IFTE 2018
4th International Forum on Teacher Education

DIGITAL COMPETENCE DEVELOPMENT OF PRE-SERVICE HISTORY TEACHERS

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Abstract

The problem of training the new generation of teachers, able to be actively involved in the implementation of the tasks of modernization of Russia in the XXI century, is of a particular importance at the moment. The level of competence of History and Social Science teachers is essential in solving the problems related to the modernization of the Russian education.

The aim of this study is the analysis of technologies aimed at the development of digital competence of pre-service teachers of History.

The objective of our study was to examine the level of proficiency in digital technology (computer, tablet computer, smartphone, interactive whiteboard) among pre-service history teachers. The research examines the impact of mobile applications in the classroom on students' motivation, emotional state, and memory. We used a range of research methods: methodological, comparative analysis and synthesis of modern approaches in training sessions at university, analysis of scientific, sociological, pedagogical and methodical literature. We studied the implementation of various approaches, programs, mobile devices on the development of digital competence of students.

The results of our student survey indicated that pre-service history teachers have basic digital competencies, and they also demonstrated their readiness for mobile learning. The information obtained will provide guidance and understanding of what strategies and technologies can be used in the classroom in the preparation of history teachers to better meet the needs of students of the new digital age.

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Keywords: Digital generation, students, history teacher, classroom.

1. Introduction

The problem of training the new generation of teachers, able to actively join in the implementation of the tasks of modernizing the country in the XXI century is significant in modern Russia. Successful implementation of the country's modernization program will depend on the level of pre-service history and social studies teachers' training. Value orientations of Russian citizens, their ability to build their activities in accordance with international and domestic experience, to take into account the ratio of traditions and innovations will depend on the professional and personal qualities of a history teacher. The creation of digital economy requires an appropriate orientation of the education system, training of people who use modern digital technologies in their activities. One of the competencies that needs to be developed by a new generation of teachers is 'digital competence'. We define the concept of digital competence as a confident and critical use of computers, mobile phones, tablet computers, and interactive whiteboards.

This competence is based on logical thinking, profound knowledge on information management and digital technology. We suggest that understanding the general structure and interaction of computer devices is also essential for the development of the competence. In addition, understanding the difference between the real and the virtual world; understanding the potential of digital technologies for innovation; basic understanding of the reliability and reliability of the information received, the ability to use programs are also significant. These skills were used as criteria in the research.

Khrolenko & Denisov (2007) emphasize that the informational society defined as postindustrial or post-economic, is being formed in the global world. This is due to the changing role and place of information for both the individual and the society as a whole. Thus, information becomes a resource of ever-increasing value. The history teacher has to work with information from both past and present years. A university student should be able not only to find information, but also to actively use it, critically evaluate and creatively assimilate. 'A person of the 21st century needs to freely navigate the sea of information not to be buried under its weight. It must be like to float in the space of knowledge, choosing in each case an optimum height, a measure of detail, speed of movement and trajectory' (Khrolenko, & Denisov, 2007, p.17). Fernandez-Cruz & Fernandez-Diaz (2016) argue that the availability of technical resources in schools and high productivity of so-called 'technology developers' or 'generation Z' are insufficient to develop students' digital competence. The primary key is determined by teachers' technological and pedagogical skills (Fernandez-Cruz, & Fernandez-Diaz, 2016). Thus, it is necessary to form the key competency that a future history teacher should have that is working with information on digital media. University students need to meet modern requirements and demands of the digital society, so that they feel confident when using digital technologies in the classroom.

100 students, future history teachers took part in in our research. These were 2nd and 3rd year students. Empirical results showed that students have good knowledge on the basics of working with a stationary computer, but the results of the evaluation of the skills of pre-service history teachers were worse. Students find it difficult to choose the right information in the information flow, do not evaluate the information, and obtain the wrong stance. The results of the empirical study are presented in Table 1.

