "International Economic Relations" and "Higher School Pedagogy" for students of the specialty "History and Archeology" at V.N. Karazin Kharkiv National University. Also, it is planned to develop video materials for practical classes, for typical tasks, and tasks for independent work at the course "Content Management Systems" for future engineers-teachers at Berdyansk State Pedagogical University.

Література

Алєксєєва Г. М. Формування готовності майбутніх соціальних педагогів до застосування комп'ютерних технологій у професійній діяльності: монографія / Г.М.Алексєєва // Донецьк: ЛАНДОН-ХХІ, 2014. – 269 с.

Ашеров А. Т., Горбатюк Л. В. Организация самостоятельной работы будущих инженеровпедагогов компьютерного профиля: состояние проблемы. Проблеми інженерно-педагогічної освіти, 2008, 20: 84-93.

Березовська Л. І. Формування комунікативно-мовленнєвої компетентності майбутніх соціальних працівників засобами інтерактивних технологій. *Актуальні питання гуманітарних наук*. Вип 27. Том 1. 2020. С. 139-145

Бучківська Г.В. Використання інформаційно-комунікаційних технологій у процесі художньо-трудової діяльності майбутніх учителів початкових класів. *Наукові записки Тернопільського національного педагогічного університету імені Володимира Гнатюка*. Серія: Педагогіка. Тернопіль: Вид. відділ ТНПУ, 2018. № 1. С. 39–46. DOI: https://doi.org/10.25128/2415-3605.18.1.6

Глазунова О. Г. Методика навчання майбутніх фахівців аграрного профілю засобами комп'ютерної графіки. – К.: НАУ, 2003.

Джеджула О.М. Теорія і методика графічної підготовки студентів інженерних спеціальностей вищих навчальних закладів. Diss. Тернопільський національний педагогічний університет імені Володимира Гнатюка, 2007.

Кравченко Л. М., Кравченко Н. В. Стратегії інженерно-педагогічної освіти в контексті інтеграції в європейський простір. Зб. наук. праць БДПУ (Педагогічні науки). 2010. №2, С. 113-118.

Несторенко Т. П., Бордоусов О. В. Ценность высшего образования для индивида [Електронний ресурс]. *Вісник Хмельницького національного*

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DOI 10.31494/2412-9208-2021-1-1

університету. Економічні науки. 2015. № 3(3). С. 171-174. http://nbuv.gov.ua/UJRN/Vchnu_ekon_2015_3(3)__35

Нищак І. Д. Методична система навчання інженерно-графічних дисциплін майбутніх учителів технологій, 2017.

Нищак І.Д., Моштук В.В. Комп'ютерна графіка. Навч. посібник для вищих педагогічних навчальних закладів. Дрогобич: РВВ ДДПУ ім. І.Франка – 2007, 352 с.

Овсянніков О., Алєксєєва, Г. Комп'ютерне середовище науково-дослідної роботи студентів інженерно-педагогічних спеціальностей комп'ютерного профілю як об'єкт проектування / О.С.Овсянніков, Г.М.Алєксєєва // Молодь і ринок: Науково-педагогічний журнал. – Дрогобич: Дрогобицький державний педагогічний університет імені Івана Франка. – 2019. – №9 (176) вересень 2019, С.107-112.

Ожга М. М. Проблеми графічної підготовки майбутніх інженерів-педагогів у наукових дослідженнях, Проблеми інженерно-педагогічної освіти. – 2012, №. 34-35., С. 226-233.

Петіна Л.В. Шляхи удосконалення внутрішньогосподарської звітності та перманентної інвентаризації в прийнятті управлінських рішень на підприємствах АПК. *Науково-виробничий журнал Бізнес-Навігатор.* 2009, №2 (17), С. 147-151.

Ступак О.Ю. Рейтингове оцінювання діяльності науково-педагогічних працівників якості освітніх послуг. *Засоби навчальної та науково-дослідної роботи*. 2016. Вип. 46. С. 69-76.

Тарануха О.М., Амеліна Н.К., Клименко І.С. Тенденції розвитку ринку консалтингових послуг в Україні. *Економіка та управління на транспорті*. Київ: НТУ. 2017. Вип. 4. С.129-134.

Alieksieieva H.M. Sutnist i struktura hotovnosti maibutnikh sotsialnykh pedahohiv do zastosuvannia kompiuternykh tekhnolohii u profesiinii diialnosti [The essence and structure of future social educators' readiness to use computer technology in their professional activities]. Zbirnyk naukovykh prats Berdianskoho derzhavnoho pedahohichnoho universytetu. Pedahohichni nauky. 2012:9-14.Fedorov A. Media educational practices in teacher training, 2015.

