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A Model For Improving Specialty Subjects Using Software Tools

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Abstract: This article discusses a model for improving specialty subjects using software tools.

Keywords: Model, technology, tool, methods, form.

Introduction: A theoretical analysis of scientific-pedagogical literature dedicated to the problems of forming special competencies of students at technical higher education institutions using software educational tools has shown that developing a concrete technology for the development of special competencies of future construction engineers based on software educational tools has become a pressing issue today.

Modeling as a method is currently being widely applied in various fields.

Since pedagogical objects are systematic and dynamic formations, their modeling must first and foremost be grounded in the methodology of a systematic and activity-based approach. Our task is to form the special competencies of students at technical higher education institutions and to cultivate the optimal information culture required for their future professional activity [8].

The subject of our research is the enhancement of the special competencies of students at technical higher education institutions in the process of teaching specialty subjects, including the subject "Construction Physics and Energy Efficiency Engineering of Buildings," through the application of software educational tools.

METHODOLOGY

Without the widespread introduction of ICT in the teaching of the subject "Construction Physics and Energy Efficiency Engineering of Buildings," it is impossible to form the information culture of construction engineers.

Technical higher education institutions must also undergo significant changes aimed at training specialists capable of managing the use of software educational tools in their professional activities, which requires the comprehensive integration of ICT into the professional training system of construction engineering students [9].

The model characterizing the level of information culture is an organic component of the theoretical model of future specialists based on a model of their activity.

The process of informatizing society, and in particular informatizing education, places on students of technical higher education institutions the task of applying software educational tools.

The foundation of the creative abilities of technical higher education students is the integration of knowledge. The methods and tools of software educational tools, along with their core conceptual system (information, object, model, system, structure, object-oriented approach, formalization, modeling), form the basis of professional knowledge, skills, and competencies [9]. Mastering the content of the subject "Construction Physics and Energy Efficiency Engineering of Buildings" in the professional preparation of technical higher education students provides them with a range of ability types that enable

them to acquire the knowledge, skills, and competencies that constitute the foundation of the future specialist's competency:

- the ability to independently acquire the necessary knowledge based on active use of modern interactive software educational tools and self-direction of the learning process;
- the ability to independently carry out various forms of data processing activities;
- orientation toward the capabilities of computer software and hardware;
- selection of the optimal communication style for various situations;
- the ability to use email and to search for necessary information on the internet;
- the ability to interpret and transmit information;
- adherence to sanitary and hygiene standards for the use of computer technologies [9].

DISCUSSION

In our view, the improvement of the methodology for teaching the subject "Construction Physics and Energy Efficiency Engineering of Buildings" based on software educational tools must be carried out in a continuous information environment using various forms, tools, and teaching methods. Forming the methodology for teaching specialty subjects based on software educational tools improves the quality of education for all types of professional activities of graduates through the proposed structure of students' professional preparation.

Based on the study and analysis of scientific research and drawing on practical pedagogical experience, a model for improving the methodology for teaching the subject "Construction Physics and Energy Efficiency Engineering of Buildings" based on software educational tools was developed (see Figure 1).

