Development of Information Culture of Future Teachers in the Conditions of Digitalization of Education

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ABSTRACT

In today's dynamically developing and globalized world, digital technologies are rapidly penetrating into various spheres of human life, and the economy, production, and even the educational space are changing at an unprecedented speed. Digital technologies have had a significant impact on the material and technical equipment of schools, universities, educational programs, forms and methods of teaching. Currently, teachers use digital tools and pedagogical software in their educational programs to individualize the educational space. They use digital technologies when preparing and conducting lessons to improve interaction between all participants in the educational process. Generating, processing and transmitting information is not feasible today without the means of new information technologies. However, each person must have a certain level of culture for handling information, because in the virtual world, the individual's own culture remains almost the only mechanism for regulating human behavior. Information culture is becoming one of the most important components of culture. In this regard, the formation and development of a modern education system is impossible without a high information culture, because education is one of the main forms of translation of cultural values of society. The article considers approaches to solving the problem of developing information culture of future teachers of preschool and primary education. Based on the analysis of the current state of the problem of forming an information-cultural personality, psychological, pedagogical and methodological works, the concept of information culture of a teacher was clarified, its components were defined: value-assessing, cognitive-communicative, effective-practical and reflexive-evaluative.
The discipline "Theoretical foundations of formation of information culture of the teacher" was developed, and it includes three modules that contribute to the successful adaptation of students of pedagogical universities in the modern information society and their future effective professional activities in the educational sphere.

Keywords: digitalization of education, information culture, components of information culture, teachers,

students, teacher training

1. INTRODUCTION

The life of modern man is inextricably linked with information and its processing. Modern society is a digital society, which imposes special requirements on the education system, requires improvement and modernization of educational strategies for students at all levels of education, and purposeful inclusion of the potential of the information space in the educational process. In accordance with the state program of the Russian Federation "Development of education" for 2018-2025, one of the priority projects is the "Digital educational environment". This project is aimed at creating conditions for the introduction of a modern and secure digital educational environment in educational organizations of all types and levels. The problem of development of digital education in Russia and abroad is revealed in the researches of Kolbachev et al. [9], Rozina [17], Glasby [6, p.14], Witecki et al. [21] and others. Information space is recognized by researchers as one of innovative educational environments [18].

Features of students' training in the modern information educational space have been touched upon by many researchers both in Russia (Borisenkov et al. [3], Lapenok et al. [12, 13], Mamontova et al. [14, 15], etc.) and abroad (Arkoudis et al. [1], Broadbent & Burgess [4], Glasby [6], Gallagher & Garrett [5], Roberts & Rees [16]. As Glasby says [6, p.14], the impact of digital technologies and the changing needs of students require significant changes in the educational process of the university, thus, university teachers have to understand that yet it is not enough to generate knowledge and share it with students, it is

necessary to make students feel comfortable in the university, the Internet must be included in the educational process, as well as smartphones and social networks that constitute the core of everyday life of young people [5, R. 10], and in this regard, students should be competent in the sphere of digital technologies [4]. Thus, one of the most relevant problems in education is the problem of developing the information culture of students.

2. PROBLEM STATEMENT

The purpose of the research is to substantiate the optimal organizational forms, methods of training, means of activity and applied software for the development of various components of the information culture of the future teacher of preschool and primary education.

3. RESEARCH QUESTIONS

In order to solve the problem set in the study, the authors consider it appropriate to consider the following questions:
- to analyze the current state of the problem of cultural personality in the conditions of digitalization of education;
- to clarify the concept of information culture of the teacher;
- to reveal the ways of developing the information culture of the teacher in the conditions of digitalization of education.

4. PURPOSE OF RESEARCH

The purpose of the study is to develop methodical base for development of information culture of a teacher in terms of digitization of education: definition of the essence of the concept "information culture of the teacher", the determination of the components of information culture, the description of the ways of development of information culture of the teacher of preschool and primary education in the context of digitalization of education.

5. METHODS OF RESEARCH

Research methods: terminological analysis, comparative analysis, synthesis, questioning, systematization and generalization.

