«ASEDU-2020: Advances in Science, Engineering and Digital Education»

«Digital engineering school on the way to digital production»

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Problem statement

• Today the development of the information-educational environment is becoming one of the engines for creating an innovative "Digital economy", the basis for high-quality training of qualified practice-oriented personnel for the introduction of "Digital production" in Russia.

• The integrated educational environment can be considered not only as a means of improving the quality of educational process, formalization and integration of various educational resources but as a full participant (subject) of the educational process.

• Today, the use of digital industrial technologies for maximum automation of various production processes and the creation of unmanned technologies is a key direction of the technological development of production facilities not only in Russia but also around the world, which determines their efficiency and competitiveness.

• It is also important that there is increasing interest in training a graduate who could be called "engineering educated" and/or "engineering literate", and therefore, a future highly qualified industrial specialist of the era of "Industry 4.0".
Problem statement

- Pre-specialized and specialized engineering classes students have no systematic intersubject connections, which prevents the formation of an independent mechanism for synthesizing solutions in various fields of knowledge.

- Unstable, disparate knowledge of basic school disciplines, aggravated by a lack of understanding of the specifics of modern technological and social processes, lead to the presence of a significant "distance" of the school from the engineering University.

Surveys show that teachers mostly choose between what they consider necessary and what students consider exciting. This may happen due to teachers' lack of topical experience in production/development.
Within the framework of the discussed educational project in Moscow school education, the project "Digital engineering school" is being formed, which is a system of modern convergent education of students, ensuring the formation of engineering competencies that are in demand in the digital economy sectors.

The main objectives of the Digital engineering school project are following:

• create a model of the educational space that allows students to develop innovative, technological and business competencies;

• ensure the implementation of project activities in schools as a mechanism for learning through action and developing skills;

• form approaches, organize training and professional development of teachers following the requirements of meta subject in the digital economy;

• increase the number of students engaged in various forms of engineering and technical creativity, taking part in scientific and technical and educational events;

• sign contracts/agreements with universities and industrial enterprises-industrial partners for the implementation of project training on their basis.
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The task of "maximum" is to teach that knowledge and skills that will remain relevant and will be useful not only for admission, but also in the process of further study at the university and, as a "minimum", at the initial stage of an engineering career. This specificity should be "red thread" through the entire course of additional education.
Conclusions

Implementation

The educational concept of "Digital engineering school" was tested and successfully implemented as part of additional engineering education for pre-specialized and specialized engineering classes in scientific and engineering circles "Software business systems", "Fundamentals of digital electronics" and "Internet of Things" in one of the secondary schools in Moscow.

• Work done:
  • Classes on programming, electronics, and automation along with public speaking and presentation basics – held
  • Teams - formed
  • Joint project - developed
  • Speeches, and presentations for participation in scientific and technical forums and conferences - prepared

• Results:
  • Awarded diplomas and prizes for 1st place and places in the first three winners
  • Positive students and parents feedback
Contacts

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