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PROBLEMS OF DIGITAL TEACHERS AND DEVELOPMENT OF DIGITAL COMPETENCIES IN HIGHER EDUCATION INSTITUTION

Abstract

The article examines the modern approach to digital pedagogy in general in the context of theoretical and practical activities of teachers. According to the authors, it is essential to correctly understand and solve the problems of creating conditions for the development and formation of digital competencies of a modern university teacher. In the article, the authors provided an analysis of foreign authors, as well as researchers from neighboring countries, on the problems of digital education in general and the digital teacher in particular. Particular attention was paid to the experience of the digitalization of education in Kazakhstan, where digital technologies and digital education are becoming increasingly popular and in demand. The idea is substantiated that teachers of higher educational institutions today demonstrate high levels of knowledge, skills and attitudes in the field of digital technologies. Obviously, work in the modern education system is impossible without knowledge, skills and attitudes in all components of digital literacy.

Keywords: digital education, digital teacher, digital competencies, digitalization of education, digital technologies, digital literacy.

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ЦИФРЛЫҚ ПЕДАГОГТЕРДІҢ МӘСЕЛЕЛЕРІ МЕН ЖОҒАРЫ ОҚУ ОРЫНДА ЦИФРЛЫҚ ҚҰЗЫРЕТТІЛІКТІ ДАМЫТУ

Аңдатпа

Мақалада жалпы сандық педагогикаға заманауи көзқарас педагогтерінің теориялық және практикалық қызметі контекстінде қарастырылады. Авторлардың пікірінше, заманауи университет педагогінің цифрлық құзыреттіліктерін дамыту және қалыптастыру үшін жағдай жасау мәселелерін дұрыс түсіну және шешу маңызды. Мақалада авторлар жалпы цифрлық білім берудің, атап айтқанда цифрлық педагогтің мәселелері бойынша шетелдік авторлардың, сондай-ақ көршілес елдердің зерттеушілерінің жұмыстарына талдау жасалды. Цифрлық технологиялар мен цифрлық білім беру барған сайын танымал және сұранысқа ие болып отырған Қазақстандағы білім беруді цифрландыру тәжірибесіне ерекше назар аударылды. Жоғары оқу орындарының оқытушылары бүгінгі таңда цифрлық технологиялар саласында білім, білік және дағдыларының жоғары деңгейін көрсетіп отыр деген идея дәлелденді. Қазіргі білім беру жүйесіндегі жұмыс цифрлық сауаттылықтың барлық құрамдас бөліктерінде білімсіз, дағдысыз және көзқарассыз мүмкін емес екені анық.

Түйін сөздер: цифрлық білім, цифрлық педагог, цифрлық құзыреттілік, білім беруді цифрландыру, цифрлық технологиялар, цифрлық сауаттылық.

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ПРОБЛЕМЫ ЦИФРОВОГО ПЕДАГОГА И РАЗВИТИЕ ЦИФРОВЫХ КОМПЕТЕНЦИЙ В ВЫСШЕМ УЧЕБНОМ ЗАВЕДЕНИИ

Аннотация

В статье рассматривается современный подход к цифровой педагогике в целом в контексте теоретической и практической деятельности педагогов. По мнению авторов, важно правильно понять и решить проблемы создания условий для развития и формирования цифровых компетенций современного педагога ВУЗа. В статье авторами был приведен анализ зарубежных авторов, а также исследователей ближнего зарубежья по проблемам цифрового образования в целом и цифрового педагога в частности. Особое внимание было уделено опыту цифровизации образования в Казахстане, где цифровые технологии и цифровое образование становятся все более популярными и востребованными. Обосновывается мысль о том, что преподаватели высших учебных заведений сегодня демонстрируют высокие показатели знаний, навыков и установок в области цифровых технологий. Очевидно, работа в системе современного образования оказывается невозможной без знаний, навыков и установок во всех компонентах цифровой грамотности.

Ключевые слова: цифровое образование, цифровой педагог, цифровые компетенции, цифровизация образования, цифровые технологии, цифровая грамотность.

