PROJECT SUMMARY

OVERVIEW

Course failure rates, already a major challenge facing high school leaders, were greatly exacerbated by the COVID-19 pandemic. When students fail a course, one of the options available to school administrators is enrollment in online credit recovery (OCR). For school leaders, providing an OCR pathway is attractive because online courses are more flexible and potentially cost effective compared to traditional face-to-face (F2F) courses. However, the data on student performance in OCR compared to F2F credit recovery is mixed. Correlational studies suggest OCR leads to higher graduation rates, particularly for minoritized students, but lower STEM test scores, postsecondary enrollment, and earnings compared to students in F2F credit recovery. Conversely, studies that randomly assign students to F2F/OCR Algebra I find few differences in course completion, learning, and downstream outcomes when variables like student to teacher ratios and classroom seat time are kept constant. These equivocal findings between correlational and causal studies offer unclear guidelines for evidence-based OCR policy. Thus, researchers can provide little guidance for education policies around the design and deployment of OCR courses. In general, we know little about how students are differentially enrolled in OCR/F2F courses, how these courses are configured/administered, and student engagement strategies.

In order to provide the groundwork to understand how OCR courses can benefit which students under what conditions, this project will develop frameworks for measuring school-based STEM policy through a case study of OCR in 14 high schools in a large, diverse school district followed by assessing nationwide trends using a nationally representative survey. The project has four aims: (1) Document and analyze the approaches to enrollment, administration, engagement, and cultural relevance in STEM OCR compared to F2F STEM courses, exploring whether these structures relate to STEM learning outcomes particularly for minoritized students, through in-depth comparative case studies; (2) Develop, pilot, and validate a survey instrument for measuring approaches to OCR structures to inform future research examining the causal impact of OCR policy on STEM learning outcomes; (3) Discover broader trends in OCR policy through a nationally representative survey of school leaders; (4) As part of the project's educational component, the PI will develop a mixed methods STEM policy analysis framework, followed by designing and offering a graduate course and example data set on how to conduct research on school-based STEM policy.

INTELLECTUAL MERIT

With expert input from an advisory board of educational leaders, the PI will extend the research literature by creating frameworks for understanding OCR school policies and implementation that can be adapted to other school-level STEM policy areas. The development of STEM policy frameworks informed by mixed methods analysis will be applicable to a broad range of school-based policy questions, facilitating novel theoretical connections between organizational and learning theories. In addition, the focus on minoritized students will open new avenues of research to understand how to broaden STEM participation by capitalizing on the intersection of STEM, online learning, and cultural responsiveness.

BROADER IMPACTS

The project will fulfill a national need for understanding how schools use OCR for STEM courses, a necessary prerequisite for building an evidence base on how students can efficiently and effectively recover STEM course credits lost due to course failure. Findings will increase the probability of positive outcomes of minoritized students often assigned to OCR by responding to students' needs and the advice and insights of practitioners. Ultimately, the project is designed to enrich educational policy by engaging in an evidence-based dialogue on the critical issue of unfinished STEM learning of minoritized students who fail courses. The findings are potentially transformative for minoritized students who are most likely to need efficient, effective credit recovery in order to successfully engage in STEM content and, consequently, participate in building an inclusive STEM workforce.