

DIGITALIZATION OF EDUCATION AT THE PRESENT STAGE OF DEVELOPMENT OF THE INFORMATION SOCIETY

A DIGITALIZAÇÃO DA EDUCAÇÃO NO ACTUAL ESTÁGIO DE DESENVOLVIMENTO DA SOCIEDADE DA INFORMAÇÃO

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ABSTRACT

The article theoretically substantiates, developed and practically implemented a structural and functional model for the formation of ICT competence of students of a pedagogical university, taking into account interdisciplinary integration; the pedagogical conditions that contribute to the formation of ICT competence of students of a pedagogical university are determined: interdisciplinary integration as the basis for building an interdisciplinary course, the content of which is aimed at the formation of ICT competence; informational, didactic, technological components as a basis for the formation of ICT competence; integration of formal, non-formal and informal education to implement the integrity of the acquired knowledge, skills, experience as the basis for the formation of ICT competence of future teachers; the creation and use of a set of tasks as special means of forming ICT competence, the educational process of a pedagogical university will be built in accordance with the conditions for the digitalization of education and aimed at the formation of students' ICT competence as the basis for the implementation of their future professional activities.

Keywords: Pedagogical strategy. Education. Social innovations. Management.

RESUMO

O artigo fundamenta teoricamente, desenvolve e implementa na prática um modelo estrutural e funcional para a formação de competências em TIC de alunos de uma universidade pedagógica, tendo em conta a integração interdisciplinar; são determinadas as condições pedagógicas que contribuem para a formação da competência em TIC dos alunos de uma universidade pedagógica: integração interdisciplinar como base para a construção de um curso interdisciplinar, cujo conteúdo é voltado para a formação da competência em TIC; componentes informacionais, didáticos e tecnológicos como base para a formação da competência em TIC; integração da educação formal, não formal e informal para implementar a integridade dos conhecimentos adquiridos, habilidades, experiência como base para a formação de competências em TIC dos futuros professores; a criação e utilização de um conjunto de tarefas como meio especial de formar competência em TIC, o processo educacional de uma universidade pedagógica será construído de acordo com as condições para a digitalização da educação e voltado para a formação de competência em TIC dos alunos como base para a execução de suas futuras atividades profissionais.

Palavras-chave: Estratégia pedagógica. Educação. Inovações sociais. Gestão.

Introduction

Today, ICT competence is one of the leading competencies in pedagogical activity at all levels of continuous education. This is also relevant for the training of mid-level specialists, including future teachers of preschool educational organizations.

Currently, the training of students in the pedagogical direction (for example, future teachers) in the education system is based on taking into account the requirements of various standards. The basis of interaction and pairing of these

standards is the professional competence of the teacher, one of its key components and a mandatory requirement for the preparation of the future teacher is his ICT competence. Under the ICT competence of students of the pedagogical direction, we will understand its integral personal-activity quality, which manifests itself: in the ability, based on knowledge, skills and experience of activity acquired in the process of preparing a teacher, to solve professional problems with the help of ICT and on the basis of digital literacy; readiness for the motivated use of ICT, taking into account the specifics of the field of professional activity.

The relevance of the problem of forming the ICT competence of students of the pedagogical direction during their studies at a pedagogical university is confirmed by: analysis of the results of the ascertaining experiment, which showed an insufficient level of knowledge and skills of students in the field of informatics and ICT, which may be in demand when using ICT in their future professional activities; a high assessment of the importance of the ICT competence of a modern teacher and the need to develop ICT competence in future teachers of preschool educational institutions, expressed by employers and teachers of pedagogical universities.

Object of study: the formation of ICT competence of students of a pedagogical university in the process of their professional training.

Subject of study: the content and organization of the process of forming the ICT competence of students of a pedagogical university, taking into account interdisciplinary integration in the context of digitalization of education.

The purpose of the article: theoretical substantiation, development and testing of a structural and functional model for the formation of ICT competence of students of a pedagogical university, taking into account interdisciplinary integration in the context of digitalization of education.

Literature review

The problem of the formation of ICT competence is studied by a number of domestic and foreign scientists: (BORDAS-BELTRÁN, ARRAS-VOTA, 2018),

(BROLPITO, 2018), (CHEN, GORBUNOVA, MASALIMOVA, BÍROVÁ, 2017), (HOWE, STRAUSS, 1991), etc. In the context of the study, the problem of developing the ICT competence of future teachers is relevant.

