

# **Lecture vs. Lecture-less: A META Analysis from Journal of Economic Education (1969 to 2015)**

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## **ABSTRACT**

*The objective of this paper is to provide empirical evidence on the relative effectiveness of lecture-less against traditional lecture style teaching in economics. The primary goal of this study is to determine to what degree lecture-less experiments contribute to the learning of economics captured by test score performance. Can students learn economics with “lecture-less” better than traditional “chalk-and-talk lecture?” The META analysis demonstrates that the average effect size in comparing lecture-less (experiment group) vs. traditional lecture (control group) instruction does not exceed 0.2 (small effect). That is to say, the main effects of lecture-less format in promoting greater economic understanding are not significant.*

## **INTRODUCTION**

An adequate supply of well-trained economists is essential for the interests of all nations. In addition, during the past century, higher education in the U.S. has become a mass process. Reports reveal that financially the reliance on large classes as the major teaching device is an important cost reduction tool to the universities. As a result, traditional lecture classes have become larger to a point where there can be no interaction between students and the professor. This means that students become an entirely passive subjects, rather than active learners. Siegfried et al (1991) argue that active learning may be particularly important in economic education where the goal is to help students to “think like economists.”

A growing body of literature shows that economic illiteracy has been a continuing concern. Economic illiteracy and the absence of adequate economics instruction receive heavy emphasis in the literature. Many authors questioned whether the choices that instructors make about how to teach introductory economics make a difference in student learning.

The paper unfolds in four main sections. The following sections of the paper provide the problem statement, motivation, and objective of the current paper; available literature on alternative teaching pedagogies in economics; a synthesis of available evidence and a META analysis; and concluding remarks.

## **PROBLEM STATEMENT**

It is argued that an important issue in economics education is that the predominant method of teaching style is “chalk-and-talk” or “one-way talk” traditional lecture method. Several survey attempts were sought to determine how undergraduate economics is being taught, and concluded that dominant teaching method used by economists is traditional lecture. Benzing and Christ (1997) state that while lecture style teaching still dominate the classroom; there is also

evidence of use of multimedia technology and other student participatory techniques. Researchers argue that teaching methods, still dominated by lecture style presentations in economics courses, have changed very little (Becker and Watts, 1998 and 2001; Watts and Schaur, 2011). Watts and Schaur further argue that it is also possible younger economic faculty cohorts drive some of the changes by responding to the call for more use of student-centered pedagogies. In addition, Hawtrey (2007) argues that the trend toward experiential learning stems from changing student expectations in the classroom. Hawtrey states that students are rarely satisfied with a one-size fits-all traditional classroom experience, and are looking for an enhanced learning experience. Hawtrey describes experiential learning as the incorporation of active, participatory learning opportunities in the class. Similarly, Luccasen et al (2011) argue that today's college students expect their instructors to be entertaining – a skill disregarded in graduate economics curricula, leaving it for instructors to learn on the job.

## **TEACHING PEDAGOGIES IN ECONOMICS**

Economists have studied a broad range of pedagogical practices. There have been a great deal of experimentation, and a wide range of alternative teaching approaches exists. These methods vary widely using many of the following techniques and tools, which are not all inclusive:

1. online assignments;
2. classroom experiments;
3. cooperative learning;
4. service learning;
5. peer instruction;
6. writing practice;
7. economic research;
8. classroom discussion and debate;
9. algebra and graphs;
10. newspaper articles;
11. case studies;
12. television;
13. computer assisted instruction;
14. clickers and podcasts;
15. social media such as blogs, twitter, Instagram and Facebook;
16. mind maps;
17. sports;
18. music;
19. literature, drama, and motion picture;
20. humor;
21. art;
22. animated cartoons; and
23. acceptance speeches by economics Nobel Laureates.

In economics, lecture-less learning occurs in a great variety of forms. For instance, Maier et al (2012) provide a pedagogic portal that brings together in a single location for various learning-centered teaching practices in economics courses, titled “Starting Point.” Maier et al

hope that greater use of such teaching practices will lead to noticeable improvements in student learning in economics.

It is evident that economists have shown a considerable amount of interest in the problem of the teaching of economics. Attempts to improve economics teaching are not new. Many studies have emphasized economic education and the need for doing something about it. As new methods of economics teaching techniques have appeared, there also have been systematic reviews of the literature on the subject. For instance, Lumsden (1967), and Colander and McGoldrick (2009) provide a review of new pedagogical practices in teaching of economics. In addition, many articles on problems in innovations in economics instruction appear regularly in most mainstream economics journals. Several journals have occasional special issues devoted to economics teaching. In addition, innovative presentations of papers on the teaching of economics in this field take place at Journal of Economic Education and American Economic Association conference sessions.

Researchers argue that how students learn economics is an empirical question. What is the best way to capture the impact of lecture-less experiments on the learning of economics? Most frequently, researchers have conducted controlled tests using a multiple linear regression model to analyze the relative effectiveness of any of the above listed experiential learning style against traditional lecture. Many attempts have been made to measure the impact of lecture-less experiments on the learning of economics. In order to draw a detailed description, the available literature is classified in chronological order by decades, from 1970 through 2000 in a separate research paper. In this current paper, I have scrutinized the available empirical evidence with a view to establishing some general conclusions on the subject. The primary objective of this current paper is to answer the question of whether students are capable of grasping principles of economics without any lectures at all.

Although it is claimed that “lecture-less” teaching facilitates active learning, however, the empirical evidence on whether it improves student learning is mixed. The effect of classroom experiments on student learning has been widely investigated, but the results have been inconclusive, and often contradictory.

