Adaptive tutorial exercises with STACK

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Abstract

When working on mathematical tasks, incorrect processing can occur for a variety of reasons. Students need differentiated feedback to correct their erroneous solutions. In the context of the following presentation, a possibility for the creation of an adaptive task control will be presented, which was developed at the Ruhr University Bochum.

In contrast to the regular options with STACK, this enables the students to work on the task in partial steps after an incorrect entry. These step-by-step tasks serve to enable the students to get to know the individual requirements that are necessary to complete the entire task and to initially only deal with them separately. The use of such adaptive tutorial tasks enables students to engage interactively with the feedback content. The intermediate steps take up knowledge and skills that have to be combined to solve the original task. By solving the individual steps and receiving error-specific feedback, the learners should be able to independently identify and correct their source of error. At the Ruhr-University Bochum, several adaptive tutorial STACK tasks were employed in a mathematical course on stochastics and statistics for engineering students. In a recent study we investigate the extent to which students of this course utilized the voluntary offering of tutorial STACK tasks and the effect of completing such tasks on their performance. Initial results from this investigation are presented. Additionally, exemplary tutorial STACK tasks are demonstrated, and didactic advantages of this task type are discussed in detail.