

Applying problem-based learning in a building information modeling course

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ABSTRACT

Building Information Modeling (BIM) provides many theoretical benefits to construction teams, but practical challenges and issues during implementation hinder companies' ability to realize its full value. Educational research suggests that problem-based learning may support students learning the necessary skills required to resolve the common issues in BIM-based construction projects. While the literature indicates value to problem-based learning for BIM education, the process for creating problem-based learning modules for BIM is less clear, which forces educators to make their best guess at how to create effective learning modules. In order to provide a consistent methodology that will enable educators to create effective BIM-related problem-based learning modules, this study proposes a structured process for developing learning modules. The proposed learning module development process involves several tasks aimed at strategically developing and validating problem statements to ensure that they represent the types of problems students are likely to face in their careers. Additionally, the process of developing an implementation strategy involves tasks intended to ensure that students are motivated to complete the learning module and instructors are prepared to assess the success of their students. To test the feasibility of this process, the authors created an example BIM learning modules related to common people- and process-related BIM problems. To validate the applicability of these modules and implementation strategy, the developed modules were presented to industry experts who confirmed that they were representative of the types of problems they faced and skills they believe are necessary to resolve the defined problems. This paper contributes to the engineering education body of knowledge by presenting a re-useable methodology for developing problem-based learning modules and creating a lesson plan for implementing the developed modules for BIM education.

KEYWORDS

Building Information Modeling (BIM); Industry practitioners; Problem-based learning

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