

RESEARCH ARTICLE

The Objectives and Competency-Based Approaches in Teaching Informatics

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Abstract

This article explores the objectives and competency-based approaches in teaching informatics in modern education. It highlights the importance of developing students' digital literacy, algorithmic thinking, and practical ICT skills through innovative pedagogical methods. The study emphasizes that informatics education should not be limited to theoretical knowledge but should focus on the effective application of knowledge in real-life situations. Special attention is given to the role of competency-based education in forming students' ability to work with information, solve problems, and use digital technologies responsibly. The article also discusses modern teaching strategies such as interactive learning, project-based activities, and the use of electronic educational resources to enhance learning outcomes.

KEY WORDS

Informatics, competency-based approach, digital literacy, teaching methodology, learning objectives, algorithmic thinking, information technology, interactive learning, educational process, digital competencies.

INTRODUCTION

From a methodological perspective, informatics education should be organized by taking into account students' age characteristics, level of psychological development, and individual abilities. In particular, at the stage of grades 5–7, students' interest is relatively high, and considering their tendency toward visual and practical activities, it is necessary to use interactive and innovative methods in the teaching process. In modern methodological approaches, the basis of informatics education is formed by the competency-based approach. This approach aims to develop the following key competencies in students: information handling competence, algorithmic thinking competence, programming and modeling skills, digital security culture, as well as communicative and collaboration competencies. Electronic learning resources serve as an important didactic tool in the formation of these

competencies. With the help of electronic resources, students can perceive complex concepts visually, strengthen their knowledge through interactive exercises, and gain opportunities for independent learning. In addition, the following principles are of great importance in forming the methodological foundations of informatics education:

First, the principle of consistency and systematicity - learning materials should be presented step by step from simple to complex. This contributes to the solid and effective acquisition of knowledge by students.

Second, the principle of visualization and interactivity - the use of graphics, animations, simulations, and multimedia tools in the learning process increases students' interest.

Third, the principle of practical orientation - students should

have the opportunity to apply their knowledge by performing real-life tasks.

Fourth, the principle of individualization - teaching methods are adapted by taking into account each student's abilities and learning needs.

Fifth, the principle of integration - teaching informatics in connection with other subjects ensures the integrity and interconnectedness of knowledge.

The educational process organized on the basis of these principles significantly increases effectiveness when electronic learning resources are used. In particular, mobile applications, virtual laboratories, online platforms, and multimedia textbooks ensure active student participation. In addition, the use of interactive methods plays an important role in teaching informatics. These include:

- problem-based learning;
- project-based learning;
- game technologies;
- collaborative learning methods.

These methods develop students' independent thinking, encourage a creative approach, and help them achieve a deeper understanding of knowledge.

In modern methodology, the assessment system also requires a new approach. Alongside traditional assessment methods, the use of formative (ongoing) and summative (final) assessment systems makes it possible to accurately determine students' level of knowledge. Electronic tests, automated assessment systems, and monitoring platforms contribute to making this process more effective.

The methodological competence of the teacher is also an important factor. The teacher should not only have a thorough knowledge of the subject content, but also possess the skills to effectively use modern pedagogical technologies and digital tools.

The methodological foundations of organizing informatics education in general secondary schools should be developed by integrating modern educational requirements, digital technologies, and students' needs. In particular, improving the methodology of using electronic learning resources in grades 5-7 plays an important role in increasing the effectiveness of the educational process.

In the modern educational space, the role of informatics has changed significantly, and it is now interpreted not merely as a set of technical knowledge, but as a fundamental discipline that forms students' digital thinking and modern culture of thought. In the context of deepening digital transformation processes, there is a growing need to define the content, goals, and tasks of this subject based on new pedagogical approaches.

The main goal of informatics education is to develop complex skills in students aimed at conscious work with information, its processing, analysis, and effective application in practical activities. In the learning process, the student is considered not as a passive recipient of ready-made knowledge, but as an active subject who thinks independently and constructs knowledge through their own activity. Such an approach not only develops students' intellectual potential but also prepares them to make independent decisions in real-life situations.

To achieve this goal, a number of priority tasks are implemented in the teaching process. First of all, it is essential to develop students' algorithmic and logical thinking, as well as to form skills for solving problems step by step. At the same time, developing skills such as searching for information, sorting and critically evaluating it, presenting it in different formats, and effectively using digital tools is considered one of the priority directions.

The content of informatics education is built on a staged system and is continuously improved in accordance with students' age and psychological characteristics. In the initial stages, students are introduced to basic information processes and digital tools, while in the subsequent stages, elements of algorithmization, modeling, and programming are gradually introduced. Such an approach ensures the systematic formation of knowledge and its practical application.

In the context of the digital society, forming students' information culture is also considered a separate pedagogical task. In this process, issues such as cybersecurity, protection of personal data, conscious use of internet resources, and information ethics are integrated into the educational content. As a result, students acquire the skills to act responsibly and safely in the digital environment.

