

Research paper discussion:

Title: Students' initial course motivation and their achievement and retention in college CS1 courses.

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Summary:

This paper investigates the relationship between students' entering motivation and their course achievement in introductory CS1 courses. The researchers examined goal orientation, future time perspective, mindsets, self-efficacy, and their impact on students' grades and retention. The study involved 274 students from four different CS1 courses at a large Midwestern state university.

The findings reveal that students' positive motivation and goal orientations contribute to their success in CS1 courses, with learning approach goal orientation being a key predictor of academic achievement. However, the relationship between motivation and grades varied across different courses, highlighting the complexity of motivating students in diverse educational settings. The study provides valuable insights for educators and policymakers looking to improve students' motivation and performance in introductory CS courses.

Familiarity:

Moderate. I have read a few research papers in this area.

Strengths:

1. **Comprehensive Investigation:** The paper provides a comprehensive examination of students' entering motivation, encompassing various factors such as goal orientation, future time perspective, mindsets, and self-efficacy. This approach allows for a more nuanced understanding of the relationship between motivation and academic outcomes.
2. **Real-World Relevance:** The study focuses on introductory CS1 courses, which are critical entry points for students pursuing computer science and related disciplines. Understanding the impact of motivation on students' success in these courses is highly relevant for educators and policymakers seeking to improve retention and performance in STEM fields. It also includes a relatively large and diverse sample of 274 students from four different CS1 courses, providing insights into how motivation varies across different educational contexts and student majors.
3. **Clear Methodology:** The paper employs well-established and validated instruments to measure students' motivation, such as the goal orientation and mindset scales. This enhances the reliability and credibility of the study's findings. They have used appropriate statistical methods, such as multiple regression and logistic regression, to examine the

relationships between motivation and academic outcomes which strengthen validity and precise inferences.

Weaknesses:

1. **Limited Course Retention Data:** The number of students who withdrew from the course was relatively low, which might affect the reliability of the predictions related to course withdrawal.
2. **Missing Long-term Impact:** The paper focuses on students' entering motivation and its immediate effects on academic outcomes. It could benefit from exploring the long-term impact of motivation on students' academic and career trajectories.
3. **Limited Generalizability:** The study was conducted at a single university, which may limit its generalizability to other educational settings. The study focused on introductory CS1 courses, which may not fully represent the motivational patterns and academic outcomes in other disciplines or higher-level CS courses.

Motivation/Research Questions:

The purpose of this study is to look at how students' initial motivation in beginning CS1 courses connects to their course accomplishment and retention. The study topics investigate the influence of goal orientation, future time perspective, mindsets, and self-efficacy in predicting students' grades and course withdrawal.

Prior & Related Work:

The paper builds upon prior research that highlights the importance of students' motivation and its impact on academic achievement in introductory CS courses. It cites various research that investigated goal orientations, mindsets, and self-efficacy in educational settings.

Scientific Approach:

The study employed a quantitative research design, utilizing surveys and regression analyses to explore the relationships between motivational factors and academic outcomes.

Impact:

This paper contributes new insights into the relationship between students' entering motivation and their course achievement in introductory CS1 courses. The findings highlight the critical role of learning approach goal orientation and suggest the need for tailored motivational strategies to improve student outcomes. Additionally, it extends prior research by examining mindsets and self-efficacy in the context of CS1 courses.

Presentation/Grammar:

The paper is well-organized and presents information clearly. However, there are a few instances of technical jargon that might be challenging for non-experts.

Audience:

The paper is most useful for educators, researchers, and policymakers interested in understanding the factors influencing students' academic achievement in introductory CS1 courses. It provides valuable insights for instructors aiming to enhance students' motivation and improve course retention.

Overall:

Overall, this paper offers valuable contributions to the field of educational psychology and CS education. Its comprehensive approach and clear methodology add to the credibility of the findings. Despite some limitations, the study's insights into motivational factors and academic outcomes make it a valuable read for anyone interested in understanding and enhancing students' performance in introductory CS courses.