

# Online Teaching Effectiveness with Instructor-made Video Tutorials: A Case of Using *Explain Everything*<sup>TM</sup>

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## ABSTRACT

With the increase in popularity of online education, how to effectively teach online classes has become increasingly researched. Educators have attempted to adopt technologies and social media applications to their courses in order to improve their teaching effectiveness (Williams & Jacobs, 2004; Duffy & Bruns, 2006; Blau et al., 2009). Among the various technologies and social media applications utilized, online video is the most common resource used (Moran et al., 2011). As such, this paper introduces a little-known video producing tool, *Explain Everything*<sup>TM</sup>, that can be used to make high quality video tutorials. For the purposes of this study, the tool was utilized in two fundamental online economics courses. The quantitative and qualitative analyses of the student evaluations reveal that the instructor-made video tutorials were effective teaching methods for the online course. Statistically, strong correlations were shown between student satisfaction and the instructor's teaching effectiveness.

**Keywords:** Teaching Effectiveness, Instructor-made Video Tutorials, Explain Everything, Course Evaluations

## INTRODUCTION

The popularity of online education has seen an explosive increase in the past decade. According to the 2015 Survey of Online Learning conducted by the Babson Survey Research Group, more than one in four students (28%) has taken at least one distance education course (a total of 5,828,826 students) in the United States, an increase from 1,602,970 students in 2002 (Lederman, 2013). The benefits of online education have been widely recognized by both students and higher education institutions. From the student perspective, online education is convenient as it offers location and time flexibility (Poole, 2000; Petrides, 2002; Schrum, 2002), enhances personal computing and internet skills, and enhances participation and social presence in the class (Bharuthram & Kies, 2012; Mbat, 2012). For many institutions, online education has become a part of their strategic plans (Santovec, 2003; LaForge et al., 2015), which enables them to reach new learners, increase convenience, and expand educational opportunities (Schrum, 2000; Rourke, 2001; Hill, 2002; Hofmann, 2002).

Although online education has become popular, the effectiveness of online teaching remains under consistent investigation by instructors and educators. Some researchers have attempted to find clues related to teaching effectiveness from student ratings, such as the effects of an instructor's personality (Centra & Gaubatz, 2000; Arbuckle & Williams, 2003); the effects of the course characteristics (Feldman, 1984; Marsh & Bailey, 1993); and the extent of teaching, social, and cognitive presence (Anderson et al., 2001; Gorsky & Blau, 2009). Although technological infrastructures used to teach in asynchronous classrooms will change over time, the effective delivery of content will remain dependent upon the utilization of the appropriate instructional design techniques (Richards, Dooley, & Lindner, 2004). Tricker et al. (2001) evaluated a variety of distance education courses and found that the students were attracted to online courses because of their flexibility. Although flexibility was the initial attraction, the students still expected high quality courses with assignments and course materials that were professionally meaningful. In addition, they wanted high quality feedback and good communication from their instructors. Student satisfaction within the online classroom is directly affected by the quantity and quality of their interactions with the instructor (Chickering & Ehrmann, 1996; Roblyer & Ekhaml, 2000; Valenta et al., 2001; Ausburn, 2004; Shea et al., 2004). A study conducted by Arbaugh (2001) of 25 online sections in a graduate program found that the "immediacy behaviors" of professors correlated with student satisfaction in the online environment, more so than student satisfaction with an instructor's mastery of technology.

Since the millennial generation is more adept at technologies and social media than previous generations, an increasing number of instructors have begun using social media (e.g., wikis, YouTube, Facebook, blogs) in their courses as effective teaching methods (Williams & Jacobs, 2004; Duffy & Bruns, 2006; Blau et al., 2009). According to Moran et al. (2011), "nearly two-thirds of all faculty have used social media during a class session, and 30% have posted content on these sites for students to view or read outside class. Over 40% of faculty have required students to read or view social media as part of a course assignment, and 20% have assigned students to comment on or post to social media sites." Mansor (2011) reported a positive experience in using a blog to teach a course on

Decision-Making Skills. He found blogs to be more interactive and user-friendly than traditional webpages. In addition, he could easily embed lecture slides, relevant articles, and students' tutorial answers in his blog. Besides blogs, a sizeable body of research has also studied the use of Facebook in courses (Downes, 2007; Stutzman, 2008). According to Barnes et al. (2007), Facebook is useful when attempting to teach the concepts of social networking and foster critical thinking as the instructor can have the students investigate the connections among their peers. Bosch (2009) revealed that using Facebook in web-based learning might improve communication efficiency because the students would be using a technology with which they are already familiar and might demystify the divide between student and teacher.

