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Solving Ill-structured Problems: Student Behaviour in an Online Problem-solving Environment

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Abstract

The ability to solve complex, real-world problems has become essential in our increasingly globalized society. Environmental issues like climate change and deforestation, economic issues associated with global economies and linked markets, and social concerns like hunger and AIDS present major challenges that must be addressed. However, schoolteachers rarely provide the kinds of experiences that will help students learn to solve these kinds of complex ill-structured problems. Students, who are typically taught using well-structured algorithmic problems, often struggle when confronted with the multiple challenges of more complex problem-solving tasks. They tend to approach an ill-structured problem by searching for an algorithm that might work (the “plug-and-chug” method), or flounder along with little planning, direction or monitoring. In the present study we examined the problem-solving behaviours of eight student teams (2-3 students per team) as they worked to solve conceptually complex physics problems in an online problem-solving environment. Results suggest that students spent the majority of their time conceptualizing the nature of the problem, solving equations and typing in information, and reading from the computer screen. Little time was spent strategizing about how to solve the problem, monitoring progress, or reflecting on the viability of solutions.

Keywords

learning, problem-solving, real-world problems.

Biography



Dale Niederhauser is Associate Professor and Director of Undergraduate Education in School of Education at Iowa State University. Research interests include technology-using teacher development and learning from linked text. Formerly served as President of ISTE-SIGTE and Chair of AERA TACTL SIG.

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