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DIGITALIZATION POLICY IN THE EDUCATION SECTOR OF THE REPUBLIC OF KAZAKHSTAN: NEW CHALLENGES AND OPPORTUNITIES

Abstract

The research relevance is predefined by the intensification of globalization processes that affect all spheres of social life, one of which is the learning process. The research aims to study the basic requirements for teachers in these conditions. Among the methods used are the methods of logical analysis, deduction, induction, synthesis, functional analysis, abstraction, and others. The concept of “digital competence” was studied, which serves as a theoretical and practical basis for understanding the requirements for teachers in modern conditions. An analysis of different types of models was carried out, which implies identifying the most optimal and all-encompassing in the conditions of digitalization. An important aspect was to survey teachers in Kazakhstan from different areas. This allowed to provide an assessment of the current situation and identify the development of the implementation of innovative communication technologies in the educational process. The main problems faced by teachers in the implementation of digital technologies in the educational process were noted. The state policy of the Republic of Kazakhstan in the studied industry was also studied. Three groups of skills, which should have a teacher in today’s environment were identified. European models of digital competence were studied, and their advantages were identified. The practical value of the results is to propose the most optimal model, which covers all the necessary skills of a modern teacher in the conditions of digitalization and will contribute to improving the quality and efficiency of the educational process following public policy and accepted international standards.

Keywords: competence; information processes; globalization; literacy; e-learning course.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫ БІЛІМ САЛАСЫНДАҒЫ ЦИФРЛАНДЫРУ САЯСАТЫ: ЖАҢА МІНДЕТТЕР МЕН МҮМКІНДІКТЕР

Аңдатпа

Жүргізілген зерттеу жұмысының өзектілігі жаһандану процестерінің белсендірілуімен байланысты, олар қоғамның барлық салаларына әсер етеді, оның бірі оқу үрдісі. Жұмыстың мақсаты цифрландыру жағдайында педагогтарға қойылатын негізгі талаптарды зерттеу. Қолданылған әдістердің арасында логикалық талдау, дедукция, индукция, синтез, функционалдық талдау, абстракциялау және басқа әдістерді атап өтуге болады. Зерттеу барысында «цифрлық құзыреттілік» ұғымы зерттеліп, ол қазіргі жағдайда педагогтарға қойылатын талаптарды түсінудің теориялық және практикалық негізі болып табылады. Әртүрлі модель түрлеріне талдау жүргізілді, бұл цифрландыру жағдайында ең тиімді әрі кешенді модельді анықтауға бағытталған. Маңызды аспектілердің бірі – Қазақстанның әртүрлі облыстарындағы педагогтар арасында сауалнама жүргізу. Бұл қазіргі жағдайды бағалауға және білім беру процесіне инновациялық-коммуникациялық технологиялардың енгізілу деңгейін анықтауға мүмкіндік берді. Цифрлық технологияларды білім беру процесіне енгізу барысында кездесетін негізгі проблемалар аталды. Сонымен қатар, Қазақстан Республикасының мемлекеттік саясаты осы салада зерттелді. Қазіргі жағдайларға сәйкес педагогтың меңгеруі тиіс 3 дағды тобы анықталды. Еуропалық цифрлық құзыреттілік модельдері зерттеліп, олардың артықшылықтары анықталды. Алынған нәтижелердің практикалық маңызы – цифрландыру жағдайында қазіргі заманғы педагогтың барлық қажетті дағдыларын қамтитын ең тиімді модельді ұсыну және бұл мемлекеттік саясат пен қабылданған халықаралық стандарттарға сәйкес білім беру процесінің сапасы мен тиімділігін арттыруға ықпал ету болып табылады.

Түйін сөздер: құзыреттілік, ақпараттық процестер, жаһандану, сауаттылық, технологиялар, электронды оқыту курсы.

