

The Effects of Adding Non-Compulsory Exercises to an Online Learning Tool on Student Performance and Code Copying

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Abstract

This study analyzes the impact of adding a review exercises module to an online tool used in a software engineering degree program. The objective of the module is to promote students' self-learning effort to improve their performance. We also intend to determine if this new feature has any effect on the amount of code copies detected in lab sessions when using the same online tool. Two groups of students were compared quantitatively: the first group used the tool exclusively during lab sessions, whereas the second group had the option of employing the tool's new module to enhance their study. The tool allows us to collect interesting data related to the focus of this research: supplementary work completed voluntarily by students and the percentage of students copying others' code during compulsory lab sessions. The results show that the students in the second group achieved better academic results and copied less in lab sessions. In the second group, the students who invested more effort in doing revision exercises and copied less in lab sessions obtained better results; and, interestingly, the effort invested in completing review exercises did not seem to compensate for the learning effort avoided by copying others' exercises during lab sessions. The results show the advantages of a tool used with a dual orientation: compulsory and voluntary. Mandatory usage in lab sessions establishes some milestones that, eventually, act as an incentive fostering learning, while voluntary use reinforces students' perception of the tool's usefulness in terms of learning.