Cherniavskyi, V., Popova, H., Voloshynov, S., Sherman, M., Yurzhenko, A. (2020). Mixed reality technologies as tool to form professional competency of sea transport professionals. ICTERI-2020, Proceedings of the 16th International Conference on ICT in Research, Education and Industrial Applications. Kharkiv, Ukraine, October 6-10, 2020 / Edited by Vadim Ermolayev, Frédéric Mallet, Vitaliy Yakovyna, Vyacheslav Kharchenko, Vitaliy Kobets, Artur Korniłowicz, Hennadiy Kravtsov, Mykola Nikitchenko, Serhiy Semerikov, Aleksander Spivakovsky. pp. 217-231.

Doronina O., Karpenko A. Human Potential and Innovation as Drivers of Competitiveness in the New Economy. Roczniki Ekonomiczne Kujawsko-Pomorskiej Szkoły Wyższej w Bydgoszczy. 2019, no. 12, pp. 71-81.

Havrysh N., Zdanevych L., Myskova N. Pedagogical training as a form of preparing the future professionals of preschool education / Innovative Approaches to Ensuring the Quality of Education, Scientific Research and Technological Processes / Edited by Magdalena Gawron-Łapuszek, Yana Suchukova. Monograph 43. *Publishing House of University of Technology,* Katowice, 2021. pp. 244-250.

Kravchenko N.V., Alyeksyeyeva H.M. , Gorbatyuk L.V. Curriculum Optimization by the Criteria of Maximizing Professional Value and the Connection Coefficient of Educational Elements, Using Software Tools: (ICTERI 2018: 14th International conference on ict in education, research, and industrial applications) [Електроний ресурс] (Kyiv, Ukraine, May 14-17, 2018) / Nataliia Kravchenko, Hahha Alyeksyeyeva, Larysa Gorbatyuk // CEUR Workshop Proceedings. 2018. Vol-1. pp. 365-378.

Lavrik V., Cortez L., Alekseeva A., García G. T., Juarez P. G., Poblano J. (2014). Development of the CAD system for designing non-standard constructions

from elastomers / Vladimir Lavrik, José Italo Cortez, Vitaliy Mezhuyev, Liliana Cortez, Anna Alekseeva, Gregorio T. García, Pedro G. Juarez, Javier Poblano// International Journal of Innovative Research in Science, Engineering and Technology. – Vol 3, Issue 3, March. – 2014. – Pp. 10717-10726.

Liu Z. Research on the Curriculum System Construction Plan for Animation Design and Production of Specialty in High Vocational Colleges. 2nd International Conference on Social Science and Technology Education (ICSSTE 2016). Atlantis Press.

Lysenkova I.P. Correction-Developing Environment as a Means of Emotional Development of Children with Cognitive Impairment. *The Norwegian Journal of Development of the International Science*. 2018, no. 20, Vol. 2, pp. 67-69.

Ostenda A., Nestorenko T., Ostenda J. Practical education on a higher level in Poland: example of Katowice School of Technology // Наукові записки Бердянського державного педагогічного університету. Серія : Педагогічні науки : зб. наук. пр. 2018. Вип.1. БДПУ, С.186-190. DOI 10.31494/2412-9208-2018-1-1

Park S. Reviewing Educational Methodology in the Domain of Animation at the Smart Media Era. TECHART: Journal of Arts and Imaging Science. – 2015, T. 2., №. 4., С. 32-37.

References

Alieksieieva, H.M. (2015). The essence and structure of future social educators' readiness to use computer technology in their professional activities. Zbirnyk naukovykh prats Berdianskoho derzhavnoho pedahohichnoho universytetu. Pedahohichni nauky. 9-14. [in Ukrainian].

Alyeksyeyeva, H. M. (2014). *Formuvannia hotovnosti maibutnikh sotsialnykh pedahohiv do zastosuvannia kompiuternykh tekhnolohii u profesiinii diialnosti* [Formation of readiness of future social educators to use computer technologies in professional activity], Monohrafiya. Berdyans'k: BDPU [in Ukrainian].

Asherov, A. T. & Gorbatyuk, L. V. (2008). *Organizatsiya samostoyatelnoy raboty budushchikh inzhenerov pedagogov kompyuternogo profilya: sostoyanie problemy* [Organization of independent work of future engineers of computer teachers: state of the problem], Problemi Inzhenerno-pedagogichnoyi osviti, no.20, pp.84-93. [in Russian].

Berezovska L. (2020). Formation of communicative and speech competence of future social workers by means of interactive technologies. *Aktualni pytannia humanitarnykh nauk*. no. 27, T. 1, pp. 139-145. [in Ukrainian].

Buchkivska G. The use of information and communication technologies in the process of artistic and labor activities of future primary school teachers. *Naukovi zapysky Ternopilskoho natsionalnoho pedahohichnoho universytetu imeni Volodymyra Hnatiuka.* Seriia: Pedahohika. Ternopil: Vyd. viddil TNPU, 2018. № 1. С. 39–46. DOI: https://doi.org/10.25128/2415-3605.18.1.6 [in Ukrainian].

