

THE ROLE OF INFORMATION TECHNOLOGIES IN IMPROVING TEACHING METHODS

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Abstract. The article focuses on the role of information technology as the main connecting link that contributes to the simultaneous development of various scientific fields and is indispensable for teaching natural sciences and technical disciplines. It is emphasized that IT allows material to be presented clearly in accordance with Bloom's method, and that modern teaching requires a contextual approach and in-depth study of objects.

Keywords: Information technology, Bloom's taxonomy, innovative teaching.

In this age of technological progress, interdisciplinary connections are one of the main concepts of the new trend in education. One such connection is information technology, which helps all sciences to develop simultaneously. It is impossible to imagine teaching physical, technical, and medical disciplines without the introduction of multimedia technologies at this point. They allow for a clear characterization of the objects being studied in accordance with Bloom's taxonomy method. Education in the present and future must include the contextual aspect of learning, studying an object from the outside and inside, and applying strategies and methods for solving academic problems related to that object.

Benjamin Bloom, an educational psychologist, defined a system for classifying different levels of learning, originally known as the taxonomy of educational objectives in 1956 and published as a unique classification of learning outcomes and objectives, which for more than half a century have been used for everything from developing lessons and supplementary material to writing questions and assessment systems [1]. This skill has been used as a training guide for teachers to take teaching to a new level of quality. According to Bloom's theory, the number of students with good knowledge will increase when the teacher effectively uses conditions that are conducive to learning [2]. The initial stage is to define learning objectives using Bloom's taxonomy.

Bloom's taxonomy is often represented visually as a triangle with lower-order learning levels at the bottom and higher-order learning levels at the top. From the taxonomy, teachers should create instructions that provide favorable learning

conditions that support students as they “learn” and “master” learning objectives. [3]. As mentioned above, Bloom's taxonomy structure can be used to assess task complexity, increase lesson accuracy, simplify lessons to help personalize learning, develop summative assessments, plan project-based learning, form discussion groups, and more. [4]. It is important to note that the different levels of thinking defined in each domain of the taxonomy are hierarchical. In other words, each level incorporates the levels that precede it. The affective domain focuses on students' attitudes, values, interests, and evaluations. The hierarchy associated with it begins with receiving and listening to information and extends to characterizing or assimilating values and their consistent impact. This domain aims to enable students to understand what their own values are and how they have developed [5].

In line with progress, new barriers arise in the selection of methods, forms, novelty, dynamism and diversity in education, as well as in the application of information technologies [6]. Certain barriers arise for studying technological aspects, such as: the skills required to use technologies; the time needed to master skills; the reliability of software or hardware components. The definition of information literacy goes beyond the simple process of searching for information and includes: transitioning to a topic; selecting and using resources; searching for information; evaluating resources; recording research [7].

In the field of information technology, there are many tools for solving educational problems.

Computer-based learning tools such as databases, spreadsheets, and teleconferencing programmes are aids in the development of certain stages of Bloom's taxonomy, such as planning, decision-making, and self-regulation. Information technology allows Bloom's well-known one-dimensional taxonomy structure to be transformed into a two-dimensional one: a new form of knowledge transfer; the spread of knowledge transfer to a wider audience; flexibility in time; flexibility in physical space; programmes focused on user groups; the use of colour, animation, and sound; joint problem solving at a distance [8].

Accordingly, Bloom's one-dimensional taxonomy was transformed by Anderson, Lorin B. and David R. from the lowest level — Remember — to the highest — Create.

Bloom's one-dimensional taxonomy model:

1. Create
2. Evaluate
3. Analyse
4. Apply
5. Understand
6. Remember

And the two-dimensional model into a two-dimensional synthesised model, where the levels were reduced from 6 to 4:

1. Redefinition.
2. Modification.
3. Increase.
4. Replacement.

Conclusion

Thus, in the context of rapid technological progress, interdisciplinary connections are becoming a fundamental concept in modern education. Information technology plays a central role in this process, acting not simply as a tool, but as a catalyst for the simultaneous development of various scientific disciplines. They provide the necessary clarity and interactivity, which is especially important when teaching natural sciences, technical and medical disciplines in accordance with Bloom's method.

The transformation of Bloom's traditional one-dimensional taxonomy into a two-dimensional synthesized model (reducing the levels to 'Redefinition', 'Modification', 'Augmentation,' 'Substitution') is a striking example of how technology is changing the very structure and approaches to the transfer and acquisition of knowledge. This opens up new horizons for the creation of flexible, interactive, and accessible educational programmes that promote effective problem solving and collaborative distance learning in the digital age.

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