UNIVERSITY of GUELPH

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SCHOOL OF COMPUTER SCIENCE

MSc Defence

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The Impact of Problem Assignment on Student Learning

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ABSTRACT:

Automated tutoring systems rely on tutoring problems to be both a teacher and a tester of a student's progress in learning a skill. It is crucial to understand each problem's effectiveness at teaching to facilitate improvements to the tutoring system either by removing or supplementing problems which are poor teachers. Unfortunately, there are no documented methods for identifying the effectiveness of an individual problem as a teacher.

This research explores the use of the amount of effort taken to master a skill as a metric for evaluating the effectiveness of problems. The number of problems students complete before mastering a skill is used as a metric for student effort. This effort is referred to as the student's learning length for a skill. The average learning length per problem were calculated from the KDD 2010 data set to explore the effect of problem assignment on the required effort. Predictors were built using transformed data from the competition, and relationship discovery methods were used on the trained predictors to discover which data was relevant to making predictions about student success. A student's learning length for a skill was shown to be a relevant metric which correlates with existing success metrics in the KDD 2010 data set. Problem assignment was not shown to have an effect on the effort needed to learn a skill.

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