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## «Digital engineering school on the way to digital production»

E. E. Kovshov, S. M. Lesin and V. S. Kuvshinnikov



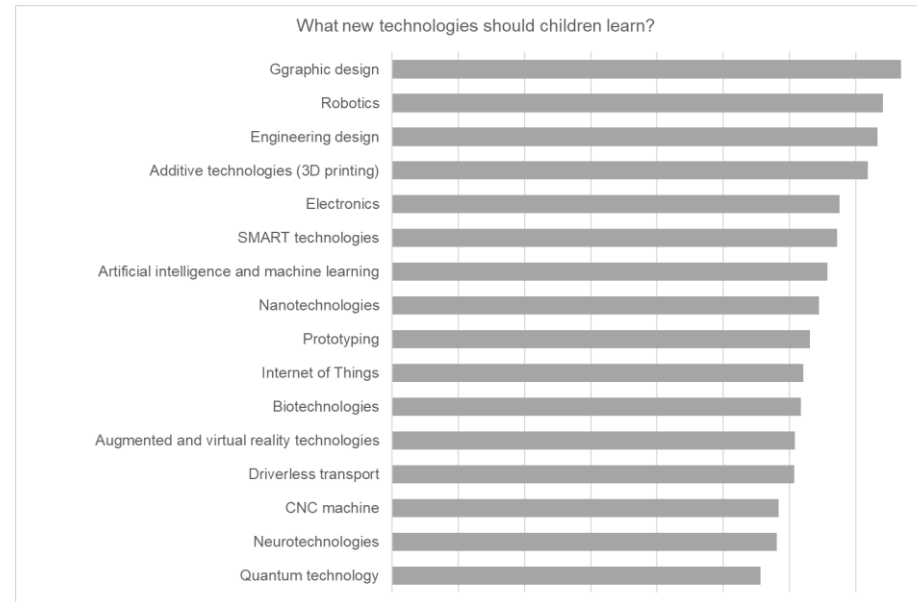
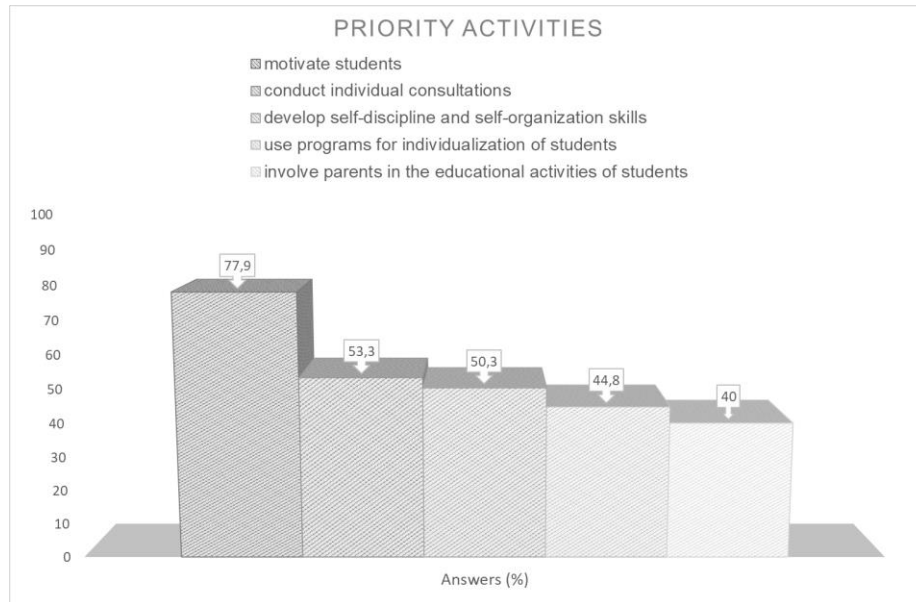
# Problem statement

- 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.



# Solution methods

- 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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  - sign **contracts/agreements with universities and industrial enterprises-industrial partners** for the implementation of project training on their basis.
- 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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