Table 01. Number of students before and after the training

Criteria	Results before training / Number of students	Results after training/ Number of students
1. Ability to find information	90	100
2. Ability to transform information	36	75
3. Ability to use changed information	36	75
4. Ability to create own information	20	78
5. Ability to confidently navigate in numerous and diverse applications.	18	50
6. Ability to use a computer	84	100

2. Problem Statement

Starcic, Cotic, Solomonides & Volk (2016) believe that the system of teacher education is failing to prepare teachers so that they feel confident using information and communication technologies. Davey & Scriven (2015) emphasize that the value of history lies in what it can create for habitual ways of thinking, as well as in the skills of research and interpretation. Cela-Ranilla et al. (2016) believe that transformational pedagogy offers the keys to problem solving and focuses on the development of critical thinking. These ideas could form the basis for the development of processes that contribute to the formation of the ability to promote the transformational idea of teaching and digital competence to develop high-quality learning environments for students. Yachina, & Khurmatulina (2016) speculate on the need to develop the system of competence monitoring. Shmakova (2013) and Fedotova (2015) indicate the importance of information technology in the future teacher's professional activities. Fross, Winnicka-Jaslowska & Sempruch (2018) underline that activities related to the use of the network and new forms of work create new functional and spatial relationships and interactions in university buildings. At present, the process of obtaining knowledge occurs in different places – not only in lecture rooms, but also in social environment and with the use of electronic devices.

Cattik & Odluyurt (2017) in their study show how important it is for an educator to know how to use smartphones when teaching autistic children. Quarles, Conway, Harris, Osler, & Rech (2017) believe that today's digital classroom should incorporate modern learning strategies to get the students' interest. Students should study the latest digital and mobile technologies on a daily basis. Maxwell, Jiang, & Chen (2017) underline that the style of learning changes from generation to generation. Jones, & Bennett (2017) warn that in an effort to digitize the aspects of higher education in order to satisfy the increasingly diverse and large-scale university market, there is a fear that the best teaching and learning, based on good pedagogy, can be left behind. Demarle-Meusel, Sabitzer & Sylle (2017) speak about the need to create a digital laboratory at the university, where students and teachers could study at any time. Horvath (2017) devoted his research to the digital life of students.

3. Research Questions

The study seeks to answer the following questions: What is the level of digital skills of students? What is the most effective way to develop digital competence among student teachers?

4. Purpose of the Study

The aim of this study is to analyse technologies necessary for the development of digital competence of students, future teachers of history. Today students live in a digital world of rapidly changing digital technologies. The history teacher has to possess the ability to control information flows, containing the public-political information. Public consciousness of the student is formed not on the basis of school textbooks in modern life. Media, especially TV, the Internet, communication with adults and peers play a major role in obtaining information. The information obtained from these sources, often of a mythological nature, filled with speculation, clichés, and superstitions, which may be socially dangerous. On the basis of such information students may experience a false idea about public life and social norms that govern human behavior. The school can act as a social institution, which, to a certain extent, capable of adjusting historical and social consciousness by teaching the student ways of working with information retrieval and evaluation. Important is such aspect of this problem as the ability of a student to self-education, which is also based on the information skills of students and accordingly on the willingness of teachers to develop them.

5. Research Methods

We used the following research methods: theoretical analysis of scientific and pedagogical literature on the problem of research, normative documents, educational and methodical documentation; pedagogical design and modelling of different approaches and pedagogical situations, understanding their own experience; diagnostic methods of evaluation (surveys, testing, and control).

The formation of digital competence of the future teacher of history involves a consistent, step-by-step mastery of didactic knowledge, skills, didactic-oriented competencies, self-development, modelling of different approaches and pedagogical situations, understanding own experience. In the process of solving the research problems we have developed a model of forming digital competence of the future history teacher.

6. Findings

We came to the conclusion that in order to train a history teacher, it is necessary to create digital laboratories at the university, where students should be taught how to work with information and information security. Preparation of the teacher of history assumes consecutive, step-by-step mastering of didactic knowledge, abilities, skills, didactic-oriented competences and ability to self-development in the subject area. We have developed and tested a model of forming digital competence of a future history teacher and identified a necessary technology (Figure 1). This model integrates all scientific, methodological and organizational potential necessary to form digital competence. Algorithmic and technological blocks contain information on the integration of subjects 'History', 'Computer Science', 'Technology of formation of digital competence of the student' and 'Pedagogy'. The tested model showed that after special training students' knowledge became more solid (Figure 1).