The problem of the formation of ICT competence, including future teachers, has been considered by many scientists: (KHUANWANGA, LAWTHONGA, SUWANMONKHA, 2016) - the formation of ICT competence of future primary school teachers in the conditions of applied bachelor's degree; (KNOBEL, 2008) - the formation of ICT competence of a primary school teacher in a pedagogical college; (KOŁODZIEJCZAK, ROSZAK, 2017) - improving the system of continuous training of teachers in the field of using ICT tools in their professional activities; (LIMBERG, OLOF, SANNA, 2012) - the structure and methodological system of training informatization of the school in pedagogical universities.

However, a study of the literature showed that the issues of forming the ICT competence of students of a pedagogical university, taking into account interdisciplinary integration in the context of digitalization of education, have not been studied.

The analysis of dissertation research, scientific and pedagogical literature, the study of the practice of forming students' ICT competence during their studies at a pedagogical university, the results of the ascertaining experiment allow us to formulate the following contradictions:

- between the increasing influence of digitalization on the development of education in general, giving rise to the need to improve the quality of the educational process, and the insufficient formation of ICT competence of students of a pedagogical university to work in the conditions of digitalization of education;
- between the need to form the ICT competence of future teachers during their training in the education system in the conditions of digitalization of education in accordance with the requirements of modern standards and the impossibility of ensuring adequately the formation of ICT competence of students of a pedagogical university as future teachers using existing models and methods;

- between the need of preschool educational organizations for teachers with a high level of ICT competence, which ensures the successful implementation of pedagogical activities, and the existing level of ICT competence of students of a pedagogical university, which is insufficient for the successful implementation of future professional activities.

The identified contradictions led to the choice of the research problem, which is to determine and justify the features of the formation of ICT competence of future teachers, taking into account interdisciplinary integration in the learning process at a pedagogical university in the context of digitalization of education.

Theoretical: analysis of pedagogical, philosophical, sociological, economic literature, legal acts of the European Union related to the research topic; analysis of the management system for the organization of additional education, modeling of the pedagogical strategy for managing social innovations in the network interaction of educational organizations.

Empirical: reconstruction and analysis of pedagogical experience, pedagogical experiment, observation, survey methods (questionnaire, conversation). Methods of statistical processing of the results of experimental work.

Materials

Today, many scientists note that the modern world has moved to a new level of technology development, called "digitalization", which is a priority direction for the modernization of education, replacing the process of informatization. The productive use of digital technologies in education, the inclusion of students in independent search, selection of information, participation in project activities forms the competencies of the 21st century in future specialists, including ICT competencies (BERNARD, GOODYEAR, 1992). Analysis of regulatory documents, research in the field of digitalization of the economy, education made it possible to identify the conditions for the digitalization of education: the digital generation of students; creation of a legislative framework for the digitalization of education;

resource support for the digitalization of education, including digital educational environment of an educational organization; training of human resources for digital education with ICT competence; the use of digital pedagogical technologies and educationally significant digital technologies (BORDERS, LEDDICK, 1987).

On the basis of research, the components of ICT competence have been clarified: motivational-value, general user, general pedagogical, subject-pedagogical components. The motivational-value component determines the activity and need of a person to use ICT, the need to comprehend knowledge and mastering skills in the field of ICT application. The general user component characterizes knowledge, skills for working with modern information communication and educationally significant digital technologies in the information and educational environment of an educational organization. The general pedagogical component includes the digital literacy of the teacher and reflects the preparation for pedagogical activity and its constant display in this environment in accordance with the planning and organization of educational activities (BERNARD, DIGEST, 1998). The subject-pedagogical component determines the expansion and deepening of the formed knowledge, skills of future teachers, taking into account the specifics of professional pedagogical activity with using IC and educationally significant digital technologies.

The levels of formation of ICT competence of future teachers are determined: reproductive, productive, creative. The reproductive level is characterized by: the reproduction of previously learned knowledge and skills in the field of informatics and ICT for use in typical situations; the ability to apply existing knowledge in the field of informatics and ICT according to the model, etc.

The productive level is characterized by: insufficient manifestation of the need for knowledge and mastery of skills in the field of ICT; the ability to apply learned information in non-standard situations and in solving non-standard tasks, including practical, applied ones with the advisory support of a teacher, etc (WILLIAMS, 2001). The creative level is characterized by: the conscious need of the future teacher to master ICT and use them in professional activities; the ability to independently apply existing knowledge in the field of informatics and ICT in solving

non-standard problems. Criteria, indicators of the formation of ICT competence of students of a pedagogical college, which determine the levels of their implementation, are singled out.