Basic provisions. To develop and form digital competencies of a modern university teacher, it is necessary to correctly understand and solve the problems of creating certain conditions.

Digital technologies and digital education in Kazakhstan are becoming increasingly popular and in demand.

Teaching activity in the modern education system turns out to be impossible without knowledge, skills and attitudes in all components of digital literacy. A digital teacher is a teacher who specializes in the use of modern digital technologies and tools in the educational process, whose task is to integrate information and communication technologies (ICT) into educational activities in order to improve the quality of education and learning.

Introduction. In the era of digitalization, the role of the teacher, namely the digital teacher, is undoubtedly important. If we analyze the digitalization of the higher education system in the Republic of Kazakhstan. One of the measures is the introduction of a unified information system for higher education. For example, providing all students with free access to the world's digital libraries for education and, as a result, a developed digital ecosystem of universities. Also, 27 events are being implemented within the framework of the National Project «Technological breakthrough through digitalization, science and innovation» in the «Science» block [1]. The National Council for Science and Technology was created taking into account international experience [2].

So, what is the concept of «Digital teacher»? What functions, skills and competencies are inherent in a digital teacher?

A digital teacher is a pedagogical specialist who specializes in the use of modern digital technologies and tools in the educational process. The task of the digital educator is to integrate information and communication technologies (ICT) into educational activities in order to improve the quality of education and learning. Here are some of the key aspects of the value of a digital teacher:

Technology Integration: A digital educator helps teachers and students use computers, the Internet, software, applications, and other digital technology tools for educational purposes.

Developing Digital Literacy: It helps students develop digital literacy skills, including the ability to analyze information, think critically, work with data, and communicate effectively in an online environment.

Personalized learning: A digital educator can use technology to create personalized educational plans tailored to each student's needs and abilities.

Improving access to education: They can help improve access to education by providing learning materials and resources online or using distance learning.

Data Assessment and Analysis: A digital educator helps collect and analyze learning data to improve teaching methods and assess student performance.

Teacher support: It can train teachers to use new technologies and tools, helping them integrate them into the teaching process.

Research and Development: A digital educator can engage in educational research and develop new methodologies and innovative approaches to teaching using digital technologies.

In general, the digital educator plays an important role in the modern educational environment, helping students and teachers successfully adapt to the rapidly changing digital reality.

Digital learning refers to the ability to achieve 21st-century goals through digital literacy, critical thinking, effective communication and high performance. The terms «digital classrooms», «computer learning», «digital literacy», «interactive classrooms», «electronic content rooms», «projection auditoriums», etc. are used interchangeably to represent the use of digital technologies in a higher education institution.

The generation of young people born around the 1990s can be called «digital natives», as they were born with the Internet and mobile technologies. It is argued that typical knowledge practices for this generation are multitasking, that is, performing several actions at the same time. They are also comfortable screen readers, enjoy computer games, and are active users of social media.

Materials and methods. A digital teacher is a teacher who teaches academic subjects using educational technologies. Digital technologies can reduce the time and effort spent by educators preparing content and presenting it to students.

Below we have presented an overview of foreign authors on the problems of digital education in general and the digital teacher.

Abid Halim and others believe that today large IT companies offer various digital technologies to educational institutions. Thanks to this, innovative educational technologies have become more accessible to both students and teachers. Abid Halim et al predict that the development of digital competencies will lead to the elimination of language boundaries and improved online accessibility of learning resources.

In the near future, trends in education will be driven by the power of the Internet, which will facilitate the introduction of innovative technologies into classrooms. However, there is no complete replacement in the classroom. Thus, we have reached the era of hybrid teaching and learning, where online and offline systems are integrated to improve results and are considered as an outcome of the implementation of Education 4.0. [3].

Teaching in the modern world requires teachers to have developed digital competencies. Thus, according to Zhao et al., the popularity of digital competencies in higher education will continue to grow [4].

In due time, improving the digital competencies of teachers will increase the quality of educational activities and the digital competencies of students, according to McGee et al. [5].

