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Titel des Beitrags: Consideration of personal factors of freshmen in mechanical engineering modeling and programming tasks in an E-learning environment

Abstract: Efficiency of E-learning system can be improved by considering students characteristics. Performance in software engineering modeling and programming tasks is influenced by different personal factors. The recent study examined different personal factors (motivation, cognitive abilities, mental workload, self-efficacy, and personality) and their impact on performance. Data from freshmen in mechanical engineering could be collected while the effort for students by use of online questionnaires was limited. Results indicated significant, but low correlations of several factors and performance. Furthermore, we show that different software engineering tasks, i.e. programming and modeling are associated with different personal factors. Cluster analysis revealed groups with differences in more intense respectively lower or moderate characteristics and their relationship to performance in programming and structure modeling in software engineering task. Clusters consisting of different grades of conscientiousness, cognitive and language abilities were associated with performance in programming task. In structure modeling tasks clusters according to motivation and mental workload factors showed performance differences. In conclusion E-learning systems and other education methods should support development of specific characteristics of students to improve their performance (e.g. motivation or mental workload).

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