FORMATION OF ELECTRONIC METHODOLOGICAL RESOURCE DESIGN COMPETENCE IN FUTURE PHYSICIANS BASED ON THE COURSE "INFORMATION TECHNOLOGIES IN MEDICINE"

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Abstract. *This thesis explores the formation of electronic methodological resource design competence in future physicians through the course Information Technologies in Medicine. In the context of digital transformation in healthcare and medical education, the ability to create electronic educational and methodological resources has become an essential component of professional training. The study emphasizes that future physicians should not only master digital tools, but also be able to design pedagogically grounded, professionally relevant, and technologically effective resources for educational and clinical communication purposes. The paper analyzes the role of the course Information Technologies in Medicine in developing this competence and identifies the key pedagogical conditions, instructional approaches, and didactic opportunities that support this process.*

Keywords: *future physicians, electronic methodological resources, competence formation, medical education, Information Technologies in Medicine, digital competence, instructional design, digital learning environment.*

The digital transformation of modern healthcare systems has significantly influenced the content and structure of higher medical education. Today's medical professionals are expected to function effectively in a technology-rich environment, where electronic records, clinical information systems, telemedicine platforms, digital diagnostics, and online educational

resources are increasingly integrated into both training and practice. Under such conditions, the preparation of future physicians requires new educational priorities, one of which is the development of competence in designing electronic methodological resources.

Electronic methodological resources may include multimedia presentations, electronic manuals, interactive tests, digital learning modules, video materials, infographics, algorithmic schemes, and online educational content created for teaching, self-study, professional communication, or patient education. Their design requires not only technical proficiency, but also subject knowledge, pedagogical thinking, logical structuring of information, visual literacy, and an understanding of the learner's needs. Therefore, the formation of this competence should be viewed as an integrative process combining professional, digital, and methodological preparation.

The course *Information Technologies in Medicine* has considerable potential for addressing this task. Traditionally, this course is aimed at developing students' basic digital literacy, introducing them to computer technologies, medical information systems, databases, and office software. However, its educational potential extends far beyond technical training. When methodologically enriched, the course can become a platform for preparing future physicians to design their own electronic methodological resources based on medical content and pedagogical requirements.

The formation of electronic methodological resource design competence within this course should rely on a competency-based educational model. From this perspective, the learning process is oriented not only toward acquiring theoretical knowledge about digital technologies, but also toward the practical ability to apply this knowledge in the creation of meaningful educational products. Competence formation involves a gradual transition from the reproduction of ready-made information to the independent design of digital resources aimed at solving professional and educational tasks. This transition

is particularly important in medical education, where students need to present complex scientific information in a clear, accurate, and accessible manner.

One of the main pedagogical mechanisms for competence formation is the inclusion of practice-oriented assignments in the course content. Students may be required to develop electronic presentations on clinical topics, create interactive test systems, design digital algorithms for diagnosis and treatment, prepare video explanations of medical procedures, or organize educational materials for online learning platforms. Such assignments promote the application of medical knowledge in a digital format and encourage the development of analysis, systematization, creativity, and instructional planning skills.

An important role in this process is played by project-based learning. Through project activities, students are engaged in the development of a specific electronic methodological product from the initial idea to the final presentation. This approach strengthens motivation, promotes independence, and creates favorable conditions for meaningful learning. In the course *Information Technologies in Medicine*, project work may include creating an electronic tutorial on a medical discipline, designing infographics on disease prevention, producing simulation-based learning materials, or preparing resources for blended and distance learning. As a result, students gain experience not only in using digital tools, but also in designing resources with real didactic value.

Another key condition for competence formation is the integration of interdisciplinary knowledge. The design of electronic methodological resources in medical education requires the combination of medical science, pedagogy, information technology, and visual communication. Future physicians should know how to select relevant content, structure it in accordance with didactic principles, adapt it to the target audience, and present it through effective digital formats. This interdisciplinary approach enhances

the quality of the created resources and prepares students for future professional situations where digital communication and educational support are essential.

The student-centered approach is also significant in the formation of this competence. Digital learning environments provide students with greater opportunities for self-directed learning, reflection, and creative expression. When students are encouraged to design their own electronic methodological resources, they become active participants in the educational process rather than passive recipients of information. They learn to make choices, justify design decisions, evaluate the effectiveness of their products, and improve them based on feedback. This contributes to the development of autonomy, responsibility, and reflective thinking.

At the same time, the successful formation of electronic methodological resource design competence requires certain pedagogical conditions. First, the educational institution should provide access to a modern digital infrastructure, including computers, software, multimedia tools, internet resources, and learning management systems. Second, the course content should be methodologically revised to include tasks focused on the design of educational resources rather than only on technical operations. Third, teachers should perform a facilitative role, guiding students in both technological and didactic aspects of their work. Fourth, assessment criteria should reflect the complexity of the competence being formed and include indicators such as scientific accuracy, pedagogical appropriateness, logical structure, visual design, interactivity, usability, and practical significance.

Reflection should also be considered an essential component of the learning process. After completing a digital resource, students should be encouraged to analyze its strengths and weaknesses, identify possible improvements, and evaluate its usefulness for educational or professional purposes. Reflective practice helps transform isolated technical skills into

sustainable competence and supports the development of lifelong learning habits.

In conclusion, the formation of electronic methodological resource design competence in future physicians based on the course *Information Technologies in Medicine* is a relevant and promising direction in modern medical education. This process contributes to the training of specialists who are able not only to use digital technologies, but also to create educational and methodological resources independently and effectively. The pedagogical value of this competence lies in its integrative nature, as it combines medical knowledge, digital literacy, instructional design, and professional communication. Therefore, the course *Information Technologies in Medicine* should be viewed as an important educational tool for preparing future physicians to meet the demands of digital healthcare and contemporary medical education.

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