Teaching informatics is closely connected with the development of creative activity. In the process of programming, modeling, and developing various digital projects, students gain the opportunity to approach problems

in new ways, transform their ideas into practical outcomes, and analyze results. This, in turn, fosters innovative thinking and a creative approach in learners. This process is organized on the basis of a competency-based approach, where priority is given not to memorizing knowledge, but to its application in practical situations. Students are guided to acquire the following integrative competencies:

- the ability to search for, select, and analyze information;
- skills of applying algorithmic and logical thinking;
- competence in the effective use of digital tools;
- the ability to solve problems creatively;
- teamwork skills and communicative competencies.

The methods used in the educational process are also updated in accordance with this approach. Tasks based on problem situations, project-based activities, interactive exercises, and lessons using digital resources ensure active student participation. In particular, the application of such methods in grades 5-7 increases students' interest and creates opportunities for deeper mastery of knowledge. The assessment process is also reorganized in line with modern requirements. Students' level of knowledge is determined not only on the basis of theoretical results, but also through their practical activities, project work, and performance in completing real-life tasks. This allows for a more accurate assessment of the learner's actual level of competence.

The individualization of the learning process is considered one of the important methodological requirements. Taking into account each student's unique developmental trajectory and selecting tasks that match their interests and abilities increases the effectiveness of learning. In this process, electronic learning resources and digital platforms play a key role in creating a flexible learning environment. As a result, the modern model of teaching informatics is aimed at developing students' complex digital competencies, and the competency-based approach defines the methodological foundation of this process. In particular, the systematic implementation of this approach in grades 5-7 of general secondary education is an important condition for improving educational effectiveness.

In the general secondary education system, the teaching of informatics is being restructured based on modern pedagogical approaches. In the context of rapid development

of digital technologies, one of the key tasks is to develop students' skills in working with information, analyzing it, and applying it in practical activities. Therefore, the content, goals, and objectives of informatics education should be systematically defined in accordance with state educational standards.[1] The main goal of informatics education is to develop modern information and algorithmic culture in students, aiming to prepare them for conscious and effective activity in a digital environment. In this process, learners gain the ability to understand information processes, manage them, and apply them in practice.[2]

The content of informatics education is formed step by step in accordance with students' age characteristics and cognitive level. Initially, simple concepts are mastered, and later the learning process progresses to more complex algorithmic and programming processes. This approach contributes to the systematic formation of knowledge.[3]

In our view, based on the State Educational Standard (SES), informatics education should include the following tasks:

- providing students with basic knowledge of informatics, information technologies, and digital technologies, and explaining their essence and content in a simple and understandable way.[4]
- forming a scientific worldview in students regarding information processing processes, and developing the basic elements of information culture.[5]
- introducing students to computer devices, modern digital tools, and their functions, as well as developing their knowledge, skills, and practical competencies in working with them [6]
- teaching students initial interaction with computers, explaining the principles of operation of devices such as the keyboard, monitor, mouse, and printer, as well as network technologies such as Smart Board, WiFi, and ADSL internet.[7]
- introducing students to the Microsoft Windows operating system, its main features, file system, and developing skills in working with utility programs.
- forming basic skills and competencies in computer graphics and working with the Paint graphics editor.

These tasks represent the main stages of forming students' digital literacy. When each direction is implemented in an interconnected manner, a holistic knowledge system is developed in students. Skills such as searching for, analyzing,

and using information appear as the main outcomes of modern education.[8]

The development of algorithmic thinking is one of the central directions of informatics education, as it shapes students' logical thinking. By creating simple algorithms and applying them in practice, students acquire the ability to solve problems in a systematic way.

Pay attention to safety issues in the process of using digital tools is also important. Rational use of the internet, protection of personal data, and compliance with information security rules are key factors in forming students' digital culture. Practical activities and project-based approaches help develop students' creative thinking. Through graphic editors, programming environments, and interactive platforms, students are able to turn their ideas into practical outcomes.

The educational process organized on the basis of the competency-based approach develops students' ability to apply knowledge in real-life situations. This ensures their independent thinking, problem-solving skills, and active participation in modern society.

In the process of teaching informatics, the system of knowledge to be acquired by students is clearly defined in the subject curriculum, and the content, scope, and sequence of mastering this knowledge must be organized on a didactically sound basis. In forming the educational content, the consistency of learning material, logical structure, and step-by-step development of concepts are of great importance. Theoretical information, generalizations, and conclusions provided within each topic should be closely aligned with the requirements set in the curriculum.

REFERENCES

1. Abduqodirov A.A. Informatika o'qitish metodikasi. – Toshkent: TDPU, 2019. – 120 b.
2. Polat Ye.S. Novye pedagogicheskie i informatsionnye texnologii. – Moskva, 2008. – 272 s.
3. Taylakov N.I. Informatika ta'limi nazariyasi. – Toshkent, 2010. – 200 b.
4. Bokiev R.R. Elektron ta'lim resurslari. – Toshkent, 2019. – 150 b.
5. Jonassen D. Computers as Mindtools for Schools. – New Jersey, 2000. – 240 p.
6. Ugrinovich N.D. Informatika i IKT. – Moskva: Binom,

2012. – 308 s.

7. Djuraev R.X. Ta'limni axborotlashtirish asoslari. – Toshkent: O'qituvchi, 2012. – 180 b.
8. Castells M. The Rise of the Network Society. – Oxford, 2010. – 597 p.