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Theoretical And Practical Aspects Of Developing Students' Heuristic Thinking In Digital Education

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Annotation. This article analyzes in detail the issues of developing students' heuristic thinking in the context of digital learning. It shows the theoretical foundations of heuristic thinking, the possibilities of integration with digital tools, as well as the practical significance of such methods as the problem method, bainstorming, and the game approach. The article also highlights the role of digital learning platforms, virtual laboratories, and interactive applications in shaping students' creative search and thinking, as well as the specifics of assessment and reflection processes. The authors offer specific proposals to overcome obstacles such as problems related to digital infrastructure, the need to improve teachers' digital literacy, and student passivity. The final article contains scientific and practical recommendations for educating a generation of creative and independent thinkers by strengthening heuristic thinking in the modern education system.

Keywords: digital learning, heuristic thinking, creative thinking, problem method, game approach (gamification), project activity, online platforms, interactive applications, innovative learning.

Introduction

The widespread introduction of digital technologies into the modern educational process, along with great convenience for educational subjects, also serves as an important basis for the development of creative abilities and independent thinking skills of students. In particular, the concept of ”heuristic thinking" is directly related to competencies that are highly valued in today's global labor market, such as problem analysis, creativity, rapid decision–making, and the creation of new solutions. This article will consider the main theoretical requirements, methodological approaches, as well as the practical importance of developing heuristic thinking in digital learning.

The main part of the concept of heuristic thinking and its meaning; heuristic thinking is the ability of a person to propose new, non–traditional solutions based on existing knowledge, experience and intuitive solutions. This type of thinking often manifests itself as creative thinking, the ability to apply special methods to solve a problem situation, to find a way that gives the optimal or most effective result from the prevailing circumstances.

Effective problem and data analysis: a student with heuristic thinking can quickly analyze the problem posed, highlight important information from unnecessary information.

An unconventional approach: a person with heuristic thinking tends to look for solutions that go beyond traditional or conventional methods, which may be unexpected but effective.

Expression of creative potential: heuristic thinking plays an important role in expanding creative perspectives, discovering new ideas, paving the way for unexpected flows.

The formation of students' heuristic thinking in the modern educational process, encouraging them to independent search, critical analysis and creativity is the key not only to academic success, but also to tremendous success in their future professional activities.

The possibilities of a digital educational environment: This is a modern, innovative approach involving the use of various interactive platforms, online applications, digital games and virtual laboratories in the educational process. The following will contribute to the development of heuristic thinking in the context of digital learning:

Online platforms: Various MOOC (massive open online courses), webinars and virtual conferences allow students to gain knowledge in various fields, as well as communicate with professionals from all over the world. In the process, the student expands the range of his knowledge, gets acquainted with new views.

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Interactive applications and games: strategy games, quests, quests, puzzles encourage out-of-the-box thinking. In the digital environment, these games form the ability to overcome different stages, solve a problem in different ways each time, and learn from mistakes.

Virtual laboratories: by performing various experiments in natural and technical sciences online, students can experiment and draw conclusions without fear of failure. This further enhances heuristic thinking, as various solutions are tested during these experiments.

Online collaboration: group projects, joint discussion of problems through video conferencing and chat platforms, and the exchange of various ideas stimulate heuristic thinking. Each student in the group can find new solutions by expressing their opinions, arguing with others.

Practical problems and solutions: Efforts to develop heuristic thinking in the context of digital learning may face some obstacles:

Lack of technical support: not all students always have sufficient technical means, the low speed of the Internet network may not give the expected result. This requires the improvement of modern information and communication infrastructure in educational institutions.

Digital literacy of teachers: When teachers are not trained in the use of digital tools, the effectiveness of the learning process decreases. Continuous professional development, exchange of experience, creation of methodological manuals serve to solve this problem.

Student passivity: Some students may not show enough interest in online assignments or creative work. In such cases, it will be necessary to use a playful approach, actively use evaluation and incentive mechanisms, and propose interesting projects.

Conclusion

The development of heuristic thinking in the context of digital learning is one of the most important priorities of modern education. Because this type of thinking encourages students to be independent and creative, to find new solutions in various difficult situations. And using different platforms, applications, gaming techniques, and interactive methods in a digital environment makes it easier to achieve this goal. At the same time, it is necessary to increase the number of problematic and creative tasks in the educational process, and to encourage work with various digital resources. It is important that teachers constantly improve the level of digital literacy, actively acting as mentors and assistants for students. Thus, digital learning not only improves traditional methods of knowledge transfer, but also creates a solid foundation for the formation and development of heuristic thinking. This is an important factor in ensuring the success of students not only in the educational process, but also in life.

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