

ORGANIZATION OF THE EDUCATIONAL PROCESS TO EFFECTIVELY INCREASE THE DESIGN COMPETENCE OF ENGINEERING STUDENTS

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Abstract. *This article examines the features of organizing online projects for engineering students. Article discusses selecting appropriate platforms and tools, developing realistic project briefs, and forming teams with assigned roles. The importance of these aspects for the successful learning and development of professional skills of students is also emphasized.*

Keywords: *online project, engineering industry, organization, platform, instrument, project work, command, distribution of roles, training, professional skills.*

In the modern world of technological progress, digitalization of education plays a key role in the training of qualified specialists, especially in the field of engineering. For Uzbek higher education students, this trend opens up new opportunities to improve their design and engineering skills, which is an important factor for a successful career in engineering.

Developing teamwork skills through online projects

Online projects are becoming an integral part of the education of students at Uzbek universities. Working in a team on real-life projects allows them to apply their acquired knowledge in practice, develop communication and collaboration skills, and gain experience in solving real-life professional problems. This helps students develop valuable competencies needed for a successful career in engineering.

Developing teamwork skills through online projects is an effective way to prepare students for today's job market demands. Online projects provide a unique opportunity for students to work in virtual teams, collaborating with colleagues from different regions and cultural backgrounds. This experience not only improves communication and collaboration skills, but also enriches students with cross-cultural experiences and promotes the development of a global mindset [1].

Online projects require students to be able to effectively organize their time, manage tasks, and communicate remotely. These skills are key in today's world where remote work and virtual teams are becoming increasingly common. Participation in online projects also helps students develop leadership skills, learn to make decisions under conditions of uncertainty, and effectively resolve conflicts.

Thanks to online projects, students have the opportunity to put their knowledge into practice by working on real-life problems and projects. This experience complements theoretical learning and helps students better understand how to apply their knowledge in real life. In addition, online projects contribute to the development of creativity and innovative thinking of students, since they are often faced with non-standard tasks and requirements [2].

Participation in online projects is an important part of a student's education as it helps them develop key skills needed for a successful career in the modern world. This experience not only increases their competitiveness in the labor market, but also contributes to personal growth and self-realization.

Organizing online projects for engineering students requires a specific approach that takes into account the characteristics of this field of knowledge and the requirements of real engineering projects. Here are some key features of organizing online projects for engineering students:

Selecting the right platform and tools: To successfully implement online engineering projects, it is necessary to select suitable platforms and tools that will allow students to effectively interact, share information and work on tasks. This may include specialized engineering software for modeling and design, as well as communication and collaboration tools such as Slack, Microsoft Teams or Google Workspace. Selecting the appropriate platform and tools for online engineering projects depends on the specific goals of the project, the type of engineering activity, and student preferences. Here are a few platforms and tools that can be helpful in organizing online projects for engineering students:

GitHub: Platform for code hosting and project collaboration. GitHub provides version control, issue management, and code reviews, making it an ideal tool for software development and project collaboration.

AutoCAD and SolidWorks: Programs for 3D modeling and design. They are widely used in the engineering industry and provide powerful tools for creating various designs and mechanisms.

MATLAB and Simulink: Software tools for mathematical modeling, data analysis and control system design. They allow students to carry out complex calculations and simulate various technical processes.

Trello and Asana: Services for managing projects and tasks. They help students organize their work, distribute tasks among project participants, and track progress.

Zoom and Microsoft Teams: Platforms for online communication and video conferencing. They allow students to communicate with each other and with teachers, discuss project tasks and hold meetings in real time.

Google Workspace: A set of tools for collaboration and information sharing. Google Docs, Google Sheets, and Google Drive can be used to create and collaborate on documents, spreadsheets, and other project materials.

The choice of specific platforms and tools should be based on the needs and requirements of the specific project, as well as the level of knowledge and experience of the students. It is also important to consider the accessibility and ease of use of these tools for all project participants to ensure effective collaboration and achievement of set goals [4].

Develop realistic design assignments: Online projects should simulate real-life engineering tasks and projects that students will encounter in their professional careers. This will help them develop not only technical skills, but also project management, communication and problem solving skills. Developing realistic project assignments for engineering students plays a key role in their learning and preparation for future careers. Here are a few steps that can help you create such assignments:

Defining Project Goals: First, you need to define the goals and expected results of the project. This could be the development of a new device, the creation of software, the design of engineering systems, etc.

Analysis of real problems and needs: Good design briefs should be based on real problems and needs of the industry. Conduct an analysis of current trends and challenges in your chosen field of engineering.

Defining Technical Requirements: Determine the technical parameters and requirements for the project. This may include device characteristics, software architecture, design features, etc.
Considering Innovative Solutions: Encourage students to use innovative approaches and technologies in their projects. This will help them develop creative thinking and find new ways to solve problems.

Breaking into Steps: Divide the project into specific steps and tasks so students can plan their work and track progress. This will also help them organize their work as a team and manage time effectively.

Provide access to resources: Provide students with the necessary resources and information to complete the project. This could include study materials, software, hardware, etc.

Feedback and Evaluation: Provide mechanisms for feedback and evaluation of project results. Teachers should regularly check students' progress, provide them with feedback and help them solve problems that arise.

Examples of realistic project assignments for engineering students may include designing an electronic device, creating a computer-aided control system, designing engineering structures, developing software to solve specific problems, etc. It is important that the assignments are challenging enough to arouse student interest and stimulate them to creative thinking and independent work [4].

Formation of teams and distribution of roles: To successfully work on online projects, students need to form teams and distribute roles within them. Each team member must have specific duties and responsibilities, and be willing to collaborate and interact with other project participants.

Instructor Support and Feedback: An important aspect of organizing online projects is providing support and feedback from instructors. Teachers should be available for consultation, help students resolve problems and provide quality feedback on their work.

Use of online resources and materials: Online resources and materials such as video lectures, e-books, interactive assignments, etc. can be provided to students to support the learning process. This will help them expand their knowledge and deepen their understanding of the topics they study.

Organizing online projects for engineering students requires careful planning, preparation and coordination on the part of faculty and school administrators, but if done correctly, it can be an effective tool for learning and developing professional skills for students.

Conclusion. In conclusion, organizing online projects for engineering students is an important aspect of modern education that effectively combines theoretical learning with practical experience and develops key professional skills. This study identified several key aspects that should be taken into account when organizing such projects.

Firstly, choosing the right platform and tools plays an important role in the successful implementation of projects. It is necessary to select those technologies that are most suitable for the specific goals and objectives of the project, and also take into account the level of knowledge and experience of students.

Secondly, developing realistic project assignments is key to allowing students to apply their knowledge into practice and develop professional skills. Project assignments should be based on real-life problems and challenges in the engineering industry and provide students with the opportunity to solve them using modern technologies and methods.

Finally, team building and role distribution play an important role in the successful implementation of projects. Effective teamwork allows students to exchange experiences, learn from each other's examples, and achieve better results in joint creativity.

Overall, organizing online projects for engineering students requires a comprehensive approach and careful planning, but if done correctly, it can be an effective tool for learning and developing professional skills of students.

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