Examining the Effects of Enhanced Compilers on Student Productivity

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Programs written by novice programmers often contain errors. Previous work shows that students struggle with debugging when compiler error messages are inaccurate, misleading, or both. Loss of productivity caused by poor error messages has not been thoroughly explored in the literature.

A special type of compiler, known as enhanced compilers, may be more effective at addressing these issues. I will discuss the results of my thesis research on helping novice programmers with enhanced compilers. In particular, I compared the effectiveness of the standard javac compiler and an enhanced compiler known as "Decaf" in helping first-time Java programmers. The results show that Decaf is more beneficial with regards to the number and types of errors generated, leading to an increase in productivity and an decrease in frustrations for novice programmers and as well as building confidence in their programming ability.

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