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ПОЛИТИКА ЦИФРОВИЗАЦИИ В СФЕРЕ ОБРАЗОВАНИЯ РЕСПУБЛИКИ КАЗАХСТАН: НОВЫЕ ВЫЗОВЫ И ВОЗМОЖНОСТИ

Аннотация

Актуальность проведения исследования обусловлена активизацией глобализиционых процессов, которые оказывают влияние на все сферы общественной жизни, одна из которых – процесс обучения. Целью работы является изучение основных необходимых требований к преподавателям в данных условиях. Среди использованных методов стоит отметить методы логического анализа, дедукции, индукции, синтеза, функционального анализа, абстрагирование и прочие. В ходе проведения исследования было изучено понятие «цифровой компетенции», которое служит теоретической и практической базой для понимания

требований к педагогам в современных условиях. Был осуществлен анализ различных видов моделей, которые предполагает собой выявление наиболее оптимальной и всеохватывающей в условиях цифровизации. Немаловажным аспектом было проведение опроса среди преподавателей Казахстана из различных областей. Это позволило предоставить оценку текущей ситуации и выявить развитость внедрения инновационно-коммуникационных технологий в образовательный процесс. Были отмечены основные проблемы, с которыми сталкиваются преподаватели при внедрении цифровых технологий в образовательный процесс. Также была изучена государственная политика Республики Казахстан в исследуемой отрасли. Были выделены 3 группы навыков, которыми должен обладать преподаватель в современных условиях. Были изучены Европейские модели цифровых компетенции и выявлены их преимущества. Практическая ценность полученных результатов заключается в предложении наиболее оптимальной модели, которая охватывает все необходимы навыки современного педагога в условиях цифровизации и будет способствовать повышению уровня качества и эффективности образовательного процесса в соответствии с государственной политикой и принятыми международными стандартами.

Ключевые слова: компетенция, информационные процессы, глобализация, грамотность, технологии, электронно-обучающий курс

MAIN PART

Digitalization of the educational process involves the introduction of innovative and communicative technologies in all spheres of activity of the relevant organizations and makes it necessary to train educators, namely, to form and assess their inherent digital competence, which focuses on the development of digital literacy in students. Integration of technologies in education is intended to improve the methods and approaches of teachers, as well as to open new opportunities for students in the key to the personalization of the educational process.

Thus, the research aims to examine the modern requirements for the qualities and skills of the teacher in a digitalization policy. On this basis, it is necessary to analyse the risks, problems, and statistics among teachers and propose a model that will improve the effectiveness and quality of the level of compliance of modern teachers to digitalization conditions.

INTRODUCTION

Following L. Amhag et al., the digital competence of teachers in the scientific doctrine is considered a result of the evolutionary nature of their information and communication competence, which is one of the necessary elements in the professional standard of the teacher in modern conditions [1]. As it serves as a basis for the further development of digital literacy in students, the teacher has an important role in adapting innovations to improve the quality level of the educational process. That is, the teacher complements the learning environment, predetermining the character in action and adapting new methods to achieve the goals of the didactic plan. But the determining start for this is the digital competence of the teacher himself. As noted by M. Lindfors et al., it is advisable to discover new meanings of teacher training in the context of digitalization policies in the educational sector [2].

As A. Lund and T. Aagaard, digitalization policy creates global transformation processes, which are an integral part of any professional activity, as it expresses the readiness to work with innovative resources, create, master, distribute, and use innovative and communication technologies [3]. That is, on the one hand, it is an integrative beginning, and on the other, it forms certain difficulties in mastering completely new tools for the whole society. Following O. Erstad et al. the impact of digitalization policy on all spheres of social life creates new requirements for the development of personal qualities while changing cognitive functions and forming new requests for the development of intelligence emotionally and socially [4]. In this case, it is appropriate to mention that emotional intelligence is a tool for the new thinking of educators and professional activity, which allows to find individual strategies for each of the students.

Preparedness in psychological terms in a teacher in the conditions of digitalization of the educational sector depends on emotional intelligence. That is, the professional readiness of the modern teacher with a high level of emotional intelligence, which can implement the educational process fully and effectively, is one of the most urgent tasks. J. Lopez-Belmonte et al. state that emotional intelligence is characterized not only by the ability to act in a balanced way in different situations but also by self-improvement and the constant introduction of something new in professional and other types of activity [5]. At the present stage, dynamically and actively developing digital tools in the educational segment provide new and effective complement the traditional tools. Digital educational resources should be understood as a set of information sources that contain text, digital, graphic, musical, photo, video, and other types of information, which aims to implement fundamentally new opportunities in the educational process.