Cherniavskyi, V., Popova, H., Voloshynov, S., Sherman, M., Yurzhenko, A. (2020). Mixed reality technologies as tool to form professional competency of sea transport professionals. ICTERI-2020, Proceedings of the 16th International Conference on ICT in Research, Education and Industrial Applications. Kharkiv, Ukraine, October 6-10, 2020 / Edited by Vadim Ermolayev, Frédéric Mallet, Vitaliy Yakovyna, Vyacheslav Kharchenko, Vitaliy Kobets, Artur Korniłowicz, Hennadiy Kravtsov, Mykola Nikitchenko, Serhiy Semerikov, Aleksander Spivakovsky. pp. 217-231.

Doronina O., Karpenko A. Human Potential and Innovation as Drivers of Competitiveness in the New Economy. *Roczniki Ekonomiczne Kujawsko-Pomorskiej Szkoły Wyższej w Bydgoszczy*. 2019, no. 12, pp. 71-81. [in Ukrainian].

Dzhedzhula, O.M. (2007). *Teoriia i metodyka hrafichnoi pidhotovky studentiv inzhenernykh spetsialnostei vyshchykh navchalnykh zakladiv* [Theory and methodology graphically ï preparation of students of engineering specialties of different schools]. Diss. Ternopil's'kyy natsional'nyy pedahohichnyy universytet imeni

ICV 2019: 79.31
DOI 10.31494/2412-9208-2021-1-1

Volodymyra Hnatyuka. [in Ukrainian].

Fedorov, A. (2015). *Media educational practices in teacher training*. [in Ukrainian].

Glazunova, O.G. (2003). *Metodyka navchannia maibutnikh fakhivtsiv ahrarnoho profiliu zasobamy kompiuternoi hrafiky* [Methodology of training future specialists of agrarian profile by means of computer graphics]. K.yiv: NAU. [in Ukrainian].

Havrysh N., Zdanevych L., Myskova N. Pedagogical training as a form of preparing the future professionals of preschool education / Innovative Approaches to Ensuring the Quality of Education, Scientific Research and Technological Processes / Edited by Magdalena Gawron-Łapuszek, Yana Suchukova. Monograph 43. *Publishing House of University of Technology,* Katowice, 2021. pp. 244-250. [in Ukrainian].

Kravchenko, L. M. & Kravchenko N. V. (2010). *Stratehii inzhenerno-pedahohichnoi osvity v konteksti intehratsii v yevropeiskyi prostir* [Strategies of engineering and pedagogical education in the context of integration into the European space]. Zb. nauk. prats' BDPU (Pedahohichni nauky), no.2, pp.113-118. [in Ukrainian].

Kravchenko, N.V. Alyeksyeyeva, H.M. Gorbatyuk, L.V. (2018). *Curriculum Optimization by the Criteria of Maximizing Professional Value and the Connection Coefficient of Educational Elements,* Using Software Tools: (ICTERI 2018: 14th International conference on ict in education, research, and industrial applications). Kyiv, Ukraine, May 14-17, 2018. CEUR Workshop Proceedings, no.1, pp. 365-378. [in Ukrainian].

Lavrik, V., Cortez L., Alekseeva A., García G., Juarez P., Poblano J. (2014). *Development of the CAD system for designing non-standard constructions from elastomers*. Development, №. 3(3), pp 80-91. [in Ukrainian].

Liu Z. (2016). *Research on the Curriculum System Construction Plan for Animation Design and Production of Specialty in High Vocational Colleges*. 2nd International Conference on Social Science and Technology Education (ICSSTE 2016). Atlantis Press. [in Ukrainian].

Lysenkova I.P. Correction-Developing Environment as a Means of Emotional Development of Children with Cognitive Impairment. *The Norwegian Journal of Development of the International Science*. 2018, no. 20, Vol. 2, pp. 67-69. [in Ukrainian].

Nestorenko, T.P., Bordousov O.V. (2015). Tsennost' vyssheho obrazovaniia dlia indyvida [Elektronnyi resurs]. *Visnyk Khmelnytskoho natsionalnoho universytetu. Ekonomichni nauky*. No. 3(3), pp.171-174. http://nbuv.gov.ua/UJRN/Vchnu_ekon_2015_3(3)__35 [in Russian]

Nyshchak, I. D. (2017). *Metodychna systema navchannia inzhenerno-hrafichnykh dystsyplin maibutnikh uchyteliv tekhnolohii* [Methodology of training future specialists of agrarian profile by means of computer graphics]. 2017. [in Ukrainian].

