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The Main Problems of Engineering Training

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Annotation: *The construction industry and its further development in our country demonstrates a lack of competitive qualified engineers and builders in this field, which requires the development of fundamentally new approaches in the system of training personnel with the necessary higher education.*

This article deals with the problems of training construction professionals in higher education and improving the quality of education.

Keywords: *Higher education, construction, design, building, construction, specialist, student, employer, technology, civil engineer.*

The increase in construction work in our country over the last three years has led directly to a shortage of qualified engineers for modern building and installation work and an increased demand for them. This, in turn, has created a need to improve the training of civil engineers.After all, a professional involved in the design and construction of buildings and structures requires a great deal of responsibility and accountability in the construction of the facility. Interviews with construction and design managers revealed the need to restructure construction curricula on the basis of high technology and innovative approaches, and to train future employees in modern design and software, in particular BIM (Building Information Modelling).

In addition, graduates of construction education often have a low level of qualification, lack of practical skills, disconnection from existing practical activities, ignorance of modern advanced construction technologies, lack of theoretical and practical knowledge of graduates in a number of disciplines, including : price-estimate documentation at the builder; construction economics; computer programmes in design and building design; technical assessment of buildings and structures; computer technology in the design of building structures; construction technology; organisation and planning of construction; health and safety at work. The reasons for the above-mentioned problems lie primarily in the fact that during the country's transition to a market economy after independence, many state construction and design organisations were transferred to other organisational forms of ownership or closed down completely. Admission quotas and areas of study in higher education institutions in the field of construction education have been reduced. As a result of the sharp decline in construction, the departure of qualified specialists from the industry, young people's interest in the construction industry has declined, making it less attractive.Today, large-scale construction, creative work and the material and technical base created, as well as a

wide range of opportunities, are increasing the interest of young people in the construction industry. Comprehensive reforms are being carried out in higher education institutions in the field of education in the training of competitive, highly qualified specialists for market conditions.

The main aim of higher education in our country is to train highly qualified, competitive, highly educated specialists who correspond to modern requirements and contribute to the development of science, culture, economy and social sphere of the country. Improving the quality of education is at the heart of higher education reform.

This task is to ensure the strong integration of science, education and industry, the effective organisation of scientific and innovation activities, and the improvement of the quality of education through the development of international cooperation, in other words, in other words, it requires a radical qualitative change in the education and training system.

In order to build up an effective training system for civil engineers, it is advisable to first take the specifics of the industry into account. This is because, unlike the social sciences and humanities, the training system for civil engineers requires the study of some complex fields of exact sciences. This poses a number of challenges and problems for future engineers to master the field to perfection.

Addressing quality problems in higher education institutions will largely depend on the following four factors.

First and foremost, the logistics need to be improved to achieve the integration of the sector into production processes. Modern laboratory and information technology is very important in the design of engineering structures.

Furthermore, the integration of education with industry will be further accelerated by improved educational regulations, i.e. independent development of curricula and academic programmes based on customer suggestions.

Second - the creation of textbooks and manuals, e-textbooks, based on SES and curricula.Currently, the new generation of textbooks are publications that are fully compliant with the higher education reform and current state educational standards. In addition to many other factors, the quality of educational literature plays an important role in ensuring the quality of education. It should be noted that the creation of a new generation of textbooks is a matter of national importance. At the same time, the normative and legal basis of the new generation of educational literature is based on the "Concept of development of the higher education system of the Republic of Uzbekistan until 2030" with the use of foreign best practices in higher education, great attention is paid to the creation of a new generation of modern educational literature based on new technologies and modern achievements of science.[1].

Today, in addition to traditional printed textbooks, the role of modern, new-generation electronic textbooks is increasing: multimedia (very informative) e-textbooks, textbooks, lecture notes, electronic programmes, digests, databanks and others in improving the quality and effectiveness of education.

E-learning literature plays an important role in expanding the imagination of learners, developing and deepening their initial knowledge, providing additional information in the organization of distance learning, visualization, interactivity of materials facilitates learning and allows self-monitoring of studied materials. With the development of science and technology in continuing education, the content is changing rapidly, in-depth study is becoming more common, there are fewer electronic textbooks for general and special subjects than the paper version, the variety, convenience and accessibility of its preparation, storage and modification is causing an increase in the number of institutions.

The textbooks of the new generation should be written in accordance with the requirements of the time, based on the achievements in science and technology, as well as new pedagogical and scientific-methodological technologies, high-quality and effective coverage of visual aids. Basic phrases on each topic, including test assignments, intellectual training, should be focused on practical activities that are rich in illustrations, visual aids, and methodological support to help implement interactive teaching methods.