6. RESEARCH RESULT

The analysis of pedagogical literature [2, 8, 10, 11, 19, 20] revealed the lack of a unified approach to defining the essence and content of the concept of information culture. The content of the concept of "information culture" is interpreted in different ways: as a part of universal culture; as a set of rules of human behavior in an information society; as a component of the basic culture of the individual, etc. In accordance with the information approach, information culture is understood as a set of knowledge, skills and abilities for searching, selecting, storing, processing, analyzing and transmitting information, that is, everything that is included in information activities aimed at meeting information needs. Information literacy is a similar concept [7].

We understand the information culture of the teacher as a personal integrative quality that allows the teacher to interact in the information educational environment based on the use of both traditional and new information technologies and represents the result of the interaction of value-assessing, cognitive-communicative, effective-practical and reflexive-evaluative components.

The value-assessing component is characterized by the formed value attitude to the information received, the degree of motivational incentives of the teacher that affect his attitude to work and life in general.

The cognitive-communicative component includes the level of knowledge acquisition that allows the teacher to navigate the information educational space freely, participate in its formation and contribute to the information interaction and communication of all participants in educational relations.

The effective-practical component reflects teachers' understanding of the principles of operation, capabilities and limitations of technical devices designed for automated search and processing of information, knowledge of the features of information technology tools for searching, processing and storing information, as well as identifying, generating and predicting possible technological stages for processing information flows; technological skills and skills to work with information flows, in particular, with the help of information technology tools.

The reflexive-evaluative component is characterized by a developed ability to reflect the process and result of activity in the information educational space, the ability to improve the knowledge, skills and make new decisions in changing conditions or unexpected situations using new technological tools.

To assess the degree of mastering the information culture of future preschool and primary education teachers, the authors of the article conducted a survey among the students of the Institute of pedagogics and psychology of childhood of Ural State Pedagogical University. During the development of the questionnaire, the formation and sequence of questions that reveal aspects of the study were considered. All the questions were of the open type, that is, they provided for the wording of the answer. 100

full-time and part-time students aged 20 to 41 took part in the survey.

For the first question, "What form of information perception is most convenient for you?", the majority of respondents chose the multimedia form of information perception (53 %), the second place was taken by the text form of information (24%), and preferably printed rather than on electronic carriers. The graphic form was chosen by 15 %, and the auditory form - by 8 %.

Answering the second question, "What sources of information do you most often use?", the overwhelming majority of students (76 %) in the first place wrote that it is the Internet, which had been fairly expected. In the second place for the number of responses were books (35 %), some of the respondents indicated television (2%).

Answers to the third question "What information do you most often look for in various sources?" were the following : educational information - 55 %; music - 53 %; movies - 15 %; books - 10 %; recipes - 7%; news - 4 %. Here we can say that most students use information resources for educational purposes.

In the fourth point, "Assess your level of information technology skills", the medium level of knowledge was revealed with 79 %, above medium - 13 %, high - 7 %, and very high - 1 %.

Answering the fifth question about the advantages and disadvantages of using the Internet, the most common advantages mentioned were: you can always find the information - 57 %; quick search - 33 %; the ability to transmit information - 26 %; the ability to earn money - 10 %. The disadvantages were listed as follows: unreliable information - 45 %; a lot of advertising and spam - 37 %; declining health - 29 %; viruses and fraudsters - 17 %. Thus, we see that students are critical of the information received from the Internet (about half of the students indicated that the information received was not reliable).

The sixth question was about the computer programs that students most often use. The results showed that the most popular programs are those ones of the MS Offise package (MS Word, MS Excel, MS PowerPoint) - 97 %, the second place was taken by a video editor (25 %), and 6% use computer translators.

The next question was "How do you assess your level of computer literacy?'. The majority of respondents indicated a medium level of 86 %. High and above medium - 12 %, and low - 2 %.

When asked about the feasibility of using information technologies in training, all the respondents answered in the affirmative. The following comments were received (the author's text is preserved): "Presently, information penetrates the brain visually through numerous informational resources", "It is impossible to live without it in the modern world", "In the age of high technologies, there is no way without them", etc.

