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DEVELOPING THE INTELLECTUAL COMPETENCES OF PRIMARY STUDENTS USING STEAM TECHNOLOGY BASED ON THE DIDACTIC APPROACHES OF FARABI AND IBN SINO

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Abstract. : This article analyzes the issues of developing the intellectual potential of primary school students through the use of STEAM technology based on the didactic views of Abu Nasr Al-Farabi and Abu Ali Ibn Sina. The harmony between the educational ideas of thinkers and the content and essence of the modern STEAM approach is revealed. Also, the pedagogical possibilities, advantages and practical results of using STEAM technology in the primary education process are highlighted. The research results show that STEAM technology is an important tool in developing students' logical, critical and creative thinking skills.

Keywords: Al-Farabi, Ibn Sina, STEAM, didactics, intellectual potential, primary education, innovative technologies, competency-based approach.

Modernizing the education system in our country, educating the younger generation as comprehensively developed, competitive and innovatively thinking individuals is one of the priority areas of state policy. The primary education stage is of particular importance in this regard. Because it is during this period that students' intellectual potential, independent thinking and creative approach skills are formed. Today, STEAM technology, which is widely used in the world's education system, serves to connect students' theoretical knowledge with practical activities, ensure interdisciplinary integration, and develop competencies in solving problem situations.

The didactic views put forward by Eastern thinkers such as Al-Farabi and Ibn Sina also encourage students to think independently and acquire knowledge through observation and experimentation. In this regard, integrating their pedagogical legacy with STEAM technology is a pressing issue in modern education. The study employed methods including the analysis of scientific-pedagogical literature, comparative analysis, observation, generalization, and systematization. The pedagogical views of Al-Farabi and Ibn Sina were analyzed in comparison with the theoretical foundations of STEAM technology.

Abu Nasr Al-Farabi is one of the scholars who paid special attention to the issues of education and upbringing in the history of pedagogy. In his opinion, the main factor of human perfection is knowledge. Al-Farabi emphasizes the importance of logical thinking, observation and practical activity in the process of acquiring knowledge. Al-Farabi considered the main task of education to be to teach students to conduct independent observation, analyze events and draw conclusions.

Ibn Sina notes the need to take into account age and individual characteristics in the educational process. He puts forward the principle of teaching knowledge from simple to complex, from close concepts to abstract ones. The scientist also emphasizes the need for education to be practical in nature and organized in accordance with the interests and abilities of students.

STEAM technology is based on the integration of Science, Technology, Engineering, Arts, and Mathematics components. This approach allows students to connect theoretical knowledge with solving real-life problems. The commonalities between the views of Al-Farabi and Ibn Sina and STEAM technology are reflected in the following:

- linking knowledge with practical activities;

- learning based on observation and experience;
- developing independent thinking;
- supporting creativity and initiative;
- ensuring an individual approach;
- strengthening interdisciplinary connections.

Organizing mathematics lessons in primary grades based on the STEAM approach fosters students' intellectual development. For instance, when studying the topic of "Fractions," students gain a practical understanding of the concept by creating geometric shapes from colored paper and dividing them into equal parts. This process involves the integration of mathematics, technology, and art.

In the "Counting Faces" activity, students can be tasked with creating a model of a classroom or schoolyard. They will take measurements, calculate the area, and compare the results. This activity develops problem-solving and critical thinking skills.

STEAM projects also develop students' communicative competencies. Working in groups, they learn to justify their opinions, discuss them, and make decisions together.

1. STEAM technology increases the intellectual activity of primary school students.
2. Students' logical, critical, and creative thinking skills develop.
3. Interdisciplinary integration is ensured and the practical significance of knowledge increases.
4. Students' motivation for learning increases.
5. The didactic views of Al-Farabi and Ibn Sina enrich the methodological foundations of STEAM technology.

The results indicate that applying STEAM technology—while drawing upon the legacy of great thinkers—serves as an effective tool for developing the intellectual potential of students during primary education. The didactic ideas put forward by Al-Farabi and Ibn Sina align with the theoretical foundations of modern STEAM technology. Their educational perspectives are significant for their focus on fostering independent thinking, knowledge acquisition through observation and experimentation, and the development of creative activity among students. Utilizing STEAM technology to develop the intellectual potential of primary school students enhances educational effectiveness, shapes student competencies, and contributes to nurturing well-rounded individuals who meet the demands of modern society.

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