

Project Lead the Way: Analysis of Statewide Student Outcomes

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Abstract

Project Lead the Way (PLTW) is a STEM education programming provider implementing hands-on, project-based engineering or biomedical science curricula in U.S. secondary schools. The goal of PLTW is to increase student interest and knowledge in these and other STEM majors/careers. A large, longitudinal dataset of students who graduated from an Indiana high school in 2010 was created. Preliminary analysis of the dataset found that students who took PLTW engineering courses were significantly more likely to select a STEM major, select an engineering major in college, and persist from the first to the second year of college. Additionally, taking three or more PLTW classes increased the likelihood of selecting a STEM major, selecting an engineering major in college, and persisting from the first to the second year of college. We also examined factors of PLTW students that made them more likely to major in a STEM field, enroll in a 4-year institution, and persist from their first to their second year of college. We found that being male, having a higher math ISTEP+ score, and receiving an honors diploma increased a PLTW students' likelihood of majoring in STEM. PLTW students who were not eligible for free and reduced lunch, who were part of an underrepresented minority, who received an honors diploma, and who had higher ELA ISTEP+ scores were more likely to attend a 4-year institution. PLTW students who received an honors diploma and were not eligible for free and reduced lunch are more likely to persist from freshman to sophomore year. These findings elucidate interesting and important patterns in the data, highlighting a need for "scale-up research" to further determine the potential factors influencing student access and success. As such, the broad objective of our future research is to produce a multi-scalar representation of PLTW outcomes in Indiana, which can then be used as a modality for understanding the outcomes, impacts, and factors influencing PLTW success nationwide. More specifically, the project will identify PLTW outcomes in rural, suburban, and urban schools and their effects on the everyday experience of students in STEM programs at IUPUI. This multi-scalar approach will explore the broader sociocultural configuration of Indiana high schools, the extent to which those schools evidence PLTW implementation fidelity, and the longitudinal impact of PLTW curriculum on current STEM majors at IUPUI.