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Assessing The Quality Indicators Of Digital Competencies In Future Educators

Maxliyo Iskandar Qizi Kholmatova
Doctoral Candidate, Department of Pedagogy and Psychology, Denov Institute of Entrepreneurship and Pedagogy, Uzbekistan

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Abstract: This article provides a comprehensive analysis of the objectives, structure, and content of a questionnaire designed to evaluate the quality indicators of digital competencies among future educators. The development of the questionnaire highlights the importance of digital competencies in pedagogical activities and the formulation of questions for their accurate evaluation. The primary objective of this study is to develop scientifically valid and effective questionnaire items that can identify the quality indicators of digital competencies in students.

Keywords: Future educators, digital competencies, quality indicators, questionnaire design, digital tools, educational system.

Introduction: The modern education system places significant emphasis on integrating digital technologies into the teaching and learning process. This integration requires educators not only to apply traditional teaching methods but also to effectively utilize digital tools and technologies. Today, digital competencies are essential not only for professional success but also for personal and social life. In this context, the decree PF-6079 issued by the President of the Republic of Uzbekistan on October 5, 2020, titled "On the Approval of the 'Digital Uzbekistan – 2030' Strategy and Measures for Its Effective Implementation", specifically in the section "Education and Professional Development in the Field of Information Technologies", identifies "increasing the proportion of the population with digital skills" as a strategic goal. In short, rapid efforts are being made today to integrate digital technologies into the education system.

For future educators, developing digital competencies is crucial for enhancing the effectiveness of the educational process and delivering contemporary knowledge to students. Future teachers must be prepared to use digital technologies efficiently in educating the next generation. From this perspective, assessing the quality indicators of digital competencies among prospective educators is of great importance for improving the quality of the education system and enhancing pedagogical practice.

By evaluating students' existing digital competencies, it becomes possible to determine the extent to which they can apply technologies in their professional activities. This requires a precise and reliable methodology, namely the development of a questionnaire. Data obtained through the questionnaire serve as a foundation for evaluating educators' digital competencies and designing effective measures for their development.

In creating questionnaire items, international experiences, scientific research, and national standards serve as primary references for assessing educators' digital competencies. Utilizing these resources, questionnaire items can be formulated, and methodological approaches can be developed to promote digital competency development in pedagogical practice and to train highly qualified teachers within the education system.

Literature Review. Among the most significant and foundational sources on this topic are the following:

Margaret Leask – a prominent scholar and educator in the field of educational technologies and teaching methodology. Her research primarily focuses on how to integrate modern technologies into teaching and learning processes, as well as how to utilize digital tools effectively. In her work "Learning and Teaching with

Technology", practical approaches to the integration of education and technology are presented. The book provides detailed guidance for teachers and students on how to apply technologies successfully. Leask developed innovative strategies for enhancing learning through technology and offered numerous classroom strategies for the effective use of digital tools. Her research provides a foundation for identifying the main directions and ideas for questionnaire items.

Vygotsky, L. S. emphasized that in preparing modern educators, it is essential to develop skills in using digital tools, ensuring information security, and conducting scientific research. His studies highlight the role of information technologies in education and the challenges of their safe application and information protection. These findings help in designing questionnaire items that assess students' knowledge of digital security and data protection.

S.N. Allayarova conducted research to identify opportunities for using advanced pedagogical practices and modern ICT in higher education institutions. Her studies analyzed not only students' but also professors' and instructors' levels of ICT competencies.

DigCompEdu (Digital Competence Framework for Educators) is a framework designed for assessing and developing digital competencies for all educators. Developed by the European Commission, it helps to identify the essential competencies needed for the effective use of digital technologies in education.