Thirdly, it is the knowledge, scientific capacity and professionalism of teachers. First and foremost, the teacher should be the course leader, not the one who teaches the student, but the one who teaches them to read, or rather, the one who encourages them to read. In this case, the teacher's pedagogical experience, the level of professionalism, level of knowledge, creativity, aspiration to innovation, the ability to communicate directly with all categories of students in the classroom, to direct students to independent thinking, creative research, the ability to use electronic and information technologies to increase the effectiveness of education, the ability to use interactive teaching methods, professional competence, culture, high ethical qualities, speech culture are also factors that affect the quality of education.

This means that since the teacher is the main factor influencing the quality of education in higher education, a high demand for the teacher should always be at the centre of the institution's attention.Today, there are many unresolved issues in this area, based on the content of the "Concept of Development of the Higher Education System of the Republic of Uzbekistan until 2030" [1]:

-the scientific potential of the country's universities is low; the average age of staff with degrees is around 50 years, and even higher in architecture and construction; -due to the low level of proficiency of professors and lecturers in foreign languages and information and communication technologies, their professional skills lag behind today's requirements;

- innovative activity, widespread implementation of research results into practice, commercialisation of scientific developments, involvement of talented young people in research work is insufficient, and strong integration of education, science and production is not ensured. If we focus on the above-mentioned issues, first of all, a higher education teacher should, in addition to lessons, be involved in science, be aware of new scientific developments in their field, and cooperate with consumers on scientific developments. Today, the annual workload of professors and lecturers is 800-900 hours and that of young teachers is 1000 hours. In such a situation, it is physically difficult for them to do meaningful research, keep abreast of the latest scientific developments, win grants, write articles, participate in international research projects and collaborate with manufacturing companies.

With such a high workload, and in some cases during the semester, teachers who take 5 or more subjects do not have the time to cope properly with students or masters and complete the workload qualitatively. In addition, for some teachers the unequal distribution of workload at the end of the semester, the size of the differences in distribution causes inconvenience to the teacher, which requires regulation of the distribution process.In Russia the workload is reduced to 900 hours per academic year, in Kazakhstan from 600 to 800 hours depending on rank and position, and in Ukraine the workload is reduced from 900 to 600 hours.

In the UK, weekly classroom hours are 3-4 hours. In France, teachers in higher education usually take 192 hours of practical classes or seminars or 128 hours of lectures per academic year. In Italy, the maximum teaching load of a professor is 120 hours per year, while in the USA and Canada the annual teaching load is around 140 hours[2].In foreign universities, professors are actively engaged in research, teaching and student work, with an average annual workload of no more than 300

hours. In order to reach the level of the world's leading universities, it is desirable that the workload of direct lecturers should be limited to 150 hours of lectures and a total workload of 400-450 hours.

Therefore, in order for university teachers to be able to carry out quality teaching, learning and research work and to train truly quality professionals, the following should be taken into account:

- the relatively even distribution of workload over the semesters contributes to improving the quality of the education provided and ensuring the efficiency of all teacher processes;
- revising the demand for teachers 'workloads (especially audiences), reducing the number of subjects it takes to no more than two per semester.

The fourth is the student's engagement, level of knowledge, degree of mastery of the speciality and the emergence of a need for it in society.First of all, it would be expedient to consider the student as a member of the university, an employee of the faculty. Because she or he is actively involved in the whole process.

The student has the ability to listen, think, self-evaluate (reflect), represent the essence of the speciality, master all subjects in the plan, apply theoretical knowledge in practical skills, present innovative educational technologies, be confident in learning and research, be able to think independently in difficult situations, make decisions, understand their duty and responsibility towards the homeland, value the interests of the majority above their own interests and be flexible in demand and need.

Individual learning, critical and creative thinking, systems analysis, entrepreneurial skills development, introduction of methods and technologies aimed at strengthening competencies in the learning process, orientation of the learning process towards the formation of practical skills, advanced pedagogical technologies based on international educational standards, curricula and widespread implementation of learning materials are important tasks. The consumer should not wait until the student has graduated, but should examine and verify the quality of his or her education at the community level and, if necessary, make appropriate recommendations to the university administration. It would be advisable for a graduate to report some shortcomings to university management after being hired.

Based on the above ideas and considerations, improving the quality of engineering education will ensure the competitiveness of future specialists in market conditions, increase their professional competence and the quality of their work. Therefore, the following measures should be taken to train professional builders with adequate knowledge, skills and abilities to adapt to changing market demands:

- wider use of innovative educational technologies and modern computer technology to ensure the formation of the student's personality as a highly qualified specialist;
- to develop students' ability to solve particular engineering problems based on the learning outcomes of different disciplines by introducing interdisciplinary integration coordination into the learning process;
- development of the university's facilities with private and public funds, based on the characteristics of the field of study;
- further improvement of the university's cooperation with line ministries and leading manufacturing enterprises.

In short, a lot of work is being done to train highly qualified civil engineers, but it is not enough. There is a lot of work to be done in this area. In order to achieve this goal, effective cooperation

with higher education institutions and staff, as well as public organizations, the main factor in ensuring future success is the deep acquisition of professional knowledge by young people, constant research, a high sense of belonging to the motherland.

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