

MODERN SCIENCE AND EDUCATION IN THE FIELD OF CONSTRUCTION.

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Abstract: *The article discusses modern science and education in the field of construction. It is said that one of the main trends in the development of modern sciences and education in the field of construction is the use of new technologies and materials. In addition, modern design and modeling methods make it possible to more accurately predict the behavior of structures in various operating conditions.*

Keywords: *modern sciences, technologies, design, modeling, operation, construction.*

СОВРЕМЕННАЯ НАУКА И ОБРАЗОВАНИЕ В ОБЛАСТИ СТРОИТЕЛЬСТВА.

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Аннотация: *В статье рассматриваются современные науки и образование в сфере строительства. Рассказывается, что одной из главных тенденций развития современных наук и образования в сфере строительства является использование новых технологий и материалов.*

Кроме того, современные методы проектирования и моделирования позволяют более точно прогнозировать поведение конструкций в различных условиях эксплуатации.

Ключевые слова: *современные науки, технологии, проектирование, моделирование, эксплуатация, строительство.*

Construction is one of the key sectors of the economy, which plays an important role in the development of society and infrastructure. Modern science and education in the field of construction are becoming increasingly relevant, as they allow solving complex tasks related to the design, construction and operation of buildings and structures. In this article, we will look at the main trends and challenges faced by modern science and education in the field of construction.

One of the main trends in the development of modern science and education in the field of construction is the use of new technologies and materials. For example, 3D printing allows you to create complex structures with high precision, and the use of composite materials can improve the strength and durability of buildings. In addition, modern design and modeling methods make it possible to more accurately predict the behavior of structures in various operating conditions.

Another important trend is the development of ecological construction. Currently, more and more attention is being paid to the use of renewable energy sources, energy efficiency of buildings and reducing the negative impact on the environment. This requires new knowledge and skills from specialists in the field of construction.

One of the main problems faced by modern science and education in the field of construction is the lack of qualified specialists. The construction industry requires a large number of engineers, architects and other specialists who can work with new technologies and materials. In addition, many specialists do not have sufficient knowledge in the field of ecology and sustainable development.

Another problem is the lack of a single standard for the quality of education in the construction sector. Different countries use different teaching methods, which makes it difficult for experts from different countries to share their experience and knowledge.

Modern science and education in the field of construction face a number of challenges and problems, but also have great potential for development. The use of new technologies and materials, as well as the development of ecological construction, make it possible to solve complex tasks related to the design, construction and operation of buildings and structures. However, in order to achieve these goals, it is necessary to overcome the shortage of qualified specialists and create a single standard for the quality of education in the construction sector.

Problems and challenges in the field of construction and education

1. Lack of qualified specialists

One of the most significant challenges for the construction industry is the shortage of qualified specialists. Despite the development of educational programs in civil engineering universities, there is a clear shortage of professionals with the skills to work with new technologies, modern building materials and design methods. This shortage of specialists leads to a decrease in the quality of construction, an increase in project execution time, and an increase in the number of errors and inconsistencies during the construction process.

Scientific research shows that most of the problems faced by the construction industry, including delays in deadlines and budget overruns, are due precisely to the insufficient level of personnel qualifications. Moreover, technological changes require not only in-depth knowledge of engineering and architecture from specialists, but also the ability to work with high-tech tools and software for design, analysis and modeling (for example, finite element methods, BIM systems and others).

2. New technologies and materials

Modern construction is closely related to the use of new technologies and materials, which requires construction companies to adapt to the rapidly changing technical landscape. In particular, 3D printing technologies, robotization of construction, the use of new types of concrete and steel structures, as well as innovative thermal insulation and environmentally friendly materials open up new opportunities for the design and construction of buildings.

However, despite significant progress in these areas, many construction companies and educational institutions face difficulties in putting these technologies into practice. This is due to both the high initial capital investment and the lack of specialists capable of working with new technologies. It is important that educational institutions can train specialists who have the skills to work with innovative construction methods and modern building materials.

3. Ecological construction and sustainable development

One of the key challenges facing modern construction is the need to move towards environmentally sustainable construction. In the context of global environmental crises such as climate change and the depletion of natural resources, there is a growing demand for environmentally friendly and energy-efficient solutions. This includes the use of renewable and recycled materials, energy-efficient technologies and construction methods, and the design of buildings with minimal environmental impact.

Currently, the field of sustainable construction is actively developing in construction education, however, the introduction of such technologies requires not only training of specialists, but also appropriate changes in legislative and standard regulations. Existing educational programs in many countries do not yet fully integrate environmental standards and principles of sustainable development into courses, which limits the possibility of full-fledged training for modern ecological construction.

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