Teachers should always strive for fast learning, adhere to the lifelong learning strategy and receive a «smart» education.

Teaching with digital technologies requires digital competencies as well as different pedagogical approaches than, for example, face-to-face teaching (Gurley, 2018). As a result, the popularity of digital competencies in higher education continues to grow [4].

Garcia-Morales V. Jay et al believe that students, educators, and higher education management must work together to support and evaluate the changes brought by the advancement of the digital revolution. Funding constraints and limitations imposed by existing IT infrastructure are two additional obstacles that universities need to overcome to make this shift [6].

As Solmaz O. notes in his research, digital literacy is no longer perceived as just learning but is recognized as the key to the social emancipation of citizens [7].

HuangChu et al.'s research notes that teachers' information literacy can be effectively promoted through the knowledge of future teachers. In addition, teachers should provide ethical education regarding the responsible use of data, including restrictions on data use [8].

According to preliminary results of the EUA survey «Digital learning in European higher education institutions», which was carried out in 2020 among institutions in all countries in the European Higher Education Area, a large number of universities indicated that they planned to conduct research on new teaching methods in the future (92%) and improve digital capabilities (75%), despite the economic crisis [9].

Which in turn will lead to improved digital competencies for both teachers and future teachers of secondary schools.

Also, according to the recommendations of the Council of the European Union on core competencies, digital competence requires educators to «take a critical approach to the validity, reliability and impact of information and data» [10]. We agree with the opinion of Vuorikari et al. that digital competence is, first of all, the ability to critically evaluate data, information and digital content, as well as the use of artificial intelligence capabilities. The meaning of criticality in this context is further clarified in the European Commission's digital competence framework for citizens, mainly in relation to the assessment of data, information and digital content, as well as in relation to the attitude towards artificial intelligence, which involves identifying opportunities while weighing risks to privacy, security [11].

Mohamed E. in his research identified the following basic digital competencies of future teachers:

− General – providing high-quality virtual support to students;
− Use of digital technologies – digital literacy;
− Development of digital learning resources to which students will have free access;
− Providing students with a choice of form of education;
− Communication – building correct communication using digital technologies;
− Facilitating learning – providing timely feedback to individual learners to meet their individual needs;
− Pedagogical Strategies – The teacher must use appropriate teaching strategies to enable learners to achieve learning objectives.;
− Assessing learning outcomes - providing feedback to learners and assessing student performance using appropriate assessment strategies. Assessment must be reliable in order to improve student performance and allow students to earn academic credit for the lessons or academic courses they complete.
− Personal characteristics - a digital teacher must have the personal qualities to be a good role model, provide quality education and support for students [12].

Scientist Starkey L. analyzed scientific articles on the topic of «teacher digital competence» published between 2008 and 2018 and identified three different ways of understanding digital competence:

1. Technological knowledge and skills that are not specific to the teacher;
2. Ability to integrate ICT into teaching and learning for future educators using digital technologies;
3. Professional digital competence that goes beyond pedagogical aspects such as communication or administrative tasks [13].

Díaz-Trindade Saraa et al., in their research, found that teachers need to improve their level of digital skills through specific training, since globally they have an average level of digital proficiency of B1 [14].

The researchers note that the use of technology such as computers, projectors, interactive whiteboards, tablets, etc. is good, but has little to do with truly innovative practices. They also note that in order for digital education to be updated in a higher educational institution, management needs to invest in the training of teachers, in turn, this will allow them to use technology for pedagogical purposes.

According to the results of a study by ElSayari Arij, the professional development program effectively develops the digital competence of teachers, thanks to which they develop knowledge and skills [15]. Thus, we can consider advanced training courses as one of the ways to improve the level of digital competencies of teachers.

As for the CIS authors and their scientific research on our problem, we can note: O. Drozdova - a professor known for her research in the field of information technology in education and e-learning, I. Smolina - an expert on digital education, working on the implementation of information technologies into the educational process, Shurbanova N. is engaged in research in the field of digital education, including online courses and massive open online courses (MOOC), Kononenko O. is actively researching the use of virtual reality and artificial intelligence in education [16].

