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Project-Based Learning in Engineering Education: Advantages, Challenges, and Implementation Strategies

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Abstract

Traditional forms of instruction often provide engineering students with inert knowledge but fail to prepare them to solve authentic problems encountered in the workplace or in everyday life. Thus, new instructional methods should be developed and implemented to integrate knowledge with academic skills to equip engineering students with higher-order thinking skills and learning abilities. This is considered one of the most important challenges for today's higher education. Project-based learning is an instructional method where real-life problems are presented at the start of the instruction cycle and are used to provide unique circumstances and inspiration to the discovery that pursues. This paper discusses the advantages of implementing a project-based learning approach as an integral part of engineering education. It presents in detail the challenges encountered in applying project-based learning and the proposed method to adjust them. The study also aims to develop a set of recommendations for future practice in implementing project-based learning.

Keywords
Project-based learning, Engineering education, cooperating learning, and Instructional methods.