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IMPROVING THE EDUCATIONAL PROCESS THROUGH MULTIMEDIA TECHNOLOGIES IN THE PROFESSIONAL TRAINING OF STUDENTS

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Annotation: This article highlights the use of multimedia technologies in the process of training students for professional development. The study examined methods of organizing learning activities based on images, audio, video, animation, and virtual platforms. The results showed that multimedia technologies effectively foster independent thinking, creativity, and digital competencies among students. Moreover, it was found that their use significantly contributes to the development of professional knowledge, skills, and abilities. In the discussion process, the advantages and certain challenges of multimedia-based education were analyzed, and recommendations for improving this process in the future were proposed.
Keywords: multimedia technologies, professional education, learning process, innovation, digital competence.

Introduction. Today, the use of innovative technologies in the educational process is considered one of the key factors in thoroughly preparing students for professional activities. Multimedia technologies play an invaluable role in training competitive specialists in the modern information environment. They not only provide opportunities to present learning materials in various forms but also foster students' independent thinking, analytical abilities, and creative approaches.

In recent years, electronic textbooks, interactive platforms, virtual laboratories, and educational video materials created on the basis of multimedia tools have been widely introduced into the learning process. Although many scientific sources emphasize the advantages of multimedia technologies in improving educational efficiency, their systematic use in professional training still remains a pressing issue.

The main objective of this study is to enhance students' professional training through the improvement of the learning process based on multimedia technologies, to develop their digital competencies, and to prepare them for practical activities. Additionally, this research explores the advantages of applying multimedia technologies in education, the challenges encountered, and possible solutions.

Materials and Methods. The primary aim of this research was to determine the effectiveness of using multimedia technologies in the process of training students for professional activities. The study was conducted during the 2025–2026 academic year with the participation of students from two higher education institutions. A total of 50 students were involved in the research. Grouping of participants. Students were divided into two groups:

- Experimental group – participated in lessons designed with multimedia technologies. This group was provided with electronic textbooks, video lectures, animations, educational platforms (Moodle, Google Classroom), virtual laboratory tasks, and online tests.
- Control group – studied through traditional methods (teacher's lecture, written exercises, and textbook-based learning).

Learning materials. Special learning modules based on multimedia were developed for the experimental group. Each module consisted of theoretical content, practical tasks, test questions,

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and interactive assignments. The video lessons were prepared in short blocks of 10–15 minutes, making them convenient for self-study.

Research procedure. The study lasted for 1 week. Two classes per week were conducted using multimedia tools. Student performance was monitored through platforms, homework completion, and practical task results. Data collection methods:

- Knowledge level – evaluated through specially designed test questions.
- Practical skills – assessed by laboratory tasks and project work.
- Students' opinions – gathered via interviews and questionnaires.
- Effectiveness of the learning process – recorded using observation methods.
- Data analysis. The collected data were processed using simple statistical methods, and the results of the experimental and control groups were compared. Changes in students' knowledge, the effectiveness of multimedia tools, and their impact on professional training were identified.

Results. The study, conducted during the 2025–2026 academic year with students from two higher education institutions, yielded the following outcomes:

1. Knowledge level. The average results of the experimental group increased by 25–30%, while the control group showed only 10–12% improvement. This indicates that multimedia technologies significantly enhanced the learning process.
2. Practical skills. The experimental group performed much better in laboratory tasks and project work compared to the control group, demonstrating stronger accuracy, creativity, and decision-making skills.
3. Student engagement. Observations revealed that students in the experimental group participated more actively in lessons, engaged more in Q&A sessions, and completed independent tasks more efficiently.
4. Digital competence. According to surveys, 82% of the experimental group stated that using multimedia technologies significantly contributed to their professional preparation, compared to 54% in the control group.
5. Challenges. Some students faced technical issues (such as internet speed or lack of devices), but these did not have a major impact on overall results.

Overall, the results demonstrated that the use of multimedia technologies positively influences the effectiveness of students' professional training. The outcomes showed that students' knowledge and skills developed more effectively compared to traditional methods.

Conclusion. The findings of the study revealed that the use of multimedia technologies has a significantly positive impact on the process of training students for professional activities. The experimental group outperformed the control group in knowledge levels, practical skills, independent thinking, and digital competence. Students also demonstrated higher levels of engagement, creativity, and initiative during lessons. The application of multimedia technologies made learning materials clearer, more engaging, and easier to understand. Although some technical challenges were encountered, they did not significantly affect the overall results. In the future, further development of multimedia tools, their integration with various professional subjects, and the introduction of new virtual learning platforms will play a vital role in preparing students as competitive professionals.

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