

Using Subgoals to Improve Student Performance in CS1

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Subgoal labels are function-based instructional explanations that describe the problem-solving steps to the learner, highlighting the solution *process*. There is strong evidence that the use of subgoal labels within worked examples improves student learning in other STEM fields. Initial research shows that using subgoal labels within computer science improves student learning, but this has only been tested using a single programming concept (indefinite loops) with text-based programming languages. The proposers are currently expanding subgoal labels to the main programming concepts taught in an introductory programming course using an imperative programming language. In this BOF we seek to uncover tacit knowledge that programming instructors have in order to develop instructional materials that bridge the gap between students, who are CS novices, and instructors, who are CS experts, to improve learning for students who are under-prepared for or struggle in CS1. We will be seeking feedback on the selection of programming topics to be covered, the defined subgoals for those topics and the worked examples created for instructional purposes.

Keywords: subgoal labels; introductory programming;

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