

Why Students Cannot Execute Their Own Global Plans

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Abstract

This study investigates undergraduate students' mathematical problem-solving processes in time restraint situations by analyzing their global plans for solving the problems. Students in undergraduate courses were asked to write global plans before they started to solve problems on class quizzes and exams. The execution behaviors of their global plans and their success or failure in producing correct solutions were explored by analyzing their solutions. Only student work that had clear and valid plans was analyzed to determine the success (or failure) of students' problem solving, and to identify hindering factors. Many categories of execution errors were identified, and how those errors affected students' problem-solving efforts was examined. Among the student responses that had valid global plans, fewer than 50% had successfully executed their plans. In addition to conceptual and procedural gaps, students' lack of prerequisite knowledge and skills, as well as their carelessness, had significant impact on their performances.



Kedar Nepal is an assistant professor of mathematics at Mercer University, Macon, Georgia. He received his MS and Ph.D. in mathematics from Oklahoma State University. His research area is primarily undergraduate mathematics education. More specifically, he is interested in students' mathematical thought processes, metacognition in learning mathematics, and professional development of college mathematics instructors. He has been teaching undergraduate mathematics and statistics courses for more than 10 years.

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