Saunders and Welsh (1990) report that traditional lectures are often less effective in promoting students’ independent thought and developing students’ critical thinking skills. Still, some other researchers argue that may be students feel more comfortable with the traditional lecture style where the instructor feeds them the information that they needed to know for the test. Some further state that the lecture method’s comparative advantages lie in transmitting information. In questioning why lectures prevail, Goffe and Kauper (2014) state that the most common explanation of lecture's efficacy is the ability to control the delivery and coverage of content.

## **A META ANALYSIS OF LECTURE-LESS vs. LECTURE**

Of course, it is not proper to recommend an intervention or a treatment based on a single study. Instead, it is advisable to examine the cumulative effect of numerous studies. How to we learn about the cumulative effects? The primary goal of META analysis is accumulating knowledge. Some researchers call META analysis as “*an observational study of the evidence*” or the common truth behind all conceptually similar studies.

Both Hedges and Olkin (1985), and Rosenthal (1985) state that META analysis is the rubric used to describe quantitative methods for combining evidence across studies. In

agreement, Glass (1981) reports that the approach to research integration referred to as META analysis is nothing more than the attitude of data analysis applied to quantitative summaries of individual experiments. In other words, META analysis is a quantitative method for organizing and extracting information from large masses of data that are nearly incomprehensible by other means.

Hakim (1987) argues that a review of the literature and existing studies is commonly part of the ground-clearing and preparatory work undertaken in the initial stages of empirical research. Converting a comprehensive research review into a research project such as this study involves applying a META analysis to all known previous studies on a particular issue. In this case, the META analysis involves “conducting research about previous research” devoted to a specific topic.

Here, it is important to note that published articles using META analysis do not follow identical procedures. The META analysis in this paper follows a number of steps recommended by Gliner and Morgan (2000). The scope of this study is restricted to literature review from the JEE between 1969 through 2015. The JEE has regularly published research articles on various aspects of economic education. After carefully screening each journal article, the results of a META analysis that integrates research on lecture-less undergraduate economics education from the JEE since its inception (Vol. 1, Fall 1969) to date are reported. The exhaustive review of the literature reveals that this study is the first attempt to summarize the existing literature and conduct a META analysis from the JEE. The JEE seems reasonable to investigate for several reasons: The JEE is one of the major journals addressing the education of economics. The JEE frequently offer original articles on innovative teaching techniques in economics. Indeed, the very first issue of the JEE states that its objective is to promote the teaching and learning of economics in by sharing knowledge of economics education.

Glass et al (1981), and Gliner and Morgan (2000) argue that an effect size is defined as the strength of the relationship between the independent variable and the dependent variable. For example, if one is comparing an experimental group (lecture-less) to a control group (lecture), the measure of experimental effect size is the mean difference between experimental and control groups divided by pooled within-group standard deviation:

$$\hat{\Delta} = (\bar{X}_E - \bar{X}_C) / S_p$$

$$S_p^2 = [(n_E - 1)S_E^2 + (n_C - 1)S_C^2] / (n_E + n_C - 2)$$

How should the effect size ( $\Delta$ ) be interpreted? Cohen (1988) provides a rule of thumb for interpreting the practical importance of  $\Delta$  as follows:

<i>small effect</i>	$\Delta = 0.2$
<i>medium (moderate) effect</i>	$\Delta = 0.5$
<i>large effect</i>	$\Delta = 0.8$

According to the results, the META analysis indicate that *the unweighted average effect size* for comparisons of lecture-less (experiment group) vs. traditional lecture (control group) instruction is 0.147, less than 0.2, which means *the method of instruction makes no difference* in the students’ average examination performance. In other words, the main effects of different teaching techniques on increased economics understanding are *not significant*.

## CONCLUSIONS

The need to strengthen undergraduate economics education was repeatedly emphasized in journal articles appeared in the JEE. Economists have responded to calls for instructional innovation in economics education. The effectiveness of alternative teaching techniques in student achievement, captured by test score as a measure of student learning, has been heavily investigated. This paper surveys the empirical evidence record from the JEE with a specific emphasize on lecture-less experiments between 1969 through 2015. The purpose of the current study was to glean insight from past studies and resulted in the following three conclusions:

*Firstly*, the current paper provides cumulative evidence on the impact of lecture-less pedagogy in economics. If science is the accumulation of knowledge, this accumulation can be facilitated by use of META analysis. The META analysis demonstrates that the average effect size in comparing lecture-less (experiment group) vs. traditional lecture (control group) instruction is less than 0.2 (small effect). In other words, the META analysis indicates that “lecture-less” pedagogy does not have a significant difference in student learning over traditional old-and-boring lecture style.

*Secondly*, the current paper has re-examined the available literature concerning lecture-less experiments and found that some earlier conclusions did not hold. Reflecting on the research results, the evidence cited in many of those papers are rather largely subjective, anecdotal, and therefore are in favor of lecture-less teaching without much empirical support. It is evident that lecture-less experiments have not met the universal acceptance. While this study provides some detailed evidence in detecting the developments in economic education, there is need for more empirical research on this field. The current META analysis may be extended by adding evidence from other journals, conference proceedings, and other forms of publications.

*Thirdly*, the results of the META analysis imply a potentially useful recommendation for economics education. Perhaps the most important finding is the lack of relationship between “lecture-less” teaching pedagogy and the learning of economics. Evidently, while lecture-less pedagogy is considered an *effective teaching tool*, it is not necessarily an *effective learning method*. Overall, the active learning component of lecture-less pedagogy cannot be denied, however there is *no cumulative evidence* that they are improving students’ economics understanding. Economists should continue to search the effect of lecture-less pedagogy on student learning. The author of this paper hopes that the paper has created an appetite to the reader to learn more about lecture-less experiments.

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