The target block of the model includes normative and social aspects related to a predictive function of the model that is the preparation of the teacher of history for future professional activities. The conceptual block of the model is a set of theoretical and methodological guidelines that allow to determine the basis for the design, implementation and analysis of educational activities, ensuring achievement of the goal:

implemented triad of didactic training 'teaching-teaching-self-development'; defining its methodological approaches (personality-oriented approach; competence approach; project approach) and principles (the principle of training, the principle of cooperation; the principle of professional orientation), providing in practice the formation of the structural components of the digital competence of the future teacher of history (meta-subject and subject). Algorithmic block of the model includes a set of stages of digital competence development:

1) integration that enables the installation of the interdisciplinary connections and interdependencies of the subject areas of 'Didactics', 'History' and 'Computer science';

2) development of digital skills, allowing the teacher to carry out the integral didactic activity of organizing and managing of the training.
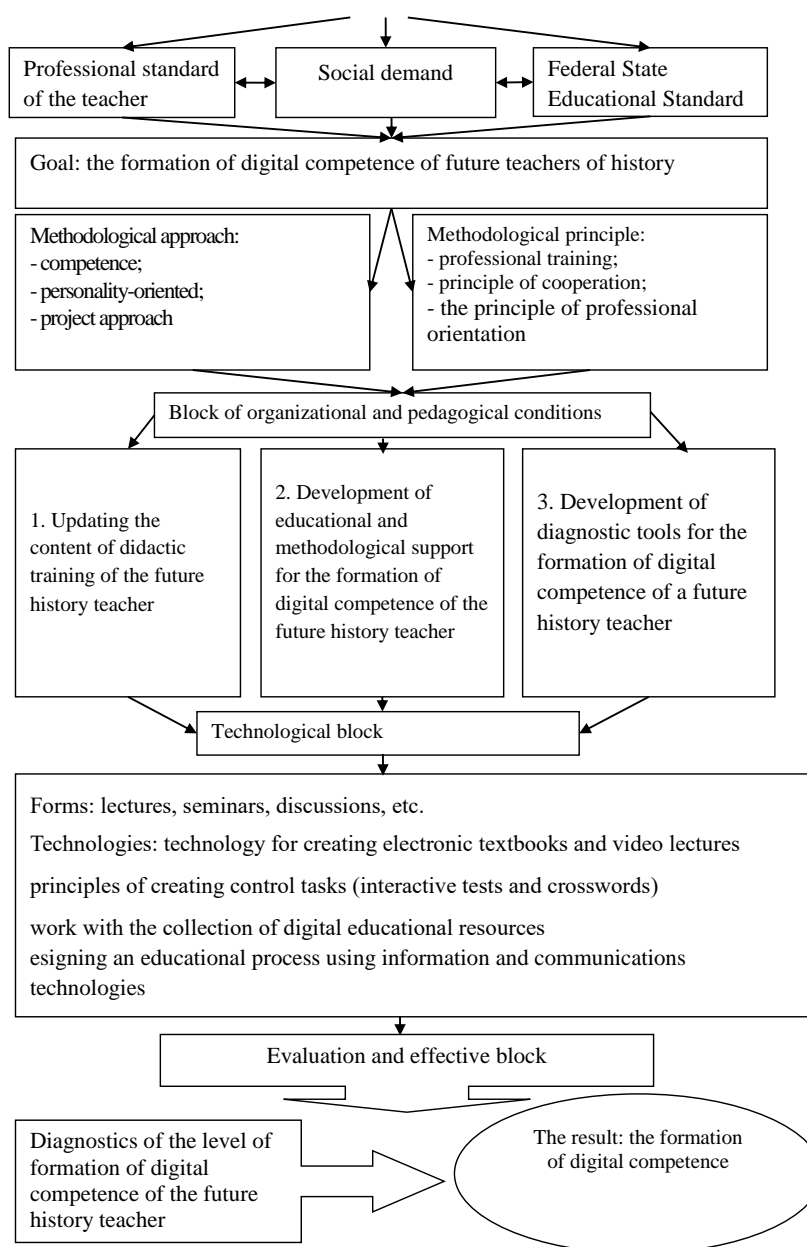
Figure 01. Model of development of digital competence of the pre-service history teacher

7. Conclusion

The development of the digital competence of pre-service history teachers is a continuous process that starts at school during the computer science course and continues to at the university. But as our research has shown, the curriculum of future teachers of history does not include disciplines that form the digital competence of students. We believe that the application of the model we have developed to form digital competence of the future history teacher will solve this problem. Questions of development of digital competence of the future history teacher as a component of professional training are much wider than our research. We have considered only part of the issues related to this problem. We came to a conclusion that conditions necessary for training future teachers of history are as follows:

1. The course 'Technologies of formation of digital competence of the future teacher' should be introduced into the curriculum of pre-service history teachers;
2. Students should learn to work with streams of information, critically evaluate Internet resources;
3. Digital laboratories that will allow students to acquire necessary knowledge in their free time should be created at the university.

It is necessary to teach pre-service history teachers the basics of digital technologies at the university since their ability to use various software programs is insufficient.

Acknowledgments

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