As for the experience of Kazakhstan, the Concept for the Development of Education of the Republic of Kazakhstan for 2022 - 2026 was approved; the presented Concept contains a number of measures to comprehensively improve the quality of education. In particular, as part of the digitalization of the educational process, a number of projects will be implemented: «Digital Teacher», and autonomous digital textbooks (mobile application), in addition, work on the digitalization of services in education will continue [17].

Results. The research method chosen was an online survey; it was held in May and June 2023 and was supposed to ensure wide coverage of the target audience; simple sampling was used. The channels for disseminating information about the survey were social networks (Facebook, etc.), including professional groups, instant messengers (WhatsApp, Telegram, etc.), and email.

A total of 115 people took part in the online survey.

The distribution according to teaching experience and positions held is as follows:

– 39.5% of respondents have over 20 years of teaching experience; 21.0% have experience from 15 to 20 years; 16.1% have experience from 10 to 15 years; 13.6% have experience from 5 to 10 years; 5.6% had up to 3 years of experience and 4.2% had 3 to 5 years of experience (Fig. 1);
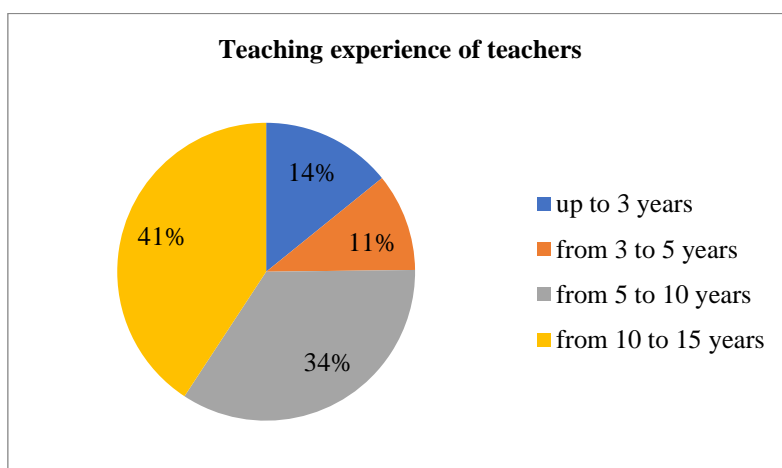

Figure 1. Teaching experience of teachers

– 10.8% – professors; 59.8% of respondents are associate professors; 20.3% – senior teachers; 9.1% are teachers (Fig. 2).
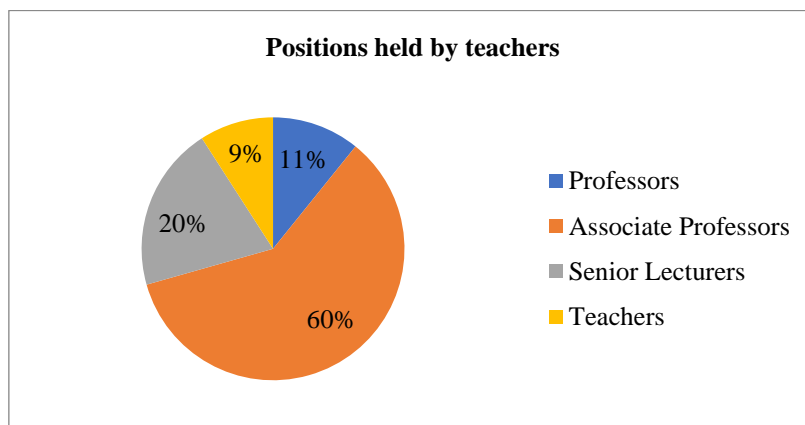