Following L.T. Zhanybekova and G.B. Zhukenova, the current state of the educational sector of the Republic of Kazakhstan faces certain problems [6]. This position is also shared by Z.M. Muldakhmetov and A.M. Gazaliev [7]. It is worth agreeing with these authors and noting that the main problem is the insufficient level of digital competence of the teacher. Since the teacher is a subject that influences the formation of competitive future specialists, it is quite important to improve his skills and professional development following the processes of globalization. This is also mentioned in the studies of G.T. Urazbayeva [8]. According to the abovementioned, special attention should be devoted to the study of the skills of a modern teacher to improve the conditions of the educational process in Kazakhstan. On this basis, the research relevance is predefined by the need to improve the skills of modern teachers in Kazakhstan under the conditions of digitalization. Despite the active introduction of digital technologies into the educational process, the scientific literature does not provide a comprehensive overview of studies that reveal the relationship between the digital and emotional competence of teachers in the context of the implementation of state digitalization policy. This study fills this gap by offering a systematic approach to the analysis and modeling of requirements for a modern teacher in the context of digitalization.

The hypothesis of the study is that the successful implementation of the state policy of digitalization in the field of education in the Republic of Kazakhstan is possible provided there is a comprehensive development of teachers' digital competencies, modernization of infrastructure, and systemic support at all levels of the educational process.

METHODOLOGY

This research was carried out using different types of methods of analysis. The functional analysis method allowed to reveal the concept and the role of digitalization in modern conditions, as well as to trace the sphere of its influence on the educational sector. The formalization method was also applied to evaluate the aspects of the digitalization process in the educational segment. The logical analysis method provided an opportunity to highlight a group of necessary skills for a teacher in the context of digitalization. Different modern models of digital competencies were considered, which allowed identifying their advantages and disadvantages. The analogy method was implemented to identify the importance of the role of one or another component in the provided models and to find the most optimal ones.

The survey method was used to provide an assessment of the digitalization process in modern conditions in the Republic of Kazakhstan. Thus, 227 teachers from Almaty, Atyrau, Karaganda, and Aktobe regions participated in the survey. This allowed to investigate the issues related to the use of digital technology in the educational process by teachers, the frequency of use of digital technology by teachers, resources for professional development, the use of technology by teachers to prepare for practice and group work, as well as the risks of active use of technology. The factor analysis method allowed to identify similarities in the difficulties of teachers' work with innovation and communication technologies, as well as to trace their advantages and possible prospects for improvement.

The abstraction method allowed to focus on a particular aspect of the research problematic, namely, digital competencies. This helped to identify their place and role in the process of forming the necessary skills of a teacher in modern conditions. The hypothetic-deductive method consisted in presenting statements as hypotheses and in empirical testing of these hypotheses, namely, in the study of digital competence models and the evaluation of their effectiveness. The deductive method allowed to characterize the range of important competencies and skills of the teacher based on the requirements of digitalization policy. The induction method was used to generate a list of necessary teacher skills based on the current conditions. The synthesis method, which is based on the theoretical and practical information obtained, allowed to provide a model that will consider all the important competencies for the formation of pedagogical activity under international standards.

As such, the functional and logical analysis methods, the analogy method, abstraction, and hypothetic-deductive method allowed to study the theoretical aspect of the work for a greater understanding of the digitalization policy, relevant necessary skills and to identify its role in the educational sector. The survey method provided an opportunity to assess the success and effectiveness of the digitalization policy in the Republic of Kazakhstan based on the responses received during its implementation. Abstracting, deduction, induction, and synthesis methods were used to study modern models of digital competence and to form one, which will consider everything necessary to improve the effectiveness of teaching activities and the educational process as a whole.

RESULTS

Digital technologies play an important role in the educational process. They are a tool for collaboration and planning active cognitive activities. Currently, the digital competencies of the educator are universal and provide a mechanism for learners to adapt to the digitalization of society. The teacher's competence, in turn, is the basis for the full participation of all subjects of the educational process in the knowledge society. The educator is at the center of the digital school, whose purpose is not only to teach subject matter knowledge, but also to solve various learning, developmental, and educational tasks, to act as a mentor, and to be responsible for building digital literacy in learners. In general, the capabilities of digital resources in the educational segment can be characterized by several specific functions. They should include the means of the operational plan for visibility in the learning process, assistance in working out the skills of practical nature of students, organization, and control of consolidation of knowledge of students, in particular, by providing homework, independent and control works, work with diagrams, tables, charts, as well as editing text format and error correction in the creative works [9].