Among the various technologies and social media utilized, online video is the most common resource used (Moran et al., 2011). Current innovative technologies have enabled widespread use of video lectures (Copley, 2007) that may ease the disconnect between distance learners and their instructors as well as increase student retention. Various studies have found the effectiveness of online video lectures as an informing method in the asynchronous class (Gill & Bhatacherjee, 2007; Cohen, 2009; Gill & Bhatacherjee, 2009; Gill & Cohen, 2009). Brecht (2012) designed three scenarios and concluded that video lectures enhanced student learning, reduced dropout rates, and improved course grades.

Various video-producing technologies and tools (e.g., Adobe Captivate, Camtasia, ScreenFlow, Articulate Storyline, Educreations, Panopto) exist to help instructors produce high quality videos for asynchronous delivery. In her study, Brannagan (2012) explained how to use Adobe Captivate to provide step-by-step instructions related to the use of Excel functions, which is an effective way to facilitate rapid acquisition of finance competencies for online nursing graduate students. He et al. (2012) used the Camtasia software package to produce tutorial video clips for an online undergraduate analytical chemistry course. Based on the students' oral and written feedback, the online video tutorials were effective in improving the students' mastery of chemistry problem-solving. A few researchers have found that Panopto was also convenient and effective when making video clips for their online classes (Ianulardo, 2009; Dorff, 2016).

Building on the previous literature, this paper attempts to affirm the effectiveness of instructor-made video lectures to be used in online education. However, it introduces a different whiteboard application, *Explain Everything*<sup>TM</sup>, with which to make high quality video lectures. For the purpose of this study, this application was used for two fundamental online economics courses (i.e., ECON E103-Principles of Microeconomics and ECON E104-Principles of Macroeconomics). Subsequently, the quantitative and qualitative analyses of the instructor's teaching effectiveness in regard to the instructor-made video lectures were presented. The results of this paper indicate that this tool is easy-to-use and makes video production more convenient and enjoyable for the instructor, and students are benefited from the instructor-made video lectures in asynchronous classrooms.

## USING *Explain Everything*<sup>TM</sup> WHEN TEACHING ONLINE ECON E103 AND E104

### Video Production and Software Package

At my campus, ECON E103 and E104 are two, general education, elective courses that are required courses for the business major. The enrollment for these two courses is usually large, at least 60 students. Due to their quantitative and graphic orientations, these economics courses, like other quantitative subjects, are usually challenging to the students (Garfield & Ahlgren, 1988; Dani & Joan, 2004; Joshi & Marri, 2006). The asynchronous classroom setting deteriorates the challenging situation due to the fact that online students don't have the opportunity to listen to vivid lectures from their instructors as would students in the physical classroom. Under such circumstances, instructors are urged to produce instructional video tutorials to benefit the students learning in the online environment (He et al., 2012; Wen, 2016).

Thanks to technological advancements, an increasing number of instructors have begun recording instructional videos for their online classes. These instructional videos have been shown to be pivotal to the students' learning experiences, in particular to the average and lower-performing students in the class (Milkent & Roth, 1989; He et al., 2012). I found that these results were consistent in my courses as the average and lower-performing students struggled without the instructional videos. Now, I make short instructional videos, varying from five to 20 minutes, for each chapter in order to explain the challenging content and illustrate quantitative examples.

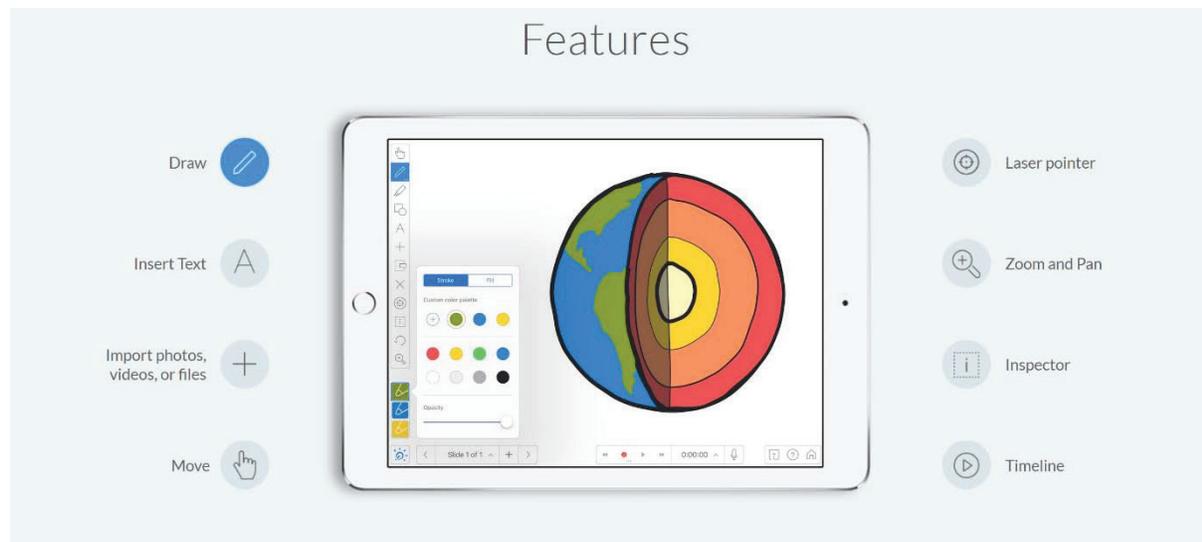
In the face-to-face classroom, I prefer to draw economic models and write notes on the board while lecturing. When thinking about instructor-made videos for online courses, I believe that it would be best to simply extend the