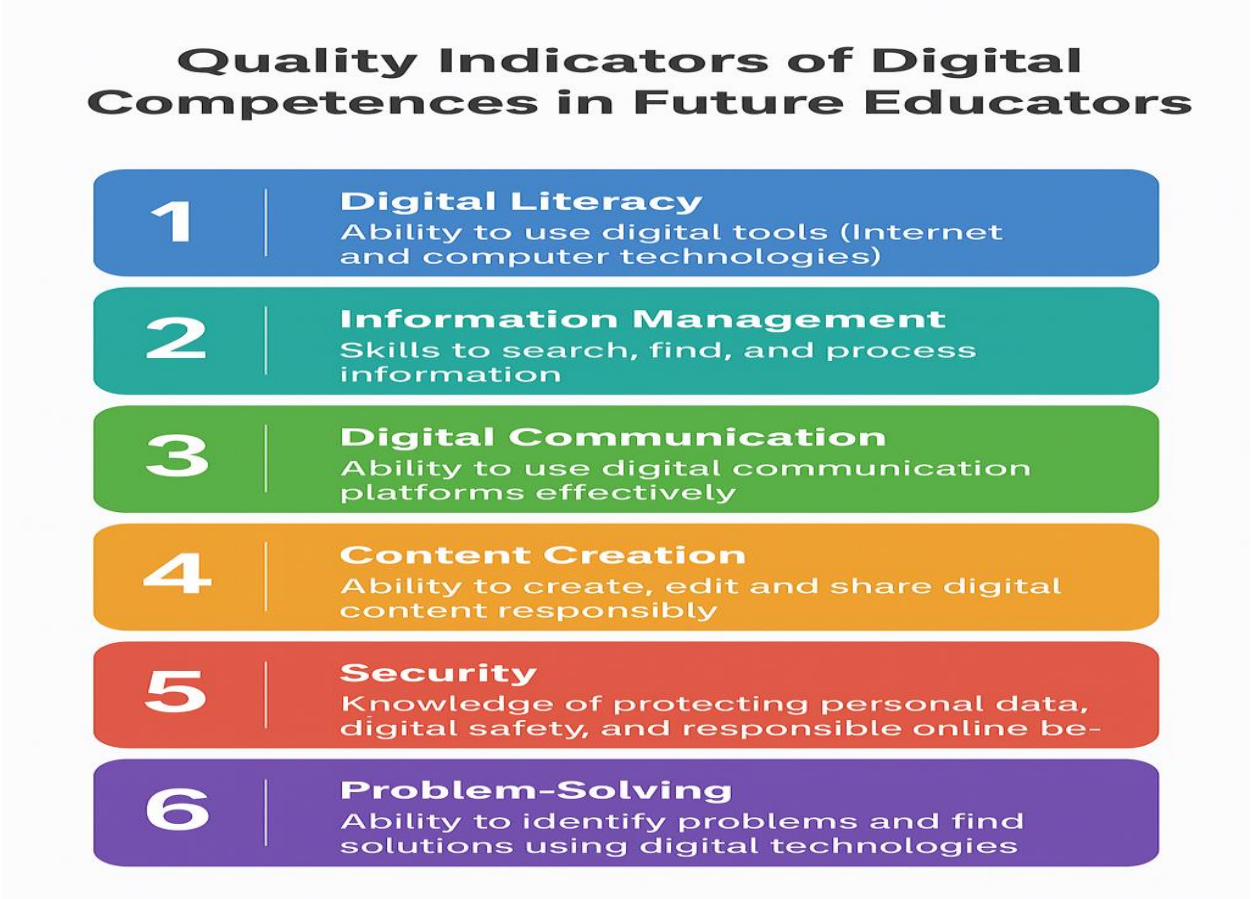
UNESCO's ICT Competency Framework for Teachers aims to develop the use of technologies in education and assists in evaluating various levels of students' digital competencies.

ISTE (International Society for Technology in Education) is an international organization promoting the effective use of technology in education and supporting the development of pedagogical practices. ISTE provides technology-related standards, resources, and opportunities for teachers, educational leaders, students, and other education specialists. The organization supports innovation in education systems worldwide and connects the global education community. ISTE standards for educators help evaluate and develop their abilities to work effectively with technology.

