

## Correlation Analysis to Quantify Learning Outcomes for Different Teaching Pedagogies

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**Abstract :** A fundamental goal of education includes preparing students to become a part of the global workforce by making beneficial contributions to society. In this paper, we analyze student performance for multiple courses that involve different teaching pedagogies: a cooperative learning technique and an inquiry-based learning strategy. Student performance includes student engagement, grades, and attendance records. We perform this study in the Computer Science department for online and in-person courses for 450 students. We will perform correlation analysis to study the relationship between student scores and other parameters such as gender, mode of learning. We use natural language processing and machine learning to analyze student feedback data and performance data. We assess the learning outcomes of two teaching pedagogies for undergraduate and graduate courses to showcase the impact of pedagogical adoption and learning outcome as determinants of academic achievement. Early findings suggest that when using the specified pedagogies, students become experts on their topics and illustrate enhanced engagement with peers.

**Keywords :** bag-of-words, cooperative learning, education, inquiry-based learning, in-person learning, natural language processing, online learning, sentiment analysis, teaching pedagogy

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