



Analyzing Learner Engagement and Performance Trends in Online Professional Learning for Educators

Dr. Belinda Gimbert¹, Dr. Dean Cristol²

The Ohio State University, USA

Abstract

The growing prevalence of online teaching has led to a significant increase in the use of big data and learning analytics. These tools capture digital traces that reflect participants' engagement, performance, and learning experiences. Researchers are leveraging learning analytics data to extract features and build models of the learning process. Specifically, they focus on measuring engagement by quantifying behavioral indicators such as frequency of interaction and time-on-task. This study centers on the Professional Development Institute of a Midwestern U.S. state's Department of Education, which supports individuals pursuing a teaching license through the Alternative Resident Educator pathway. The institute offers three online content modules available 24/7, designed to equip participants with the essential knowledge and skills for classroom success. Each module includes lessons and assessments that measure individual content mastery. The research question guiding this study investigates how various performance patterns emerge as educators engage with required activities and how these patterns impact knowledge and skill acquisition in a self-directed elearning environment. The study assumes that participants exhibit diverse learning strategies and performance patterns shaped by the nature of the elearning content. To examine these dynamics, the study draws on the expectancy-value theory developed by Wigfield and Eccles (2000), traditionally applied in face-to-face learning settings. Here, the same motivational principles are applied to better understand the relationship between motivation and engagement in an online learning environment. Using data visualization techniques, the researchers identified five distinct engagement patterns and uncovered a range of performance strategies employed by participants in the e-learning context.

Keywords: Student Learning and Teaching Processes, Educational Policies and Strategies, Digital Traces, Learning Patterns, Expectancy-Value Theory