RESULTS

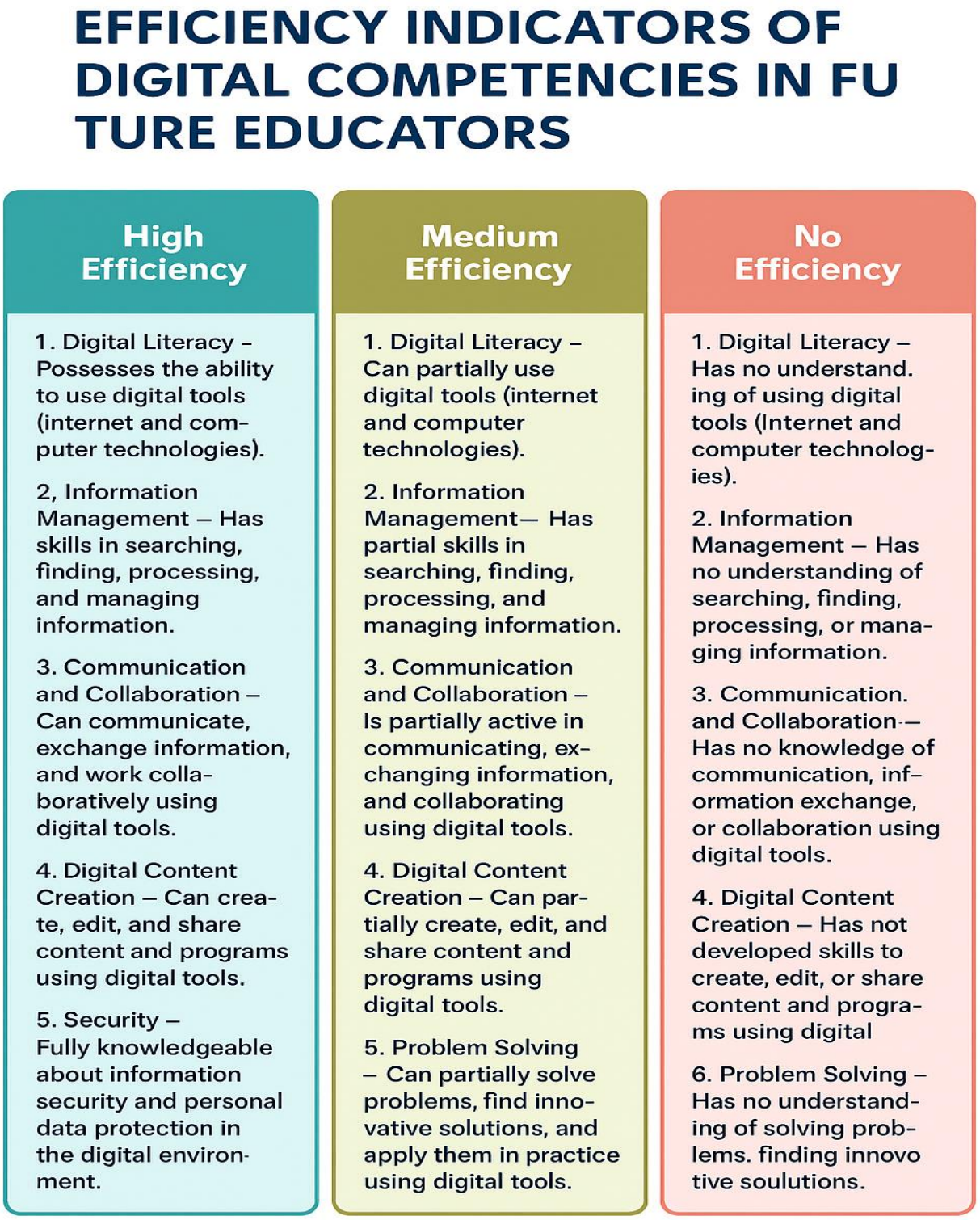
Based on the information outlined above, six key criteria have been developed to assess the quality indicators of digital competencies in prospective educators.

Figure 2. Criteria for Assessing the Quality Indicators of Digital Competencies in Future Educators



Based on the criteria for assessing the quality indicators of digital competencies in future educators, high, medium, and low efficiency levels were identified.

