Evaluating Learning Outcomes in the Implementation of Flipped Teaching Using Data Envelopment Analysis

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Abstract : This study integrated various teaching factors -based on the idea of a flipped classroom- in a financial management course. The study's aim was to establish an effective teaching implementation strategy and evaluation mechanism with respect to learning outcomes, which can serve as a reference for the future modification of teaching methods. This study implemented a teaching method in five stages and estimated the learning efficiencies of 22 students (in the teaching scenario and over two semesters). Subsequently, data envelopment analysis (DEA) was used to compare, for each student, between the learning efficiencies before and after participation in the flipped classroom -in the first and second semesters, respectively- to identify the crucial external factors influencing learning efficiency. According to the results, the average overall student learning efficiency increased from 0.901 in the first semester to 0.967 in the second semester, which demonstrate that the flipped classroom approach can improve teaching effectiveness and learning outcomes. The results also revealed a difference in learning efficiency between male and female students.

Keywords : data envelopment analysis, flipped classroom, learning outcome, teaching and learning

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