The Role of Digital Technology in Developing the Method of Teaching Engineer Builders

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Annotation: This article demonstrates that information technologies' global development trend helps to model the architecture of building's model or graphics as well as to build and use during its whole lifecycle. In turn, miss-ions in design and building encourages to develop information techno-logy even more. This, on the other hand, entails to learn the skills in this field effectively along with improvement.

Key words: Education, information technology, information model of the building, multimedia, method.

The assertion of automating the design was created in previous centuries fifties at the same time with the discovery of commerce computers. The software gives an opportunity to automate the pictures of the nature drawn by the apparat devices. The possibilities of graphic programs extended slowly, and it simplified the drawing process.

Nowadays, the effective development of the information technology in construction is visible. The system of the modern computer aided design is designed on creating computer model. Now, users not only create a drawing, but the electron copy of designed object. In the modern construct-ion practice designing the object, building and design are completed at the same time. [1,85] This demonstrates that it is necessary to intensive exchange the result of the work between research, design and construction organizations that are geographically far away from each other or uses unmatching computer platforms. Consists of creating and using a collection of interrela-ted design information and information model of the building. This data is used for forming documents of construction, anticipating operational featu-res, evaluating expenditures, planning construction works and governing the construction field.

Today, under the influence of digital technologies, communication tools, mobility and the growth of globalization, architectural design and construc-tion are facing significant changes. Group of participants form a contact for-mation of information modelling work during the construction or a design. As a result, building information model. As a result of server project it is possib-le to create high quality architecture and engineering solutions, as well as to create separate parts during the process of design and construction on the methodological basis of interaction. Design and construction are parallel works, BIM [2,323] creates new opportunities for design engineers and creators, as well as entails developing all experiences, learning new skills about digital technologies and teamworking in projects.

Without denying the expediency and necessity of personal work experience presented in the individual work of each student in his course, and in the future in the diploma project, students should have an idea about the collective network and the practical skills of working in this environment should be formed, because o After graduation, they will interact with experts working on a real project in this technological process.

The software and hardware complex that implements BIM technology is not an artificial intelligence system. It is an automated information system that always works with the participation of a person who performs the decision-making function in the design process. Such a system is aimed at performing complex design operations that can be algorithmized (execution and adjustment of drawings, design calculations, modeling of designed objects, including their visualization in the form of geometric models, selection of possible typical structural elements, components, materials, etc.). An important quality of the system is the ability to provide options in accordance with the specified design requirements that are complete enough for expert review and final correction.

At the current stage, teaching the professional activities of students of architecture and engineering universities remains in the traditional framework, and digital design issues have only an indirect impact. The first and main problem is that students, as a rule, master certain graphic software packages within the framework of existing subjects dedicated to computer technologies and independently build them into a technological chain while working on an educational project. A limited number of study hours and late learning of digital technologies do not allow them to develop qualitatively and fully. Currently, students who are graphic editors do not yet have full working skills, as a result of which not only the presentation of a volumetric spatial solution and project suffers, but also the student himself has a negative experience in working with digital technologies.

Software products with artificial intelligence elements have also been developed for architects. For example, Autodesk Project Discover is a generative design technology that automatically creates, evaluates, and generates a geometric model (constraining geometry based on given rules and conditions), a set of measurable goals, and multiple design options. includes in this case, the initial data for generative design can be imported from the BIM model. This technology can be used to choose the optimal floor plan of the building, the interior of the room, the pattern of the facade, finishing materials, etc.

After graduation, future professionals will not only have the skills to work in advanced software products, but also have the experience of working together in a team of experts, properly building interdisciplinary cooperation, and applying various methods of searching for design solutions. should take.[3,110] They should be able to combine the design ideas of the process participants into a single architectural and engineering solution, coordinate project information in a single source, demonstrate design decisions, and make adequate decisions.

Today, data arrays about regions, structures, materials and their properties, construction technologies are becoming a new asset and mainly due to their alternative value, that is, existing, already known information is being used for new purposes. and being used to implement new ideas. In such conditions, the state task of creating an infrastructure that ensures effective interaction of economic entities in the digital space has begun to be solved. The construction industry not only creates jobs and accounts for 6 percent of global GDP, but also forms the infrastructure necessary for business to thrive, and the impact of the construction industry will only grow over time. It is the introduction of digital technologies that is an important factor in the innovative development of the construction industry, which allows prospectors, architects, engineers, designers, customers and builders to become a truly united team and achieve success in the implementation of the most complex capital construction. Projects, but the transition to digital management is not only the transfer of information and processes to digital form, but also a change in models, approaches, ways of thinking (and "managers").
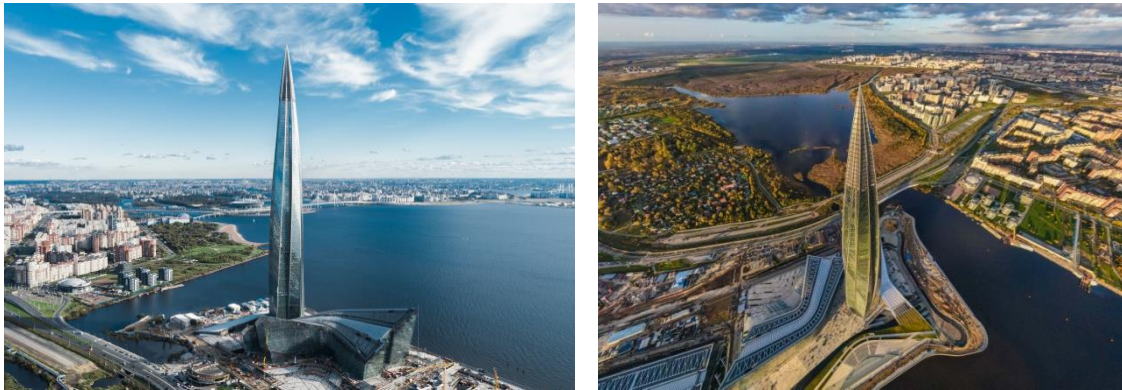
1- picture. Forms of natural oscillations of the complex

Progressive collapse is the most dangerous phenomenon of the destruction of construction structures, which can lead to the death of many people and large material losses. Note that the processes of deformation, destruction and collapse of building structures are non-linear processes, which are accompanied by large plastic deformations and movements, as well as dynamic loading effects during the failure of structural elements. It is recommended to solve such problems using methods of direct integration of dynamic equations in time.

Unique and responsible buildings and structures in seismically active areas, given the maximum estimated earthquake, taking into account accelerograms, the direct dynamic method and the possible manifestations of the effects of physical, geometric and structural nonlinearities (MRZ) it became mandatory to make calculations. The main criterion of such calculation-books is to prevent the collapse of the whole structure or its significant part ("progressive"). For the development of this direction, it is necessary to improve and create adequate mathematical nonlinear models of the behavior of building materials and structures under dynamic loading.

In conclusion, design, construction and digital technologies are combined into one common field of knowledge that should be comprehensively taught by modern architects and engineers. The time of narrow specializations is over, the need of the hour is highly qualified specialists who are capable of teamwork in a single digital environment with a new level of design and construction culture, and, first of all, high-level knowledge of computer technologies.

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