Figure 2. Positions held by teachers

The majority of teachers we surveyed define the general level of their digital competence as average (55.2%), 40.2% consider their level to be high, and only 2.2% defined it as low; 2.4% of respondents found it difficult to assess their competence (Fig. 3).
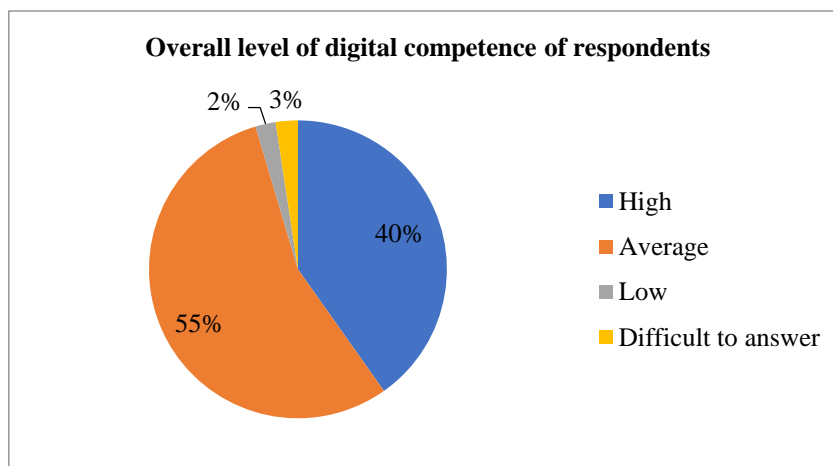
Figure 3. Overall level of digital competence of teachers

Further analysis was carried out in the context of basic, universal, general technical and special competencies

It was found that 87.1% of respondents demonstrate a high level (on a five-point scale) of basic digital competencies, 10.8% have a good level, and only 2.1% have basic digital competencies at a satisfactory level (Fig. 4).
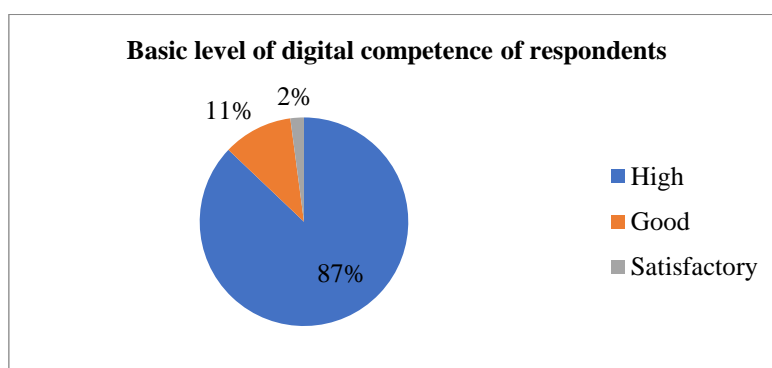

Figure 4. Basic level of digital competence of teachers

For universal digital competencies, a similar picture emerges: 77.6% have them at a high level, 17.1% at an average level and 5.2% at a satisfactory level (Fig. 5).
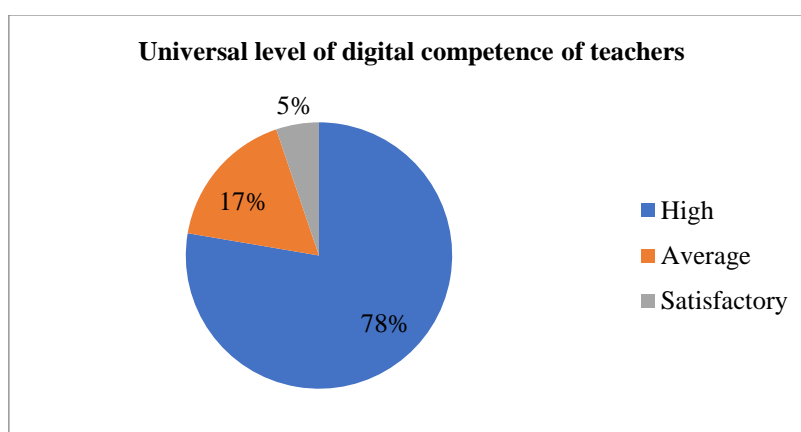

