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IMPROVING TEACHERS' TECHNOLOGICAL PREPAREDNESS IN THE DIGITAL EVOLUTION OF EDUCATION

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Abstract
The article examines essential methods for enhancing the professional training of prospective teachers amid the digital transformation of education. Its objective is to pinpoint activities aimed at ensuring high-quality preparation for teachers of the future in the context of digital education. The proposal focuses on developing the human resource capacity of future educators who can perform pedagogical roles in a digital landscape. Efforts are underway to establish conditions conducive to the vocational training of future teachers that align with new educational program developments and the incorporation of new courses designed to enhance teachers' digital competencies. This includes updating the content of educational subjects, introducing innovative teaching models, and integrating massive open online courses (MOOCs) into academic curricula. The article highlights the significance of the digital transformation within universities, the evolution of educators in digital contexts, and the characteristics of the emerging Generation Z students, alongside the necessity of incorporating the "Digital Didactics" subject into educational frameworks. It also discusses the establishment of a mentoring system as a vital resource for enhancing educators' professional skills, as well as the creation of new foundational and supplementary educational programs aimed at equipping future teachers and addressing professional gaps. Specific skills related to teachers' digital competencies have been identified, which are recommended for development through the execution of these new educational initiatives.

Keywords: Digital didactics, educators, teachers, learning, competencies, teaching, universities, skills, transformation, environment, pedagogy.

Introduction

The most crucial aspect of the educational process is a teacher who possesses essential professional skills and is knowledgeable about contemporary educational technologies while being actively engaged in facilitating and enhancing the learning process. The role of the teacher encompasses a wide range of responsibilities, which are supported by a set of competencies that include the teacher's knowledge, skills, expertise, and personal experiences; these factors collectively determine the overall professionalism of the educator. Among the various competencies that influence a teacher's effectiveness, those that best represent the current trends in both education and society are of utmost importance. With the ongoing digital transformation in education, teachers face the challenge of developing new competencies to effectively organize learning using digital technologies.

The findings from the assessment of digital literacy among Russian teachers in both schools and higher education, conducted by Aymaletdinov [1] et al. (2019) via the National Agency for Financial Research, indicate that teachers generally possess a high degree of digital literacy, with 87 percent of school teachers and 88 percent of university educators demonstrating this proficiency. However, their actual engagement with digital technologies in teaching practices is shown to be moderate. The study also highlights a distinction in the ICT skills between school teachers and those in universities. School teachers tend to engage more frequently with educators from other institutions using digital communication, to exchange information and enhance their professional development through online training, taking on more responsibility for ensuring the secure use of information technology in their educational tasks.

Conversely, university educators are more adept at crafting digital teaching materials, modifying existing resources, and transforming current digital educational materials. They are also more inclined to form student working groups for project-based learning through digital platforms that facilitate collaborative document editing via cloud services.

The outcomes of the targeted project identified key ICT competencies that educators should prioritize for development. These competencies include:

- Digital communication with students and colleagues;
- Sharing and creating materials with fellow educators using cloud systems;
- Utilizing computers to generate new teaching materials and adapt existing ones;
- Enhancing knowledge on information protection methods;
- Evaluating the reliability of information while recognizing false or biased content;
- Engaging in secure and responsible usage of digital technologies;
- Innovatively applying digital technology for educational objectives;
- Implementing digital technologies in the educational process and tracking students' online behavior;
- Employing digital tools to assess and monitor student progress along with identifying their need for additional support.

Considering the results from the NAFI study (2019) [2], it appears that the effective incorporation of teachers into the digital transformation of education is currently impeded by a lack of qualified professionals. Developing efficient strategies to address these professional gaps is a critical objective of the federal initiative "Teacher of the Future" within the national project "Education." Addressing professional shortages and cultivating the ICT competencies of future educators, who can effectively carry out teaching functions within a digital learning environment, necessitates specific actions to enhance the human capital of digital educators.

Problem Statement. The digital approach in education promotes the necessity for teachers to familiarize themselves with the most pertinent technological tools and methods for executing the educational process. The educational organizations' teaching, management, and technical personnel are tasked with integrating technologies and leveraging digital opportunities within the educational landscape. A comparative analysis conducted by Brodovskaya et al. (2019) of the digital environments in leading universities worldwide and those in the Russian Federation has enabled researchers to pinpoint key challenges in the digitization of Russian universities, including the online reading support for applicants, digital education, the de-personalization of

education, the organization of educational cases, and ineffective interaction within online learning support [4].

We assert that the future educators' skill sets needed for conducting the educational process within a digital setting should be cultivated among active students. In our opinion, addressing this issue hinges on modernizing the educational process at universities themselves, which involves creating personalized learning pathways and determining optimal methods for digital collaboration among all participants in the educational process. This includes developing a framework outlining the digital competencies of future educators, establishing personalized information and educational environments for both teachers and students, selecting efficient pedagogical techniques, and defining pathways and trajectories for study within the digital context, alongside advancing digital didactics as a pedagogical discipline. The development of both "hard" skills and "soft" skills should occur within this digital framework.

In higher education, students—who will become future teachers—must gain a variety of competencies that will allow them to progress in a digital educational setting, necessitating that they actively engage in the educational process within this digital environment, which should also reflect the global community. According to Pogrebnikov et al. (2019), there is a correlation between students' utilization of personal educational environments and their academic achievement: those who actively engage with their personal educational tools tend to achieve higher average grades and perform better on assessments [5].

