International Journal of Multidiscipline

TLEP – International Journal of Multidiscipline
(Technology, Language, Education, and Psychology)
ISSN: 2488-9342 (Print) | 2488-9334 (Online)

Open Access | Peer-Reviewed | Monthly Publication

Important Directions Of Preparing Future Engineers For Professional Activity

Ibragimov Abdulla Abdurayimovich
Denov Institute of Entrepreneurship and Pedagogy

Abstract
This article analyzes current issues related to improving the professional training of future engineers. The author argues that in engineering education, along with theoretical knowledge, practical skills, innovative thinking, ethical responsibility, and educational directions based on international standards are important. Based on the IMRAD model, the article provides an in-depth coverage of methodological approaches, empirical results, and their impact on the education system.
Keywords: engineering education, professional training, innovation, ethical responsibility, practical skills, digital literacy.

Introduction

In today's globalization and digital economy, the need for engineering professions is growing sharply. Engineering requires not only technical knowledge, but also an integrated approach, problem solving, teamwork, and an understanding of environmental and social responsibility. Therefore, training young people studying in the field of engineering in accordance with the requirements of the times has become an urgent issue. This article aims to identify important areas as a solution to this problem and scientifically substantiate their impact.

Methodology

The following methods were used in the study:

1. Analytical-methodical approach - models of engineering education in Uzbekistan and abroad were compared.
2. Expert survey - questionnaires were received from 50 engineering teachers working in higher education institutions and 100 students.
3. Practical experience - project-based training, practical exercises, and startup training were organized with the participation of students.

Results

The results of the study showed that the following main areas play a decisive role in the training of future engineers:

Direction	Found useful by students (%)	Rated as a priority by teachers (%)
Practical training	82%	90%
Innovative projects and startups	74%	80%
Ethical standards and social responsibility	58%	72%
Digital technologies and programming	88%	86%
International standards and English language teaching	69%	78%

Experimental observations have shown that students who participated in project-based work, hackathons, and startup competitions achieved high results in independently expressing their opinions and proposing practical solutions to real problems.

Analysis and discussion

Based on the results of the study, it is considered necessary to introduce the following changes in engineering education:

1. Practice-oriented teaching system - combining theoretical knowledge with real production processes.
2. Innovative teaching methods - project-based learning, problem-based learning (PBL), developing thinking through group work.
3. Increasing digital literacy - extensive attention to teaching the basics of

programming, CAD/CAM systems, and artificial intelligence.
4. Ethical responsibility and environmental awareness - technological solutions must ensure human health and environmental safety.
5. Study of international experiences - academic mobility, international cooperation, teaching practice based on foreign literature.

Conclusion

Fundamental reforms are required in the engineering education system. These reforms should serve to improve the professional training of students not only in content, but also in methodology, based on modern standards. The proposed directions can serve as an effective tool in adapting engineering education in Uzbekistan to world standards.

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