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OF STUDENTS' TECHNICAL LITERACY AS A PEDAGOGICAL PROBLEM

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Аннотация: В данной статье анализируется развитие технической грамотности учащихся как актуальная педагогическая проблема современного образования. Рассматриваются понятие и компоненты технической грамотности, педагогические условия, влияющие на её формирование, а также интеграция теории и практики в рамках учебного предмета «Технология».

Ключевые слова: техническая грамотность, педагогическая проблема, предмет технологии, практическая деятельность, инженерное мышление, конструирование, робототехника, компетенция, проектный метод.

Abstract: This article analyzes the development of students' technical literacy as a pressing pedagogical issue in modern education. It explores the concept and components of technical literacy, the pedagogical conditions that influence its development, and the integration of theory and practice within the subject of technology.

Keywords: technical literacy, pedagogical problem, technology education, practical activity, engineering thinking, construction, robotics, competence, project-based learning.

The development of society, the digitalization of production processes, and the rapid introduction of new technologies into everyday life pose a challenge to the education system not only to arm students with theoretical

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knowledge, but also to educate them as individuals who can understand technical means, use them consciously and safely, analyze simple technical problems, and find practical solutions. From this point of view, technical literacy is an important component of modern educational outcomes.

The purpose of the article is to theoretically analyze the development of students' technical literacy as a pedagogical problem, clarify its components, and substantiate methodological approaches that can be used in educational practice.

1. The content and structural structure of the concept of technical literacy

Technical literacy is a set of knowledge, skills, and attitudes that are expressed in a person's ability to understand and use technical objects, materials, devices, and technological processes, perform practical tasks, and comply with safety regulations. This concept is broader than simply memorizing technical terms and includes transferring knowledge to a practical situation, identifying cause-and-effect relationships, and evaluating one's own performance.

Technical literacy can be conditionally divided into several interconnected components. The first part is the knowledge component. It includes knowledge of technical concepts, properties of materials, functions of tools, principles of operation of mechanisms, stages of technological processes and safety requirements. The second part is the practical-operational component. This component is manifested in such actions as measuring, marking, selecting tools, assembling parts, making simple models, testing the result and correcting errors.

2. Aspects of the development of technical literacy as a pedagogical problem

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The pedagogical problem implies the need to identify contradictions that arise between educational goals and existing teaching practices and eliminate them through scientifically based methods. A number of contradictions can also be observed in the development of students' technical literacy. On the one hand, society requires young people who think practically, understand technical innovations and can work independently. On the other hand, in some lessons, there is a possibility that students will remain as receivers of ready-made information or mechanical repeaters of instructions.

3. Unity of theory and practice in technology lessons

An important condition for the development of technical literacy in technology lessons is the inextricable connection of theoretical concepts with practical tasks. After the student receives information about the properties of materials or the principle of operation of a mechanism, he must apply this knowledge in the process of experimenting, observing, comparing, and manufacturing products. For example, when studying the hardness and elasticity of different materials, students compare samples, enter the results of observations into a table, and justify which material is preferable for a particular item.

Practical tasks are more effective when they are linked to a specific problem or need. For example, tasks such as 'Design a sturdy and inexpensive device to organize books', 'Create a simple mechanism to help lift a load', or 'Propose a model to save water' encourage students to seek technical solutions. In doing so, they define the task, set criteria, select materials and tools, build a model, test it, and troubleshoot.

4. Criteria for assessing technical literacy

Technical literacy should not be assessed solely on the beauty or functionality of the final product. The assessment process should also include the student's ability to understand the problem, make a plan, select materials

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and tools, follow the technological sequence, work safely, verify the result, and justify the conclusion.

The following criteria can be used for evaluation:

- 1) understanding technical concepts;
- 2) reading a drawing, diagram or instruction manual;
- 3) appropriate selection of tools and materials;
- 4) perform work sequentially and safely;
- 5) independent solution of a technical problem;
- 6) test the result and correct the defect;
- 7) explain the conclusion with evidence;
- 8) group collaboration and efficient use of resources.

Conclusion

The development of technical literacy of students is one of the important pedagogical problems of modern education. It involves not only the acquisition of technical knowledge by the student, but also the application of this knowledge in practical situations, analysis of problems, creation of models and products, observance of safety rules and evaluation of the results of their activities. Therefore, it is appropriate to consider technical literacy as a unity of components of knowledge, practical action, problem-solving, information work and responsibility.

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