Research Methods. The theoretical foundation of this study considered various scientific knowledge methods, including the analysis, comparison, and synthesis of contemporary research findings and publications related to the examination and sharing of experiences in the digital transformation of education. The practical section of the article employs empirical research methods such as observation, comparison, and modeling. Conclusions were drawn using a deductive approach.

Ongoing research by scholars worldwide is focusing on the professional roles of top educators in the digital era, their interactions with the new generation of learners, the development of a new higher education paradigm, and communication methods in the digital environment, as evidenced by various studies (Cabellon & Junco, 2015; Hashim, 2018; Saykili, 2019; Schejbal, 2012).

Shutaleva et al. (2019) consider the digital transformation of education through the lens of humanization. Kolesnikova (2019) emphasizes that effective learning and self-education strategies in the digital age can only be achieved by redefining and reassessing fundamental didactic concepts and categories on a transdisciplinary basis, while also taking into account the pedagogical experiences from the analog past and retaining the continuity of humanitarian values and meanings (p. 67). Our goal is to implement the digital transformation of the educational process in a manner that honors previous scientific knowledge while maintaining continuity, as the principles of foundational sciences underpin traditional teaching materials.

The digital transformation at the university level involves consistent and rigorous efforts, particularly on the part of educators. For instance, various blended learning models such as the rotation model (including rotation of stations, laboratories, “flipped classes,” and individual rotation), the “flexible” model, the “choice” model, and the extended virtual model should already be put into practice at universities to ensure that future teachers can confidently and

effectively apply modern pedagogical methods in schools after graduation. University instructors must tailor the educational process to cater to the requirements of the economy and society. Additionally, adapting traditional lectures into a digital format for independent learning demands specific competencies from teachers, along with a contemporary material and technical infrastructure from the university.

Incoming university students—future educators—enter their studies with varying levels of digital literacy and general information culture. The primary objective for the university, in terms of successfully transforming education digitally, is to standardize the initial ICT skills needed for a smooth academic experience in the digital university setting. Moreover, we believe it is crucial to initiate digital adaptation programs for first-year students to facilitate their studies in a digital environment, particularly in terms of the undergraduate curriculum.

Introducing "Digital Pedagogy" into educational programs plays a vital role in enabling future educators to acquire the competencies necessary for organizing a learning process in a digital context. Hilltdinova et al. (2019) advocate for the incorporation of the term "digital pedagogy" into the modern pedagogical lexicon as a phenomenon that indicates a new area in the foundational theories of contemporary education. Similar initiatives have already been implemented at Peoples' Friendship University of Russia, with the development and delivery of an online course in digital literacy for educators titled “Digital Pedagogy”.

Considering the representation of contemporary users of educational materials, the digital transformation of educators includes:

- The active engagement with the university's information and educational environment;
- The development of a personalized information and educational environment;
- The production of digital educational resources targeted at today's students;
- The application of interactive and blended learning approaches;
- Consistent communication with students within a digital context.

Currently, issues surrounding digital transformation for teachers of Russian as a foreign language, such as the characterization of the informational culture of RCT educators, the level of development of its components in professional practice as explored by Deryabina and D'yakova (2018; 2019a; 2019b), and the explanation of information and communication technology competence by Mitrofanova and Zherebtsova (2019), along with professional culture in a globalized context as discussed by Shaklein and Mamontov (2019), are under active investigation, with findings being incorporated into the curricula of emerging educational programs. Therefore, in alignment with the objective of enhancing the preparation of future educators amid the digital transformation of education, Tambov State University named after G.R. Derzhavin has been offering a master's degree program since 2019 aimed at training the next generation of teachers within the framework of digital transformation in education, specifically in "Linguistics" with a focus on "Theory and practice of teaching Russian as a foreign language in digital humanitarian knowledge" (Digital Humanities).

Conclusion

Digital University is emerging as the primary agent for ongoing training within a digital economy, acting as a catalyst for regional economic transformation, spanning from pre-school education to the generation and application of innovations. We assert that to equip educators

for the future, higher education institutions must formulate a collective strategy aimed at enhancing vocational training amidst the digital evolution of education.

In this study, we will identify specific initiatives designed to enhance the professional development of future educators in light of education's digital transformation and address the shortage of teaching personnel. We believe that cultivating the professional competencies required for educators to effectively conduct the educational process in a digital setting necessitates not only the creation of new foundational and supplementary educational programs but also measures such as:

- The development and execution of refresher courses, internships, mentorship systems focused on the digital transformation of teachers, and the establishment of a digital learning environment for future educators;
- The inclusion of digital didactics, a field of pedagogy that studies the organization of the educational process in the digital aspect of public life, in the curriculum;
- The utilization of the digital educational environment in delivering the higher education curriculum;
- The proactive adoption of blended learning models.

We believe that universities must play an active role in the digital transformation while being mindful of the associated risks and avoiding superficialities or mimicry in education. It is crucial to remember that the learner is at the core of the educational process, with the objective of fostering an accomplished, capable, creative, and ethically-minded individual who recognizes their societal responsibilities for the present and future of their nation. The fundamental values underpinning pedagogical activity continue to revolve around the humanistic culture of the educator, a high education caliber, professional aptitude, the moral compass of the educator, and a cooperative relationship between educators and students guided by collaboration.

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