Figure 3. Efficiency Indicators Assessing the Quality of Digital Competencies in Future Educators



Development of a Questionnaire for Assessing Digital Competencies of Future Educators

Based on these efficiency indicators, a questionnaire was developed to assess the digital competencies of

future educators. The main purpose of designing the questionnaire was to evaluate the digital competencies of prospective teachers and to determine their level of readiness to use digital tools in their professional activities. The questions were designed to comprehensively capture students' existing digital competencies, including their skills in using information technologies, experience with online educational platforms, knowledge of digital content creation and security, as well as their proficiency in applying digital tools in pedagogical practice.

During the questionnaire development process, particular attention was paid to formulating clear and concise questions that align with the objectives and are understandable to respondents. A total of 26 questions were included in the questionnaire. Below is an analysis of these questions:

1–2. These questions aim to collect general information about the students, such as their level of education and the university they attend. They help to compare digital competencies among students at different levels and institutions, as well as to understand their approach to digital tools and technologies.

3. How would you rate your ability to use a computer or mobile device?

This question assesses students' proficiency in using technology. It allows respondents to self-evaluate their competence in operating computers and mobile devices.

4. For what purposes do you use the Internet? (Select up to three options)

This question identifies the main purposes for which students use the Internet. The possibility to select up to three answers reveals how students utilize the Internet for studying, gaming, social networking, and other activities, providing a comprehensive view of their online behavior in educational contexts.

5. What difficulties do you encounter when searching for information online? This question identifies challenges students face during information search. The types of difficulties include inability to perform accurate searches, misunderstanding search results, lack of sufficient skills, and others. It highlights students' shortcomings in searching, analyzing, and utilizing information.

6–8. Which scientific databases do you use, for what purposes, and how do you conduct searches? These questions evaluate students' level of engagement with scientific databases such as Scopus, Web of Science, Google Scholar, and others. They provide insights into how frequently students use these resources, the importance of these databases in their academic activities, and the methods of conducting searches. While most students use popular databases like Google Scholar or Ziyonet.uz, limitations exist in working with advanced databases like Scopus or Web of Science.

9. How do you organize and store information downloaded from the Internet? This question assesses students' skills in organizing and storing information, reflecting how they manage digital resources in their academic work. Some students store information by category or date, while others prioritize it by importance. Understanding these patterns helps improve efficiency in managing information databases.

10. Which digital communication tools do you find most convenient? (Select multiple options) Identifying students' preferred communication tools helps assess their digital competence. Most students favor social media and instant messaging platforms because they facilitate quick and effective communication.

11–12. Frequency and level of engagement with digital platforms

These questions measure the extent to which students use digital platforms, the time they spend on them, and the platforms used for information exchange.

13–17. Digital content creation, editing, and preferred content types

These questions determine students' skills in creating, editing, and sharing digital content and programs, revealing the level of their digital proficiency.

18–22. Information security and protection against digital threats

These questions evaluate students' knowledge and practices in protecting digital information, security measures, and password creation. They assess students' attention to online security and the protection of personal data.

23. Which tools do you prefer to use during classroom activities?

This question helps to understand students' attitudes towards modern technologies and tools in pedagogical contexts.

24. What is your understanding of digital competence?

Through this question, students' comprehension of the concept of digital competence is evaluated based on the definitions they select.

25–26. Open-ended questions regarding challenges and suggestions for developing digital competencies These questions allow students to express problems they face in enhancing their digital competencies and to provide recommendations for improvement.

CONCLUSION

The significance of an effective and scientifically grounded questionnaire for assessing digital competencies of future educators has been examined. Taking into account the role of digital tools and technologies in pedagogical practice and their contribution to the educational system, the questionnaire is proposed as a valuable instrument for identifying the existing digital competencies of students. Furthermore, the study emphasizes the importance of considering the specific characteristics of pedagogical activity and the needs of students when formulating questions necessary for assessing digital competencies.

Based on the analysis of the questionnaire items, it is evident that the instrument allows for a comprehensive evaluation of future educators' digital competencies. It provides accurate and complete information, facilitating a clear understanding of students' digital skills and preparedness for integrating digital technologies into their professional practice.

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