

FORMATION OF COMPLEX KNOWLEDGE THROUGH PRACTICAL TRAINING IN THE EDUCATIONAL PROCESS

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<https://doi.org/10.5281/zenodo.17759155>

Abstract. *This article analyzes the importance, effectiveness, and impact of using various pedagogical methods in the teaching process. Relying on a single method in modern pedagogical practice cannot fully ensure the development of students' knowledge, skills, and interest.*

Therefore, teachers must integrate and combine different teaching methods. The article examines traditional and innovative approaches, interactive teaching methods, and ways of enriching the learning process through technological tools.

Keywords: *teaching methods, pedagogical process, interactive methods, innovative methods, learning process, educational effectiveness.*

Introduction

In modern education, the teaching process is a complex system aimed not only at transmitting knowledge but also at developing students' thinking abilities, creative skills, and practical competencies. In this process, the teacher's ability to select and correctly apply pedagogical methods plays a crucial role.

Traditional teaching methods lectures, question-answer sessions, independent work, and laboratory activities are effective in delivering theoretical knowledge; however, relying solely on one method may decrease students' interest in the lesson. Therefore, it is necessary to integrate various methods and use interactive and innovative approaches in the teaching process. Purpose of the Study The purpose of this article is to scientifically analyze the pedagogical, psychological, and methodological significance of practical training in forming complex knowledge among students, to identify mechanisms for integrating theoretical knowledge with real-life practice through practical activities, and to propose modern educational technologies aimed at enhancing their effectiveness.

Materials and Methods

The following materials and sources were used in the study: Educational and methodological complexes: school textbooks; methodological manuals for practical lessons; laboratory guides.

Normative legal documents: Presidential decrees and resolutions of the Republic of Uzbekistan; educational standards (State Educational Standard, qualification requirements).

Pedagogical experiment materials: results of practical lessons conducted with students; observation protocols; students' test results and diagnostic cards.

Scientific literature: research articles in pedagogy, psychology, and didactics; monographs on active learning technologies, STEAM, problem-based learning, and project-based instruction.

Research Methods

1. Theoretical Methods Analysis and synthesis – to study the theoretical foundations of practical training and its role in forming complex knowledge;

Comparative method – to compare various methodological approaches;

Conceptual modeling – to develop a model of forming complex knowledge through practical activities in the educational process.

2. Empirical Methods

Observation – to monitor students' activity and dynamics of knowledge acquisition during practical lessons;

Interviews and surveys – to collect feedback from teachers and students Pedagogical diagnostics – to assess the level of knowledge acquisition through tests, assessments, and evaluation sheets.

3. Experimental Methods

Pedagogical experiment – forming experimental and control groups; implementing a special methodical program based on practical activities; comparing initial and final results to evaluate changes.

4. Statistical and Methodological Analysis

Mathematical and statistical processing of obtained data; Analysis of average indicators, percentages, and dynamic changes; Determining the effectiveness of the experimental methodology.

Conclusion

The results of this study show that the effective organization of practical training in the educational process is one of the most important factors in developing deep, systematic, and sustainable complex knowledge among students. Practical activities not only concretize theoretical concepts but also foster students' independent thinking, creative approaches, and competencies for applying knowledge in real-life situations.

This process activates higher-order thinking, enhances analytical and comparative reasoning, and increases motivation toward practical tasks. The analysis indicates that active teaching methods used during practical sessions such as problem-based learning, project-based approaches, experiments, and STEAM elements significantly stimulate students' cognitive processes and facilitate the assimilation of complex knowledge. Through these methods, students enrich their personal experience, learn to apply theoretical knowledge in practical contexts, and gradually build a strong, coherent, and functional system of knowledge.