The ninth question was "How often should information technologies be used in the educational process?". The students' opinions were divided into three parts. Use as often as possible - 34 %, periodically, as necessary - 37 %, as rarely as possible - 29 %.

To the question, "Are you ready to study remotely using information technologies or digital resources?", 56 % answered in the affirmative and 44 % - in the negative.

In the eleventh question it was necessary to give a definition of information culture. Here are some answers: "Literacy in the use of computer technology", "The ability to work with information correctly", "The ability to work with information purposefully and use it for the intended purpose", "Effective information activity", etc.

On the twelfth question, "What does information culture allow a modern person?", the following answers were received: to use devices - 67 %, to communicate with people - 55 %, to learn new things - 47 %, to maintain appropriate behavior in the Internet - 45 %, - leisure - 37 %, to work with information - 35 %, to be successful - 15 %, a high standard of living - 7 %, personal security - 5 %. 7 % did not give an answer, which allowed us to assume that the question caused difficulties in the wording of the information culture in the previous question.

Answering the last question, "How do you assess the level of formation of your information culture?", showed that the majority of students consider it medium (78 %) regardless of age, 3% consider their level of culture high, and the rest answered - below medium.

Thus, we can formulate the following conclusions:

1. Students quite sensibly assess their level of development of information technology skills, computer literacy and the level of formation of information culture.

2. The greatest difficulty was caused by the answer to the question "What does information culture allow a modern person to do?".

3. All the respondents define "information culture" in a very narrow way, isolating only individual components.

In this regard, it was decided to develop the discipline "Theoretical foundations of the formation of information culture of a teacher", which can give an idea of information culture and information society, the role of information technologies and global information networks in the formation of information culture of a teacher of preschool and primary education.

To master this discipline, students use the knowledge, skills and abilities formed in the course of training in secondary schools, as well as in the study of the disciplines "Information technology", "Information and communication technologies in education".

For the formation of each component of the information culture of future teachers, three modules were defined, which formed the main content of the discipline "Theoretical foundations of the formation of information culture of a teacher": "Info-environment", "Strategies and

algorithms of information processes", "Information activity in education". The main goal of the first module "Info-environment" is the formation of a thesaurus, a system of information concepts that provides a general and special orientation of the individual in the surrounding digital educational environment and modern digital technologies. The module "Strategies and algorithms of information processes" is designed to develop students' skills to organize information activities, implement their information needs and requests, perform an optimized information search and analysis of various sources of information, process the information found, and enter into a variety of information contacts. The module "Information activity in education" summarizes and deepens the knowledge gained during the mastery of the previous modules, contributes to the formation of skills to use information sources effectively, digital technologies in the educational process, and regulate information behavior in the educational environment reasonably.

As a result of mastering the discipline, students learn the specifics of the information culture of the teacher; the main methods of information processing, the basics of modern technologies for collecting, processing and presenting information; master the ability to use modern information technologies for collecting, processing, analyzing and storing information; use Internet resources in the educational process; evaluate software and prospects for its use, taking into account the professional tasks to be solved; master the skills of working with general and special purpose software; methods of orientation in professional sources of information (sites, educational portals, forums); basic software methods of information protection when working with computer systems and organizational measures and techniques of antivirus protection.

The rapid development of digital technologies and the Internet has led to new forms of learning, such as distance learning, online learning, and learning using electronic educational resources. To implement these technologies, a highly developed information culture of the teacher is necessary, which implies a formed personal integrative quality that allows the teacher to interact in the information educational environment based on the use of both traditional and new information technologies and is the result of the interaction of value-assessing, cognitive-communicative, effective-practical and reflexive-evaluative components.

Currently, various types of modern technologies are used in education: virtual reality, electronic textbooks, text and physical databases, interactive training simulators, computer presentations, online translators and dictionaries, web applications for textbooks, etc.

Electronic learning is gaining momentum in the context of the development of educational digital technologies and the Internet, so the teacher must have a number of skills.

Distance learning, online learning, and training using electronic educational resources in this discipline are provided through unrestricted Internet access, as well as a website for organizing webinars Webinar.ru and the Mirapolis virtual room. As a result of mastering the discipline, the future teacher will know such general concepts as information society, information resources, ways of their functioning, etc., and will also be able to analyze and synthesize information; find information and use it in the professional and other cognitive activities. A modern teacher will be able to use special programs for distance learning, interact with students online, etc.