It is important to note that the use of digital resources in the educational process also provides an opportunity to achieve certain goals. For example, it is the development of the personality of students, preparing individuals for life in the conditions of digitalization and informatisation of society, which is revealed in the development of various types of thinking, abilities of the communicative character, the use of computer graphics, the formation of information culture and skills in the implementation of information processing. This allows intensifying all levels of the educational process due to the active implementation and use of information and communication technologies, which allows for deepening interdisciplinary links, improving the efficiency and quality of learning, increasing the activity of cognitive activity, and increasing the level of optimization of the volume of search for the required information [10].

It should be mentioned that digital literacy is a necessary quality for mastering the proper level of digital skills for the SMART space. This should be interpreted as the skills through which the teacher realizes digital consumption, the use of the Internet to evaluate, search, process, analyse and synthesize information, and communicate with the teaching team to make constructive decisions [11]. In general, an educator in a digitalized environment should have 3 types of skills: Hardware Skills, Software Skills, and Metaskills. The first refers to the "hard" skills that are related to a digital device or hardware; the second refers to the "soft" skills to implement interactions with software to handle information; the latter, in turn, are meta-skills that everyone must possess to successfully apply the

previous two types. An important aspect for the modern teacher is the development of digital competencies. This represents a set of skills and abilities to use digital technology and media in the process of solving and setting tasks that are related to the processing and acquisition of knowledge and information necessary to implement professional activities, learning, socialization, and expansion of already provided opportunities.

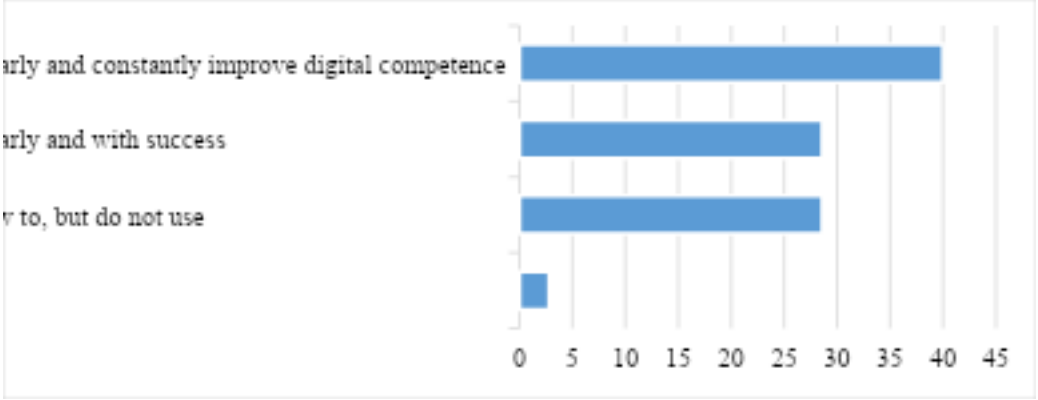
On this basis, it can be emphasized that the digitalization of the educational process is justified to create a basis for teachers who are fluent in digital competence and oriented to the education of a continuous nature. It is worth noting that the main feature is to ensure the proper and necessary level of the educational process and integration of students with special needs in the educational process under conditions of inclusion. That is, the conditions provided by the process of digitalization allow the creation of new opportunities for absolutely all categories of students. It should be mentioned that a teacher with a high level of emotional intelligence can create a psychologically favourable environment for the implementation of the learning process. The teacher's mastery of digital competence is important due to the activity of digitalization policy. Under the requirements of this state policy, in modern information and communication conditions, the teacher is obliged to be able to use services to work with digital educational content, conduct classes, laboratory, and practical work with them using interactive electronic materials of the educational plan, to master professional development programs digitally. That is, it implies an update of the didactic toolkit of the digital plan teacher due to the introduction of digital technologies in pedagogical activities [12].