Figure 5. Universal level of digital competence of teachers

With general technical digital competencies, the situation is the opposite. Thus, 55.6% of respondents note that they cannot work in general technical applied computer programs or have minimal skills (40.2% and 15.4%, respectively), 21.3% have them at a satisfactory level, and only 13. 3% of respondents have a good level of these competencies, and 9.8% have a high level (Fig. 6).
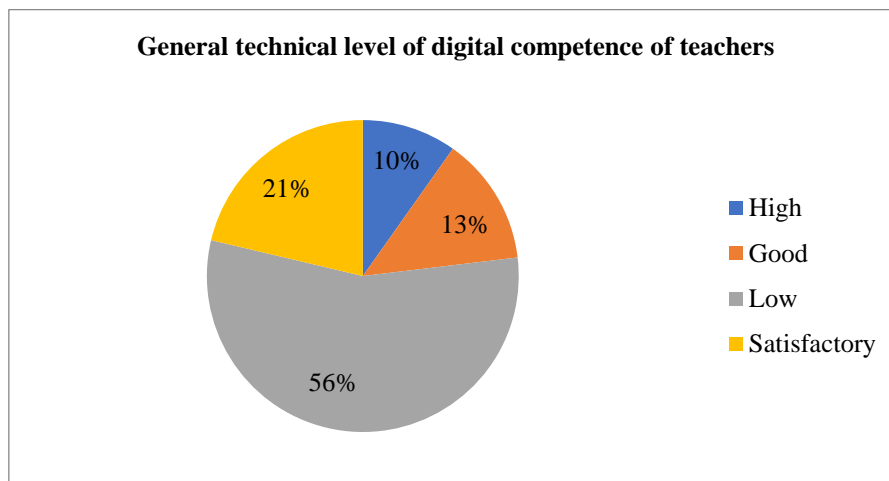

Figure 6. General technical level of digital competence of teachers

With regard to special digital competencies that allow the implementation of professional tasks related to teaching, based on the use

‒ computer equipment and specialized;
‒ computer programs used at the university;
‒ the picture emerges as follows: just over half (55.6%) of respondents reported a high level of proficiency in these competencies;
‒ 32.5% cope at a good level,
‒ 9.4% work at a satisfactory level;
‒ 2.4% consider their level to be unsatisfactory.

As a clarification, respondents were asked three questions, which also allowed them to assess the overall level of digital competence.

1. Can you perform simple tasks (for example, start the system, work with the system interface, open and/or create a simple document, view it and make changes, print it, etc.)? 96.2% of respondents answered affirmatively, which generally confirms that they have basic digital competencies and indicates an initial level of proficiency in them.

2. Can you use the appropriate system to solve the main problems within your professional activity? 92.3% of respondents answered affirmatively, which may indicate a basic level of digital competency.

3. Can you use automated systems to solve complex problems within your professional activities, and also customize such systems to optimize work? The answers were distributed as follows: 42% of respondents answered in the affirmative, 41.3% did not always cope with this, 10.8% found it difficult to answer, and 5.9% answered that they could not.

Consequently, less than half of the respondents have digital competencies at an advanced level. As part of our research, a question was asked about the use of online courses in education. It turned out that 84.6% of respondents had already taken them in order to improve their professional qualifications, and only 13.6% did not have such experience. At the same time, 1.7% found it difficult to answer this question, apparently not knowing what exactly could be classified as such training courses.

At the same time, to the statement in the questionnaire «I prefer to take online courses in order to improve my professional qualifications», the answer «yes» was given by 39.1% of respondents, and 37.8% indicated that «rather, yes»; and only 14.7% responded that they would most likely not give preference to such training formats. At the same time, 6.6% of respondents consider online courses ineffective, and 1.7% do not give them preference when improving their professional qualifications.

Discussion. Higher education teachers today demonstrate high levels of knowledge, skills and attitudes in the field of digital technologies. Obviously, work in the modern education system is impossible without knowledge, skills and attitudes in all components of digital literacy [18].

