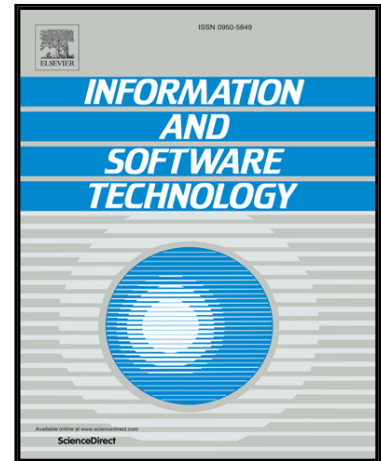


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A Systematic Mapping Study on Game-related Methods for Software Engineering Education

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Abstract. Context: *The use of games in software engineering education is not new. However, recent technologies have provided new opportunities for using games and their elements to enhance learning and student engagement.*

Objective: *The goal of this paper is twofold. First, we discuss how game-related methods have been used in the context of software engineering education by means of a systematic mapping study. Second, we investigate how these game-related methods support specific knowledge areas from software engineering. By achieving these goals, we aim not only to characterize the state of the art on the use of game-related methods on software engineering education, but also to identify gaps and opportunities for further research.* **Method:** *We carried out a systematic mapping study to identify primary studies which address the use, proposal or evaluation of games and their elements on software engineering education. We classified primary studies based on type of approaches, learning goals based on software engineering knowledge areas, and specific characteristics of each type of approach.* **Results:** *We identified 156 primary studies, published between 1974 and June 2016. Most primary studies describe the use of serious games (86) and game development (57) for software engineering education, while Gamification is the least explored method (10). Learning goals of these studies and their development of skills are mostly related to the knowledge areas of “Software Process”, “Software Design”, and “Professional Practices”* **Conclusions:** *The use of games in software engineering education is not new. However, there are some knowledge areas where the use of games can still be further explored. Gamification is a new trend and existing research in the field is quite preliminary. We also noted a lack of standardization both in the definition of learning goals and in the classification of game-related methods.*

Keywords. *Software engineering education; game-based learning; Gamification; game development based learning.*

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