The services that most often must be used by a teacher from a personal device to implement the educational process are the digital registry, digital schedule, services for working with digital educational content, mastering additional educational programs, services for digital record keeping, communication educational programs [13]. Since digital technologies are inherently dynamic, they are constantly improving. In this regard, updating and developing digital competencies is integral to their effective, safe, and appropriate use in a teacher's professional activity.

The concept of "digital competence of a teacher" should be understood as a set of competencies of the general pedagogical, general user, and subject-pedagogical nature and 3 levels of their development, namely digital transformation, digital use, and basic level, which provide an opportunity to characterize the cognitive, creative and functional aspects of this type of professional activity. In this context, digital use refers to the use of information and communication technologies and related services productively and regularly to solve a wide range of pedagogical tasks. In turn, digital transformation is the creative use of information and communication technologies in professional activity, improvement of digital skills, and realization of programming of own educational environments. At the basic level, it is necessary to understand the general ideas of the teacher about the potential of information and communication technologies, as well as their use in solving individual tasks [14].

In this regard, the issue of surveying teachers to determine their assessment of skills and knowledge becomes important (Figure 1).

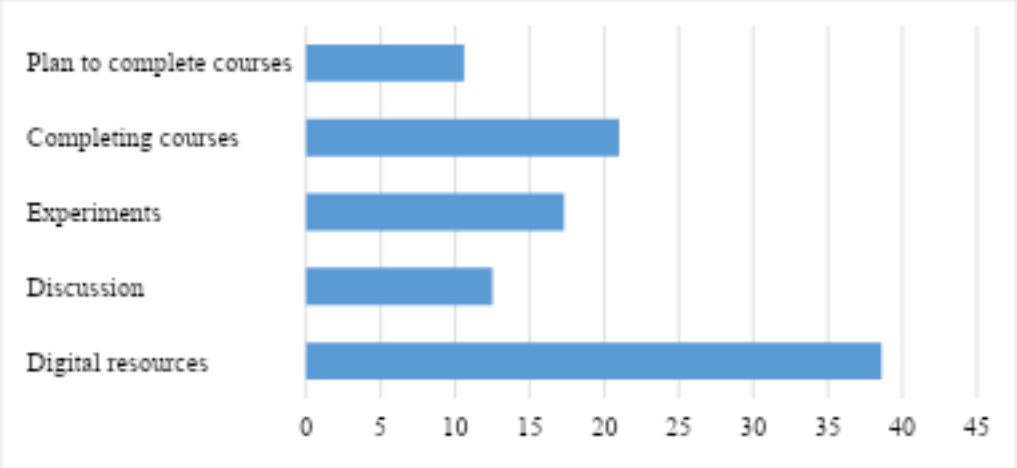
Table 1 – *Teachers' use of digital technologies in the educational process, %*



This survey was conducted among 227 teachers of Almaty, Atyrau, Karaganda, and Aktobe regions. As it can be noted from the answers of respondents, 2.8% believe that they do not understand digital technologies and therefore do not use them in the educational process. In turn, 28.6% understand information and communication technologies but do not use them in professional activities. Also, 28.6% regularly use them and own them at a sufficiently high level, but at the same time sometimes there are some difficulties. 40% confidently use digital technologies in the educational process and, importantly, are constantly improving their knowledge.

It is important to consider how long-ago teachers began to implement digital technologies in their professional activities (Figure 2).

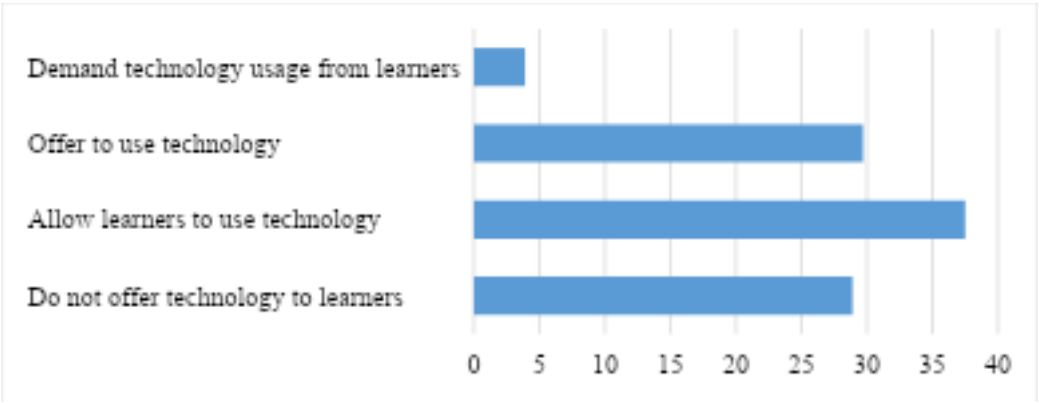
Table 2 – *Qualification improvement resources, %*



