Work In Progress - Intrinsic Motivation as a Predictor of Success in Computer Science

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Abstract – Student success and retention are major concerns for most colleges. Efforts designed to help struggling students include expanding faculty office hours, sponsoring review sessions, hiring student lab instructors, and providing tutoring labs where students may go for help. These mechanisms are described as reactive and are intended to help a student already in academic trouble. The on-going goal of this study is to identify proactive mechanisms, allowing a student’s support staff to identify risk factors and intervene with support strategies before the student begins to fail. Students’ levels of intrinsic and extrinsic motivation are being studied to determine if these measures can be a more accurate predictor of student success and persistence. Secondly, this study is also attempting to determine if extrinsically motivated students can become more intrinsically motivated through innovative classroom activities and delivery methods. This WIP presents the status of this research study.

Index Terms – Motivation, Predictors, Retention, Student Success

OVERVIEW OF THE STUDY

The retention of students in college programs is a frequent focus of attention for many reasons. Diamond [3] discusses the impact of student success on retention and states that the early years of study, especially the first year of college, are critical for student success. For a student, a failure in the first year of study can be emotionally and financially devastating. The first year is academically rigorous, and the first year away from home often presents a difficult transition for many students.

Due to low retention and graduation numbers in the CS discipline, several studies have attempted to identify risk factors including computer background and experiences [4]; student potential [10], and high school GPA [1], [6], [9]. Student background and experience have been shown to be a factor within the first year population at the Rochester Institute of Technology (RIT); a special course track for these students has addressed some of the attrition issues with this population of students. However, weak academic results and an inability to persist are often not associated with a student’s level of intelligence, academic potential or high school preparation; this is believed to be the case at RIT. Typical students were very successful in high school and had SAT scores above 1200. Many enter with advanced math skills (Advanced Placement, precalculus or calculus) and programming experience. It is acknowledged that some students leave the Institute because of a lack of maturity and inability to focus on their studies; however, academic potential is seldom cited as the reason students don’t succeed in the major.

Numerous studies and research not specific to the CS discipline have focused on motivation and the relationship to academic performance and persistence [2], [5], [7], [11], [12]. Extrinsically motivated individuals are motivated to do something because “it leads to a separable outcome” (Ryan & Deci, 2000, p. 55). The outcome is often some type of reward or recognition. Intrinsically motivated individuals are motivated to do something because “it is inherently interesting or enjoyable” [8, p. 55]. Intrinsically motivated individuals feel a motivation “from within” because of interest in the task at hand. Extensive work by Ryan and Deci has shown that intrinsically motivated learners are more successful and tend to be more persistent.

This study is examining CS students their entire first year to determine if the level of motivation can be a good predictor of students at-risk so that preventative measures can be implemented before students start to fail. A second effort of this study will be to look closely at motivators used in a typical classroom to determine if extrinsically motivated students can become more intrinsically motivated through the use of innovative classroom activities and instructional delivery methods.

This conference presentation will present the status of this study.

REFERENCES