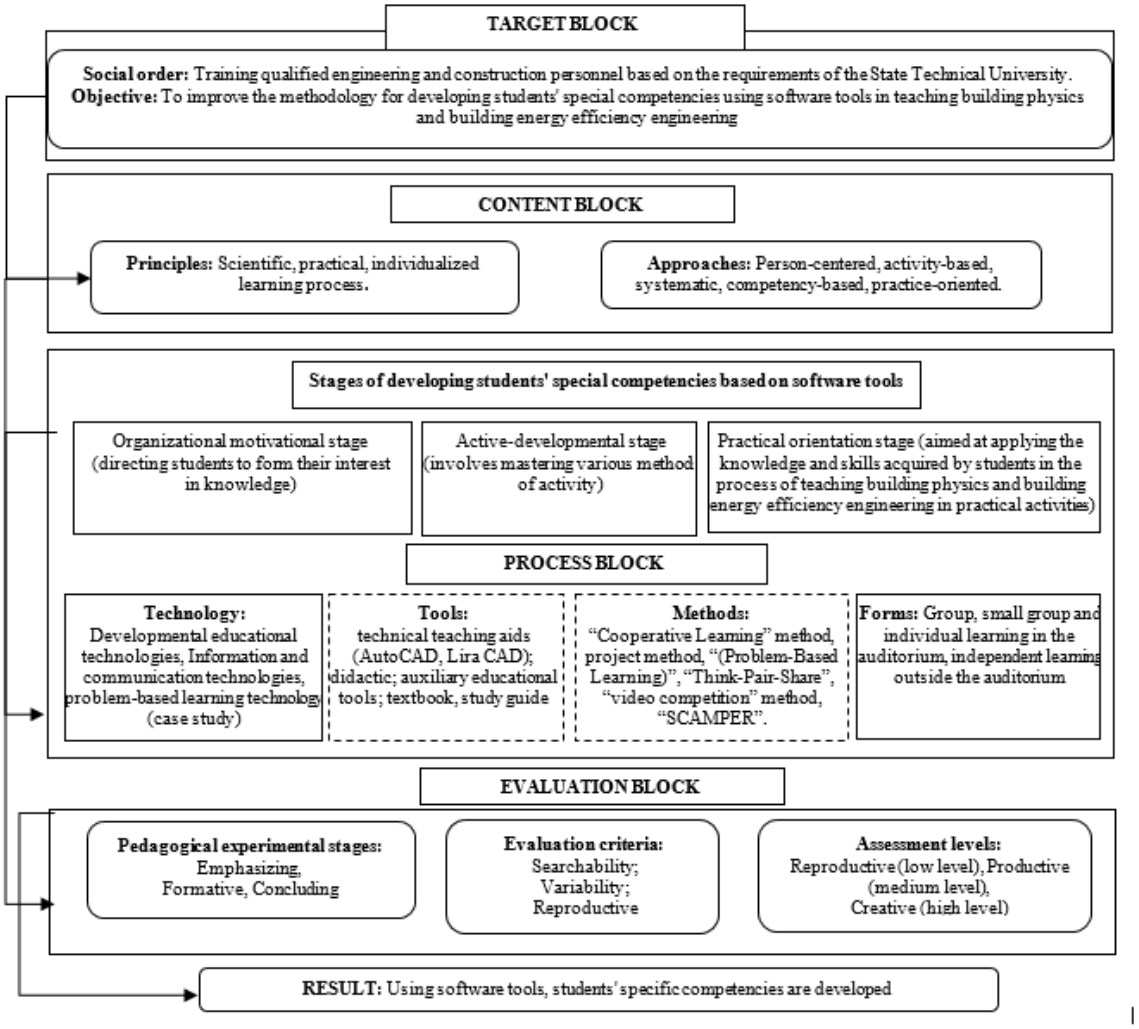

Figure 1. Model for improving the methodology for teaching the subject "Construction Physics and Energy Efficiency Engineering of Buildings" based on software educational tools

Through the methodological model for improving the methodology for teaching "Construction Physics and Energy Efficiency Engineering of Buildings" based on software educational tools, the following components are included: the target block (forming knowledge, skills, and competencies through teaching the subject "Construction Physics and Energy Efficiency Engineering of Buildings" based on software educational tools, aligned with State Educational Standards and qualification requirements, as well as improving instruction); the content block (principles, approaches); the process block (consisting of components such as technology, tools, methods, and forms); the assessment block; assessment criteria (exploratory, variative, reproductive); assessment levels (high, medium, low); and the outcome (improvement of the methodology for teaching the subject "Construction Physics and Energy Efficiency Engineering of Buildings" based on software educational tools, leading to the preparation of qualified construction engineers).

In the target component of the conducted research results, the goal was defined based on the social demand for construction engineers.

In the content component, tasks are developed to achieve the goal, and the pedagogical-organizational conditions for developing competency in working with software tools are identified based on approaches and principles.

In the process component, the process is carried out through the structural framework, teaching methods, forms, educational methods, and tools for developing competency in working with software tools in the teaching of "Construction Physics and Energy Efficiency Engineering of Buildings." In the assessment component, the stages of the pedagogical experiment, along with the criteria and levels for identifying the development of students' competency in working with software tools, are developed. As a result, improvement of the methodology for teaching the subject "Construction Physics and Energy Efficiency Engineering of Buildings" based on software educational tools is achieved.

A necessary component of the system for developing the special competency of future construction engineers in working with software tools is a set of didactic tools that help develop the cognitive abilities of future construction engineers and directly support the formation of skills, assist in broadly transforming students' knowledge, and facilitate checking the level of skill formation. In this process, the selection of didactic tools is carried out in accordance with the learning objectives, methods, content, characteristics of the educational material being studied, and the material-technical equipment of the educational process.

The target, content, process, assessment, and outcome components, in their interrelation, ensure the step-by-step development of competency in working with software tools, as well as the development of high-level personal and special competencies.

CONCLUSION

The effectiveness of using this model in developing students' special competencies based on software educational tools is explained by the fact that the content block and the process block (technologies, tools, methods, and forms) within the block sections of the proposed model have proven their efficacy.

REFERENCES

1. Muslimov N.A., Urazova M.B., Eshpulatov Sh.N. Technology for forming the professional competency of vocational education teachers. Tashkent: Science and Technology. 160 p.
2. A.O. Egamberdiyev. Advanced foreign experiences in organizing practical classes for future specialists based on innovative technologies. NamSU Scientific Bulletin-2023, Issue 7. pp. 689-691.
3. A.O. Egamberdiyev, M.L. Boltayeva. A model for improving the methodology for teaching specialty subjects based on software educational tools. NamSU Scientific Bulletin-2024, Issue 1. pp. 565-569.
4. A.O. Egamberdiyev. Methodology for teaching specialty subjects based on software educational tools with the application of innovative technologies. NamIEC Construction and Education Scientific Journal. 2023, No. 5-6. pp. 133-139.
5. A.O. Egamberdiyev. Developing a methodology for improving the special competencies of students using software tools. NamSU Scientific Bulletin-2024, Issue 10. pp. 694-697.

6. A.O. Egamberdiyev. Advanced foreign experiences in organizing practical classes for future specialists based on innovative technologies. World Bulletin of Public Health (WBPH). Available online at: https://www.scholarexpress.net. Volume 23, June 2023. ISSN: 2749-3644. pp. 143-144.
7. Pedagogical conditions for developing students' special competencies based on software tools. NamSU Scientific Bulletin-2025, Issue 2. pp. 672-676.
8. Batotsyrenova K.G. Foundations of the theory of humanities training of technical university students (based on pedagogical technology). Doctoral dissertation in Pedagogical Sciences. Moscow, 2000. 383 p.
9. Lager A.I., Gulidova L.N. New approaches to the teaching technology of graphic disciplines. // Computer Geometry and Graphics in Education: Collection of scientific-methodological articles from an inter-university seminar / Ed. N.V. Sosnin. Krasnoyarsk: KGTU, 2000. pp. 24-28.