As such, the data provided show that more active implementation of digital technology began in the period of 1-3 years. This allows to conclude that the current policy of digitalization of the educational sector is implemented successfully, but the indicators should be much higher. In general, teachers use a variety of resources to enhance digital competence. Often these are electronic educational resources – 38.6%, discussions with more experienced colleagues on this topic – 12.5%, experiments with various online services – 17.3%, have taken professional development courses – 21%, and plan to take such courses – 10.6%.

Statistics on the use of technology to prepare practical and group activities are shown on Figure 3.

Table 3 – *Use of technology to prepare practical and group activities, %*

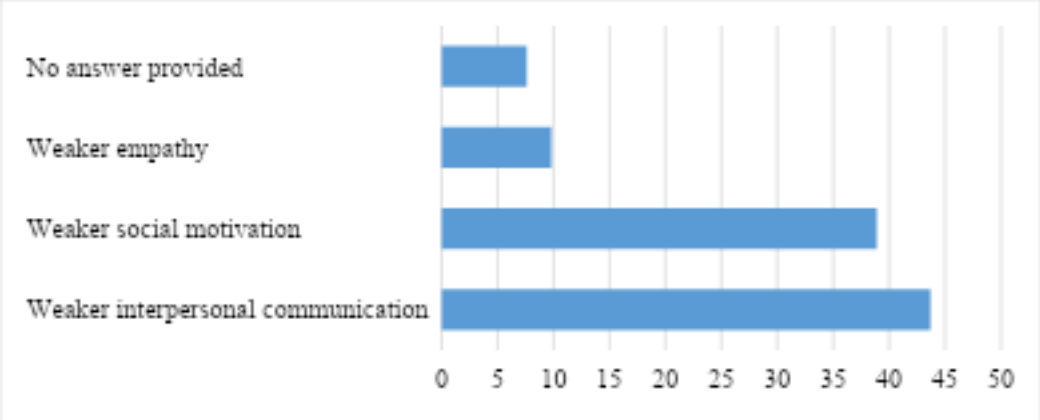


An important aspect was to determine whether teachers use digital technology to prepare practical and group projects. Thus, it was noted that 28.9% do not use them, while 37.5% provide

students with the opportunity to create various kinds of projects, use information and communication technologies, and exchange information. 29.7% encourage students to use digital technologies in the implementation of the educational process, while 3.9% put it as a requirement.

The percentage of active technology usage risks is presented on Figure 4.

Table 4 – Active technology usage risks, %



It is worth mentioning the possible risks associated with the introduction of digital technology in the educational process in the opinion of teachers. As such, 43.7% expressed the position of weakening of interpersonal communication skills, 38.9% – social motivation, 9.8% – weakening of empathy, teamwork, and leadership skills, and 7.6% did not provide an answer.

The obtained results provide an opportunity to form prospects for further formation of such a necessary skill for teachers as digital competence. In this case, it is advisable to note that it is considered simultaneously as a result of the self-development of the teacher, synthesis of personal and professional experience of the teacher, as well as an educational result of teachers' professional training in the conditions of digital educational space. Thus, the formation of pedagogical digital competence occurs due to the implementation of three key blocks.

The first is the training modeling of the personal educational environment in the conditions of digitalization following the passage of certain practices and taking appropriate professional development courses. This includes the use in the educational process of digital educational resources, materials of digital platforms, organization of projects in the online environment, application of digital tools, and conducting propaedeutic work, which will provide an opportunity to form a teacher's skill to work in the digital educational space, demonstrate various options of work and motivate students to use digital technologies.