In general, if we consider the concept of a digital teacher in theoretical terms, we can identify several components of this competence: first of all, this is the digital literacy of teachers, which we discussed above. Further, these are generally pedagogical competencies, which include teaching skills in developing effective educational strategies adapted to the digital environment, understanding teaching methods and classroom management. We can also note the use of educational technologies, including interactive whiteboards, educational programs, online platforms and applications. They must also be able to integrate them into the educational process. Undoubtedly, a digital teacher must be prepared for constant changes and updates in the field of education and technology, must look for new ways of teaching and strive for innovation. As a teacher, they must also influence the motivation of students, stimulate their interest in learning and help develop independent work skills. And of course, the aspect of safety and ethics on the Internet, just like in a real educational environment, a digital teacher must ensure the safety of students in the online environment and teach them ethics on the Internet [19].

Thus, the digital educator successfully combines both pedagogical competencies and technical knowledge to effectively use digital resources to achieve educational goals.

In Kazakhstan, as in many other countries, digital technologies and education are becoming increasingly popular and in demand. Digital educators can work in schools, universities, educational centers or as self-employed professionals. Whatever the field of employment, digital teachers' integral responsibilities are: developing and implementing digital educational programs and resources, training teachers and students in the use of digital tools and applications, assessing the effectiveness of digital educational methods, and researching new technologies and teaching methods.

If we talk about a certain portrait of a Kazakhstani digital teacher, we can give a generalized description of such a teacher - the experience can vary from several years to decades, depending on his career goals and place of work. Many digital educators have degrees in education and information technology, as well as certifications in their respective fields.

Conclusion. Digitalization, or the process of introducing digital technologies into various spheres of society and the economy, is an important aspect of the development of modern countries, including Kazakhstan. However, the adoption of digital technologies may face various problems and challenges. Here are some of them that may be relevant for Kazakhstan:

Insufficient infrastructure, namely insufficient broadband Internet coverage and inaccessibility of digital infrastructure in remote areas, can limit access to digital services and education. Cybersecurity is also a fairly serious problem since the growth of digital technologies also increases threats in the field of cybersecurity. Protecting critical information and infrastructure from cyber attacks is becoming an important task. Another important aspect is the lack of competent personnel. No one doubts that successful digitalization requires qualified IT specialists and data analysts. A lack of such talent can slow down the digital transformation process. In our opinion, what slows down and can hamper the development of innovation is the lack of a clear regulatory framework and legislation in the field of digital education, thus there is a danger of creating distrust among participants in the digital educational market. In this issue, of course, there is also an economic component, namely, the development of digital technologies requires significant financial investments and public and private companies are not always able to provide sufficient funding. Today we talk a lot about effective educational programs, and therefore it is necessary to adapt them and educational institutions themselves to the requirements of the digital era. This can be challenging and require time and resources.

For the successful digitalization of Kazakhstan, it is important to solve these problems, develop strategies and action plans, as well as attract investments and develop human capital in the field of digital technologies. This will help the country improve its economy, improve the quality of education and ensure sustainable development in the digital age.

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A COMPARATIVE ANALYSIS OF THE LEVEL OF ENGLISH PROFICIENCY AMONG FUTURE TEACHERS IN CLIL AND NON-CLIL GROUPS

Abstract

In the contemporary world, the acquisition of the English language is of paramount importance, on par with scientific knowledge. English serves as the language of instruction for numerous academic publications, the latest scientific breakthroughs, and international conferences. Moreover, it stands as the global language for education. One prominent method to facilitate this second language acquisition is Content and Language Integrated Learning (CLIL). This study centers on the evaluation of English language proficiency among students at K. Zhubanov Aktobe Regional University, distinguishing between CLIL students and Non-CLIL students. The assessment is conducted through a comprehensive survey, and the study delves into the positive impact of CLIL through interviews with the university's CLIL teachers. The study's findings unequivocally demonstrate that CLIL students exhibit a higher level of English language proficiency compared to their Non-CLIL counterparts. The interviews with CLIL teachers unveil several affirmative effects of CLIL on students, including enhanced English language skills, opportunities for international internships, academic mobility, and the ability to pursue further studies at the Master's degree and PhD study level.

Keywords: CLIL positive effects, English proficiency, primary education, pre-service teachers, teaching.