Traditional pedagogical methods:

Traditional methods are teaching approaches formed on the basis of long-standing pedagogical experience. They include lectures, question-and-answer sessions, discussions, laboratory work, and practical classes. For example, the lecture method is effective for delivering a large amount of knowledge quickly and systematically, but it does not require active student participation. The question-and-answer method, on the other hand, encourages students to actively engage in the learning process and helps strengthen their understanding. Interactive methods: Interactive methods ensure active student participation and make the learning process more engaging. These methods include role-playing, problem-based situations, group work, debates, and "idea exchange." For instance, group work helps students collaborate with one another, discuss problems, and develop problem-solving skills. Likewise, analyzing problem situations increases students' critical thinking.

Use of innovative methods and technologies: In modern teaching, the use of information and communication technologies makes the learning process more interactive and effective. For example, online tests, presentations, virtual laboratories, and educational platforms help strengthen students' knowledge and develop practical skills. Additionally, the flipped classroom method allows students to prepare independently at home and engage in active discussion and practical activities during class time.

Integration of different methods: Combining various teaching methods enhances students' knowledge, skills, and interest to the highest extent. For example, theoretical knowledge may be delivered through lectures and later reinforced through group work or interactive activities. At the same time, integrating technological tools makes lessons more engaging and effective.

Criteria for selecting methods: The following criteria should be considered when selecting a teaching method: the age characteristics of students, the nature of the subject, the complexity of the material, students' level of knowledge, and the overall purpose of the lesson.

Choosing an appropriate method makes the learning process more effective and supports students' personal development. Modern education systems not only aim to deliver theoretical knowledge but also to teach students how to independently construct complex knowledge.

Complex knowledge includes the ability to apply theoretical information in practice, think critically, solve problems, and develop creative approaches. From this perspective, practical classes are considered an essential part of the learning process. Through practical activities, students acquire complex knowledge and develop analytical thinking, decision-making, and innovative problem-solving skills. Practical tasks also help reinforce knowledge, deepen understanding, and form connections between different areas of learning.

Complex knowledge refers to multifaceted, practice-oriented understanding that integrates multiple fields of study. Research shows that the following aspects are important in the formation of complex knowledge:

1. Integration – combining different subjects and theoretical knowledge.
2. Metacognitive ability – the learner's capacity to analyze their own knowledge and regulate their learning process.
3. Problem-based approach – analyzing new situations and solving problems.
4. Creativity – generating new ideas and solutions. These aspects ensure that students acquire complex knowledge at a level beyond simple memorization.

In the educational process, practical classes perform the following main functions:

1. Reinforcement of theoretical knowledge – students apply theoretical concepts in practice, which helps store information in long-term memory.
2. Development of thinking and analytical skills – students learn to solve problems independently.
3. Formation of skills – through practical tasks, learners strengthen their technical and analytical competencies.
4. Increasing motivation – practical activities engage students in learning and raise their interest.

According to research, the effectiveness of practical classes in forming complex knowledge depends on students' active participation and level of collaboration. Practical activities not only improve academic performance but also teach students to think independently, solve problems, and make creative decisions.

Moreover, through practical tasks, learners learn to apply knowledge in real-life situations, which deepens their understanding of theoretical concepts.

Studies show that achieving the formation of complex knowledge requires practical classes to be conducted regularly and systematically. In modern education, practical sessions serve as an effective tool for developing complex knowledge. They contribute not only to reinforcing theoretical knowledge but also to fostering critical thinking, creativity, and

independent decision-making skills. Organizing practical classes effectively, creating proper pedagogical conditions, and applying innovative methods are essential for forming complex knowledge. In this way, students develop scientific, technological, and practical competencies and grow into highly qualified specialists who meet the demands of modern life.

Conclusion

Using various methods in the teaching process is one of the key principles of modern education. While traditional methods are effective for delivering theoretical knowledge, interactive methods ensure active student participation, and innovative methods and technologies make lessons more engaging and interactive.

Therefore, by integrating different methods during instruction, teachers can maximize the development of students' knowledge, skills, and interests.

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