The second aspect implies the professional development of teachers in the implementation of the learning process, which includes the improvement of methodological training in the aspect of the digital transformation of education through the introduction of modern online learning platforms, participation in webinars. This provides an opportunity to create a practice-oriented environment for the formation of digital competencies of the teacher.

The third aspect allows the exchange between positive and negative pedagogical experiences in the educational environment in the context of digitalization. This also includes participation in various competitions within the framework of national programs on digitalization of the educational process, studying the experience of foreign advanced states, and drawing a parallel with the domestic one to get a complete picture regarding the shortcomings and advantages of using information and communication technologies in the educational segment, as well as determining the degree of effectiveness of their implementation in practice.

Based on the results, it is worth concluding that one of the necessary skills for the modern teacher in modern conditions is digital competence. The dynamic development of digital technology has

actualized the question of identifying its essence. The indicators obtained in the survey provide practical value for identifying and shaping the modernization of the educational sector and the development of programs for professional development and retraining. Subsequent research will focus on the study of the prospects of the implementation of artificial intelligence in the sphere of education.

DISCUSSION

The increasing role of information processes and digital technologies is a global process that affects all social relations. Their introduction and adoption of appropriate management decisions on this basis are becoming an increasingly large-scale and dynamic process in the educational sphere of Kazakhstan.

The digital transformation began in 2013 with the adoption of the program "Information Kazakhstan – 2020", which included a comprehensive plan for the transition to an information society, the creation of mobile government institutions, and the improvement of public administration [15]. In December 2017, the program "Digital Kazakhstan" was approved. It aimed at the development of the digital system, which provided an opportunity to effectively interact with the state, business, society, and education, as well as to increase the competitiveness of the economic system of Kazakhstan and the corresponding quality of life of the population [16].

On this basis, the relevant issue in modern conditions for teachers is to improve digital literacy for the implementation of the transition to the digitalization of education. It is worth noting that this process contains the main stages to implement the strategy. The first stage is digitization, which should be understood as the transfer of received information from analog to digital form. The next one is digital transformation, which implies the introduction of information and communication technologies in the educational sector, namely, electronic diaries, portfolios, messengers to support communication with students and teachers, interactive whiteboards. Thus, to obtain the requested information in an objective and timely manner, the National Educational Database is used; it helps the teacher quickly and promptly obtain statistical reports on the required request. The last stage is digital innovation; it consists of the implementation of innovative and communication technologies in the educational process.

Following F.M. Rokenes et al. and under the provisions of the European Union Framework Convention of Core Competences, digital competence is one of the eight most important, which includes the critical and confident use of information and communication technologies for leisure, communication, work and other activities [17]. The authors also write that the Joint Research Center has developed the first model of digital competencies for teachers in Europe; in each group several competencies are distinguished, namely from 3 to 6, for a total of 21. It is worth agreeing with the authors' statements and adding that there are 8 levels of competence expression, which depend on the independence of problem-solving (independently or with the help of something/someone), on the complexity and complexity of tasks (from simple to indefinite), on the dominant cognitive domain (understanding, memorizing, creating, and applying).

According to A. Anton-Sancho et al., this profile includes 6 areas of digital competencies of the teacher, which focus on the mastery of innovation and communication technologies to assess learning outcomes, the use of digital tools to empower the educational plan of students, the use of technology in the professional environment, the development of such skills as searching, creating and sharing digital resources in the educational sector, supporting the development of digital competencies of students and the formation of necessary [18]. The position of this author should be more detailed to get a broader view of it. So, the competence of a technological plan should include the ability to use a different kind of technology, ranging from low-tech to digital. The latter should be understood as the ability to solve technical and technological problems, knowledge of many technologies, experience in implementing activities with technology, tracking innovations and trends in the industry, as well as the presence of skills that are necessary in this regard.

Based on the work of L.T. Muharlisiani et al., such a model as Technological Pedagogical Content Knowledge is quite promising [19]. In this case, it is worth agreeing with the opinion of these authors as this model includes 3 key components – technology, pedagogy, and content. That is, it describes the basic skills and abilities that are essential for the implementation of pedagogical activities regardless of the discipline taught. The competencies of technological nature should include the ability to use various innovative and communicative technologies, including low-tech and digital. The latter in this case should be understood as knowledge of the use of technologies and their large differences, the ability to solve problems of technological plan, the availability of technical skills and experience in working with different technologies, tracking innovations, conducting training to improve the skill of working with technology. It is advisable to mention the relationship between pedagogical, content, and technological competencies, which is the basis of many teacher competency assessment models.