Nyshchak, I.D. & Moshtuk, V.V. (2007). *Kompiuterna hrafika*. [Computer Graphics]. Navch. posibnyk dlya vyshchykh pedahohichnykh navchal'nykh zakladiv. Drohobych: RVV DDPU im. I.Franka, 352 s. [in Ukrainian].

Ostenda, A., Nestorenko, T., Ostenda, J. (2018). *Practical education on a higher level in Poland: example of Katowice School of Technology* // Naukovi zapysky Berdianskoho derzhavnoho pedahohichnoho universytetu. Pedahohichni nauky. №1. BDPU, pp.186-190. DOI 10.31494/2412-9208-2018-1-1[in Ukrainian].

Ovsiannikov, O. & Alyeksyeyeva, H. M. (2019). *Kompiuterne seredovyshche naukovo-doslidnoi roboty studentiv inzhenerno-pedahohichnykh spetsialnostei kompiuternoho profiliu yak obiekt proektuvannia* [Computer environment of research work of students of engineering and pedagogical specialties of computer profile as an object of design], Molod i rynok: Naukovo-pedahohichnyi zhurnal. Drohobych: RVV DDPU im. I. Franka, 9 (176),107-112. [in Ukrainian].

Ozhha, M. M. (2012). Problemy hrafichnoi pidhotovky maibutnikh inzhenerivpedahohiv u naukovykh doslidzhenniakh [Problems of graphic training of future engineers-teachers in scientific researches], Problemy inzhenerno-pedahohichnoyi osvity. no. 34-35, pp. 226-233. [in Ukrainian].

Park S. (2015). *Reviewing Educational Methodology in the Domain of Animation at the Smart Media Era*. TECHART: Journal of Arts and Imaging Science, № 2(4), pp. 32-37. [in Ukrainian].

Petina, L.V. (2009). Shlyakhy udoskonalennya vnutrishn'ohospodars'koyi zvitnosti ta permanentnoyi inventaryzatsiyi v pryynyatti upravlins'kykh rishen' na pidpryyemstvakh APK [Ways to improve internal reporting and permanent inventory in management decisions at agricultural enterprises]. Naukovo-vyrobnychyy zhurnal Biznes-Navihator [Research and production magazine Business Navigator]. vol 2 (17). pp. 147 – 151. [in Ukrainian].

Stupak, O.Iu. (2016). Reitynhove otsiniuvannia diialnosti naukovopedahohichnykh pratsivnykiv yakosti osvitnikh posluh. *Zasoby navchalnoi ta naukovodoslidnoi roboty*. Vyp. 46, pp. 69-76. [in Ukrainian].

Taranukha O.M., Amelina N.K., Klimenko I.S. Trends in the market of consulting services in Ukraine. *Economics and management of transport*. Kyiv: NTU. 2017. issue 4. pp.129-134 [in Ukrainian].

АНОТАЦІЯ

У статті розглядається проблема використання відеоматеріалів у професійній підготовці майбутніх інженерів-педагогів, зокрема візуалізацію дидактичних матеріалів у професійній підготовці майбутніх фахівців з комп'ютерних технологій. Доведено, що необхідна зміна парадигми викладання дисциплін комп'ютерного профілю в контексті візуалізації дидактичних матеріалів як основи абстрагування матеріалу. Встановлено, що навчання дисциплінам комп'ютерного профілю здійснюється в умовах дуже мінливої предметної області та великої кількості різноманітних методів й інструментальних засобів. Однім з головних принципів навчання студентів стає високий рівень абстрагування навчального матеріалу. Розглянуто класичні методики навчання дисципліни "Системи керування контентом", які передбачають лекційно-практичну форму навчання з переважно текстовими дидактичними матеріалами, що мають низький рівень абстрагування порівняно з використанням відеоматеріалів. Показано, що завдяки технічним перевагам застосування відеоматеріалів (швидкість, маневреність, оперативність, можливість перегляду і прослуховування фрагментів і інші мультимедійні функції; дидактичними – інтерактивність занять (створення ефекту присутності, відчуття автентичності, реальності подій, інтерес, бажання дізнатися і побачити більше)) здійснюється підвищення якості й ефективності освітнього процесу. Визначено дидактичні основи застосування відеоматеріалів при навчанні студентів системам керування контентом, розроблено та впроваджено в професійну підготовку майбутніх інженерів-педагогів БДПУ відеоматеріали для використання систем керування контентом на прикладі майбутніх інженерів-педагогів факультету фізико-математичної, комп'ютерної та технологічної освіти Бердянського державного педагогічного університету. Встановлено, що використання навчальних відеоматеріалів має значний потенціал і сприяє підвищенню ефективності навчання та гарантує якісну професійну підготовку студентів.

Ключові слова: *вища освіта, професійна підготовка, майбутні інженери-педагоги, інформаційні технології, системи керування контентом, відеоматеріали.*

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