

Digital Skills of Teachers

Anna Serezhkina^{1,*}

¹Kazan National Research Technological University, Popova, 10, 420029 Kazan, Russia

Abstract. The aim of the work is to analyze the digital skills of teachers of Russian universities a year after the COVID-19 pandemic. The latest research on the digitalization of education, analysis of the digital competencies of teachers and tools to evaluate the digital skills of educators has been conducted. The results of a study conducted on a sample of Russian teachers are described. It has been revealed that teachers have an average level of digital literacy, and most educators are integrators and experts in the use of technology in the educational process. They are able to assess educational resources, create digital resources and share digital materials, cope with the problem of changing existing digital courses, etc. The findings are of interest both to the university's professional development system, which develops the digital competence of its teachers, and for teachers who wish to improve their level of digital literacy through self-education.

1 Introduction

The intensive growth of information technology and the rapid digitization of education dictate the requirements for the availability of adequate time-of-the-art competences for all participants in the educational process. The use of digital skills today is one of the conditions for the competitiveness of a specialist. And the education system has a task to work ahead of the curve. It is necessary to teach students today what will be in demand tomorrow. Therefore, a modern teacher must keep up with the times. He must know the various modern technologies, own them, be able to apply them in practice depending on the goals and objectives of training.

The COVID-19 pandemic and the rapid transition to online learning around the world have made major changes in teaching practices. The question arose about the readiness of teachers for such changes, about the digital competence of participants in the educational process, about the emotional state of teachers and students associated with the process of organizing full-fledged online learning.

Digital competence refers to a set of knowledge, skills, skills and attitudes that allow a person to achieve different life goals through digital technologies. In the education system, digitalization dictates two tasks for teachers to develop their own digital competencies, as well as to develop the competences necessary for students to function in the digital world.

A team of authors from the Kingdom of the Netherlands, Ester van Laar et al. [1-16], have done a tremendous job of analyzing 1592 different articles to identify and describe the

* Corresponding author: all-self@mail.ru

digital skills and common skills needed by people in the 21st century. The literature review allowed them to build a 21st century skills structure consisting of seven basic and 5 contextual digital skills, and to show the relationship between them. The authors included technical, information management, communication, cooperation, creativity, critical thinking and problem solving. The contextual skills group consisted of ethical awareness, cultural awareness, flexibility, self-reliance and continuous learning. The study found that the description of the common skills required in the 21st century is much more extensive than the description of digital skills. At the same time, the availability of common skills is not always supported by digital technologies (as opposed to digital skills).

In their study, Hämäläinen R. et al. [4] considers the digital competence of teachers as a concept that includes digital skills, attitude to digital technologies and knowledge of the latter. Based on data from two international studies by PIAAC (International Adult Competency Assessment Program) and TALIS (International Study of Teaching and Learning) the authors studied how digital skills, knowledge and digital relationships relate to teachers, how they relate to personal and contextual factors (gender, age, subject, teaching, teaching).

The results showed that all teachers recognize the importance of using digital technology in learning. At the same time, there are marked differences in the skills and knowledge of teachers. For example, 42 % of teachers demonstrated weak digital skills, while 84 % felt they had the skills they needed to work. 11 % of teachers felt they had the necessary skills, but only 12 % of them showed strong skills. Most often, the weak skills were demonstrated by older teachers. About half of teachers allow students to use ICT in classrooms, thus showing their positive attitude to the use of digital technology. The authors also concluded that the vast majority of teachers, including older teachers, recognized the need for professional development in the use of digital technologies.

An interesting suggestion was made by Avci Z. Y. et al. [2], who say that experienced educators with a very positive attitude to digital technologies can act as coaches or mentors to support their colleagues.

The study of Instefjord E. J. et al. [5] was dedicated to studying the professional digital competences of Norwegian teachers, as well as the study of the integration of digital competence into pedagogical education. The authors found that the effectiveness of teachers is directly related to their digital competence. A third of educators consider themselves good role models in the use of information technology.

Suárez-Rodríguez J. et al. [15] proposed a model of the relationship between the technological and pedagogical competences of teachers in ICT and the use of ICT. It has been found that teachers' competence is a significant factor influencing both their teaching practices and their integration of ICT into education in general.

List A. et al. [6] studied teachers' ideas of digital literacy. Out of the 24 skills suggested by the authors, educators chose those that they considered important for digital literacy. The study has identified four profiles of digital literacy concepts: technology-oriented, digital-oriented, goal-oriented and based on critical use of digital literacy. Differences were also found when comparing the concepts of digital literacy of teachers in the United States and Sweden.

Russian scientists studying the digital competence of teachers have come to the conclusion that school teachers demonstrate a high level of digital competence, especially in the field of information management and the technical aspects of internet use [14]. The study involved 450 Russian teachers. According to the authors, the high level of digital competence of teachers is associated with the constant use of ICT in professional activities, they have a higher educational level (compared to their students and their parents). The study involved informatics teachers, and this affected the level of digital competence of teachers in general. Teachers are more actively using the possibilities of the Internet for