Drawing on the findings of S. Willermark and M. Gellerstedt and under the recommendations of UNESCO, it is proposed to introduce the structure of information and communication technology competencies of teachers, which consists of three approaches and six modules [20]. It is worth noting that approaches are the degree of competence expression, and modules are their groups. Accordingly, the first module denotes the teacher's ability to apply technology independently and help students use it, the second – is to use technology to solve complex tasks, and the third – is the production of new knowledge using technology. These recommendations are used for more extensive implementation of digital technologies for the organization of the educational process, rather than to identify the competencies of the teacher directly.

As per J.K. Andreasen et al., there are four components in the structure of digital competence, namely responsibility, skills, knowledge, and motivation [21]. Each of them can be realized in different spheres of activity on the Internet. Therefore, under the position of these authors, 4 types of this digital competence should be distinguished: informational, communicative, technical, and consumer. The first implies the skills of the teacher, which are associated with the search, organization, and understanding of digital information and its critical reflection, as well as the creation of objects using appropriate resources. The second type contains the skills of the instructor that are necessary for various forms of communication. The third, in turn, encompasses those skills that will enable the effective and safe use of software tools for various kinds of tasks. The fourth type denotes the introduction of those skills that will allow the teacher to solve with the help of information and communication technologies those tasks that are related to specific life situations and meet different needs. It is advisable to mention that consideration of aspects of the motivational and volitional nature of digital competence opens the way to understanding the changes in the structure of modern society, which occur under the influence of innovation and communication technologies and involve the development of digital citizenship, as well as provides an extension of human capabilities.

Following S. Bader et al., the European model of digital competencies for education at the moment is the most complete and all-encompassing [22]. It is worth agreeing with this and noting that this model is aimed at the development of teaching skills that are needed in a transformative environment, improving the application of digital technologies in the educational sector, as well as the reliance on programming and data-based analysis in education. Hence, this model poses the need in the form of a set of certain skills and competencies of the teacher, which are professional, digital, pedagogical, subject matter, and cross-border.

Based on the above, it is proposed to improve and implement in general in the professional activities of teachers a model that includes information competence as a teacher's skill to work with information resources, media competence as the skill to create information objects using technology, communication as the ability of the teacher to communicate and work with cloud technology, technological as the ability of the teacher to safely and effectively implement innovative and communication technologies, as well as information security to provide a teacher to assess the risks and threats when working in the digital space. Thus, it will allow teachers to implement their activities under the requirements of the digitalization policy and increase the effectiveness of the educational process.

CONCLUSIONS

The research was conducted to explore the necessary skills of teachers in a digitalized environment. Following this, the role of this kind of public policy was initially identified and traced its impact on the education sector. Thus, it was noted that its active implementation and improvement provides an opportunity to implement the educational process under the international standards and conduct training in an innovative way to form competent future specialists. At the same time, one of the main conditions for the embodiment of the goals set by state policy is the presence of several skills that allow teachers to conduct the educational process with the introduction of innovative and communicative technologies. To track the effectiveness of this aspect in the Republic of Kazakhstan, a survey was conducted, which was attended by 227 teachers from different areas.

Based on the information received, it was found that the policy of digitalization is actively developing, but there are several problems associated with the difficulties of using innovative and communication technologies by teachers in the process of providing training. In this regard, recommendations were offered to address the problems provided. It is to provide opportunities to improve digital literacy and qualifications of teachers. It is important to consider different models of digital competence. It is worth noting that it serves as a necessary skill for teachers in today's globalized environment. Even though most of the modern models of digital competence have similarities with each other, each of them does not adequately cover the range of necessary skills. Thus, a model has been provided in which all important aspects, namely information, media, communication competencies, and information security, are included. It will provide an opportunity to improve the effectiveness of education and the quality of its delivery. Subsequent research will focus on the prospects of introducing artificial intelligence into the educational sector.

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