The structural-functional model for the formation of ICT competence of students of a pedagogical college includes theoretical, target, content-activity, organizational-technological and evaluatively effective blocks. The theoretical block is based on the theoretical foundations for the formation of the ICT competence of students of the pedagogical college - approaches (system-activity, personal, integrative) and principles (fundamental, scientific, systematic, interdisciplinary integration). The basis of the target block is an integrated goal based on social order (education based on modern standards), the formation of ICT competence of students of a pedagogical college.

The content-activity block includes the components of ICT competence (motivational-value, general user, general pedagogical and subject-pedagogical) and the stages of its formation (motivational, actualizing, basic, summarizing). The basis of the organizational and technological block is the pedagogical conditions for the formation of ICT competence of students of the pedagogical college, active and interactive methods, forms of education, digital pedagogical, IT and educationally significant digital technologies, didactic teaching aids, incl. digital.

1. For the effective formation of ICT competence of students of a pedagogical university, it is necessary to take into account interdisciplinary integration and the conditions for the digitalization of education. Interdisciplinary integration as the highest form of integration of the content of education is the basis for selecting the content of an interdisciplinary course aimed at developing the ICT competence of students of a pedagogical university. The conditions for the digitalization of education include: the digital generation of students; creation of a legislative framework for the digitalization of education; resource support for the digitalization of education, including the digital educational environment of an educational organization; training the human resources potential of digital education, owning

ICT competence, including digital literacy; digital pedagogical technologies and educationally significant digital technologies.

2. The model for the formation of ICT competence of students of a pedagogical college is a structural and functional complex education, including: a theoretical block containing approaches (systemic-activity, personal, integrative) and principles (fundamental, scientific, systematic, interdisciplinary integration); target block, reflecting the integrated goal (formation of the ICT competence of the future teacher), based on social order - education based on modern standards; content-activity block, including components (motivational-value, general user, general pedagogical, subject-pedagogical) and stages of ICT competence formation (stage I - motivational, stage II - actualizing, stage III - main, IV - generalizing); organizational and technological block, the basis of which is the pedagogical conditions for the formation of ICT competence of students of a pedagogical university; active and interactive forms and methods of teaching, IT and digital technologies, didactic teaching aids, incl. digital, providing the formation of ICT competence of future teachers; evaluative and effective block, reflecting the levels of formation of the ICT competence of the future teacher (reproductive, productive, creative) and the result - the formed ICT competence of future teachers.

3. The implementation of the structural-functional model for the formation of ICT competence of future teachers involves a number of pedagogical conditions that contribute to the holistic formation of the ICT competence of students studying at a pedagogical college in the context of digitalization of education: interdisciplinary integration as the basis for building an interdisciplinary course, the content of which is aimed at the formation of ICT- competencies; including informational, didactic, technological components as a basis for the formation of ICT competence; integration of formal, non-formal and informal education to implement the integrity of the acquired knowledge, skills, experience as the basis for the formation of ICT competence of future teachers; creation and use of a set of tasks as special means of developing the ICT competence of future teachers.

4. When implementing a structural-functional model for the formation of ICT competence of future teachers, the following are preferable: active and interactive forms and teaching methods; digital pedagogical technologies (blended learning, mobile learning, augmented reality technology, distance learning technologies, gamification, electronic (online) learning, etc.); educationally significant digital technologies (artificial intelligence, robotics components, wireless communication technologies, virtual and augmented reality technologies, etc.), based on the use of technical means and specialized interactive equipment (PCs, laptops, tablets, robotic kits, electronic flipcharts, interactive sandbox, interactive cubes, etc.).

Conclusions

1. Based on the analysis of regulatory documents, dissertations on the research problem, modern standards, it was concluded that it is necessary and possible to form the ICT competence of students of a pedagogical university, taking into account interdisciplinary integration in the context of digitalization education.

2. Identified and substantiated the conditions for the digitalization of education, contributing to the formation of ICT competence of students of a pedagogical college (digital generation of students; creation of a legislative framework for the digitalization of education; resource support for the digitalization of education, including the digital educational environment of an educational organization; training the human resources potential of digital education, owning ICT competence, including digital literacy; use of digital pedagogical technologies and educationally significant digital technologies).

3. The definition and components of the ICT competence of future teachers have been clarified, the introduction of a motivational-value component has been substantiated. ICT competence of future teachers has a four-component structure: motivational-value, general user, general pedagogical, subject-pedagogical components. The levels are defined (reproductive, productive, creative), criteria and

indicators for the formation of ICT competence of students of a pedagogical college, the content of the data is disclosed levels (reproductive, productive, creative), respectively.

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