Investigating the utility of peer tutoring for learning the skill of code tracing

Ronessa Dass
Carleton University, Ottawa, Ontario, Canada

Kasia Muldner
Carleton University, Ottawa, Ontario, Canada

Abstract

A fundamental skill needed to learn to program is code tracing, which involves simulating the steps a computer takes when executing a program to predict how it will behave and what output it. While code tracing helps students understand and write programs, students find this activity challenging. However, to date, little work exists on how to best support novice programmers in this activity. To address this gap, the high-level goal of our research is to investigates the utility of peer-tutoring for learning to trace programs. In our prior work, we conducted a preliminary case study exploring qualitative features of peer tutoring interactions. As the next step, we conducted an experimental study with two conditions: code tracing in a peer tutoring context vs. code-tracing alone. We present results from this study, focusing on quantitative results related to learning outcomes in each condition.

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