Thanks to this discipline, students are taught the skills of using information and communication technologies for the organization of the educational process:

- to apply methods and techniques of training using modern computer software products and their demonstrations;
- to organize educational and cognitive activities of students using multimedia technologies;
- to implement the emotional and value component of the content of education by demonstrating the capabilities of the information educational environment in obtaining, processing, transforming and storing information, etc.;
- to establish closer contact and mutual understanding with students and colleagues through their own informational behavior in order to strengthen the pedagogical impact;
- to improve not only the level of their own professional activities, but also the quality of education, upbringing and development of children;
- to create conditions for the development of students' needs for the use of multimedia technologies in everyday life.

When mastering the discipline "Theoretical foundations of forming information culture of a teacher", students apply their knowledge to solve issues of creating and using Windows documents, create MS Office electronic documents; use integration of office applications, OLE-technologies for exchanging information between office application documents; get skills in forming data search queries, as well as in formalizing tasks from various subject areas. They represent data in the tabular form, dependencies in the form of formulas, and a sequence of actions in the form of flowcharts. For this purpose in class the following software tools included in the MS Office package are used: Microsoft Excel - a spreadsheet program, is the best known of its kind; Microsoft PowerPoint is the most famous program for making, editing, and showing presentations; Microsoft Publisher publishing system, a simplified version of Microsoft Word with an emphasis on working with markup; Microsoft Word - a text editor for making documents, the best known example in the line; Microsoft Paint is a multifunctional, but at the same time quite easy to use raster

graphics, editor by Microsoft, which is included in all Windows operating systems, starting from the first versions.

Students use modern information systems, technologies and resources in solving management and decision-making tasks, work in global computer networks and master methods of searching information in their specialty, learn to choose the necessary technical tools and information systems for solving specific tasks and problems.

The future teacher must have a special intuition to quickly and effectively determine the most successful sources in terms of perception of the students' version of the presentation of the found material, as well as a special sensitivity to the sources of information. For example, which source should one use oneself, and which ones should he or she keep in mind when offering students to search for? Therefore, we try to integrate different abilities of a teacher in the course of mastering the discipline: technical, informational, psychological, pedagogical and methodological. At the same time, the synthesis of these abilities is provided by the success of the teacher's actions in order for the actions of the students to be successful later. Thus, we pay attention to

the psychological characteristics of a person responsible for his or her information culture, the importance of studying this aspect, which opens an additional direction in the formation and development of information culture of the teacher.

The development of the discipline "Theoretical foundations of formation of information culture of the teacher" is a necessary base for further study of the discipline "ICT in the primary classroom" and "Using ICTs in teaching preschool children", whose aim is to establish a system of knowledge, abilities and skills in the use of means of information and communication technologies for the most effective solution of pedagogical tasks associated with the implementation of ICT in preschool and primary education. And one of the criteria for evaluating an open lesson when having pedagogical practice by students is the expediency and correctness of the use of digital technologies and information computer tools in the process of solving the tasks set in the classroom.

7. CONCLUSION

In the modern world of development of digital technologies, one of the main challenges is the unprecedented growth in the amount and variety of information available to modern people. Integration of various technologies, types of activities, the use of artificial intelligence in professional activities, constant professional self-education of a modern person require people to acquire new skills and competencies, be ready to use new technologies in professional and everyday life. Of particular importance are educational programs that provide personalized learning paths, which imposes special requirements on the education system, on the formation of information culture and formation of "digital

literacy" of future teachers. The mastery of the discipline "Theoretical foundations of formation of information culture of the teacher" will provide valuable attitude of students to the received information, learning to work with digital resources, programs enabling to navigate in the information educational space freely, to use them in their occupational activities, it will also build up the ability to improve their knowledge, skills, and find new solutions in changing conditions or unforeseen situations using new technological tools. All these skills undoubtedly reflect the requirements of the modern education system for teachers of preschool and primary education.

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