instructor's classroom and teaching style to the virtual world. Although multiple video-producing technologies have been studied in the literature (Dunbar, 2004; Hornik & Thornburg, 2010; Premuroso et al., 2010; Brannagan, 2012; Dorff, 2016; Porter & Tiaht, 2016), they have not fully matched my teaching style or meet my instructional demands. Thankfully, I was able to locate an Apple application, *Explain Everything™*, which is an “easy-to-use design, screencasting, and interactive whiteboard tool with real-time collaboration that lets users animate, record, annotate, collaborate, and explore ideas, knowledge and understanding”(App description from iTunes App Store). The recording file can be easily converted to a MP4 file, which is compatible with my university's online teaching platform, *Canvas*.

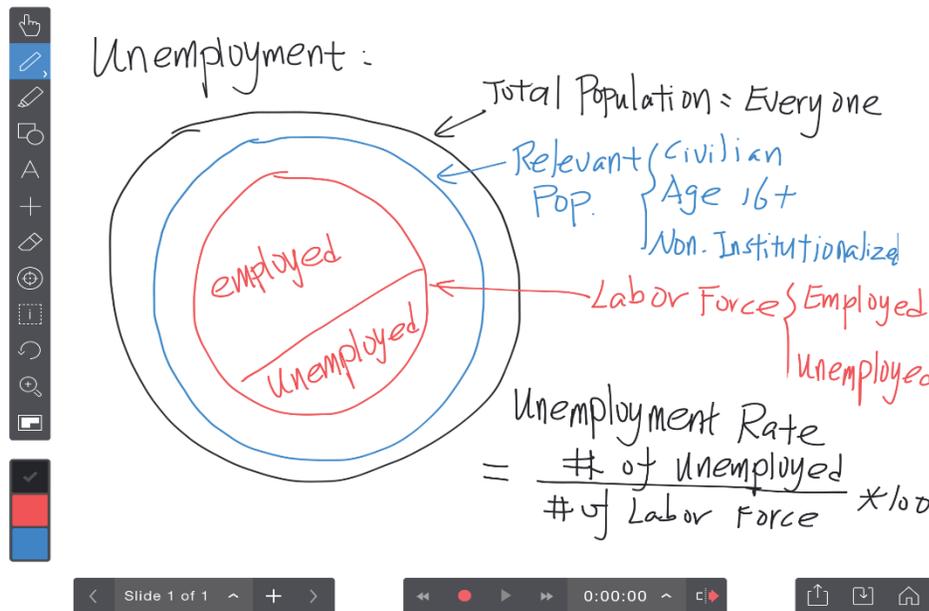
I produced all of the videos on an iPad. I believe that the act of writing on an iPad is as natural as writing on a standard whiteboard in a classroom. From the student's viewpoint, the learning outcomes of watching the video and listening to my lecture in front of the computer screen is the same as sitting in the classroom. I usually make one 5 to 20-minute video clip per topic; however, with this app's multiple-page function, I can cover different topics on different pages within one video clip.

This app offers various functions that make video-producing efficient and enjoyable. For example, I can select ink colors as well as ink widths while writing. It also provides me with the availability to import external files, such as PowerPoint slides, photos, videos and Word files, into the video and lecture and write on them.

**Figure 1: *Explain Everything™* Interface from iTunes App Store**



**Figure 2: Screenshot of ECON E104 Lecture Notes in *Explain Everything™***



### Effectiveness of Instructor-made Video Tutorials in Teaching Online ECON E103 and E104

The effectiveness of the instructor-made video tutorials for student learning was clearly shown in the course evaluations. At my university, the semester-end course evaluation contains 18 objective rating questions on a 5-point Likert scale with a score of 5 indicating strong agreement with the statement. Nine of the 18 questions directly assessed the instructor's teaching effectiveness and the students' perceptions of the course (see Table 1). Table 1 displays the weighted average scores for these selected questions over the past ten semesters in which ECON E103 and E104 were taught online. The instructor-made video tutorials were first introduced to my classes in the spring semester of 2014. Prior to Spring 2014, there were not many resources available to assist student learning. Students were often struggled when doing weekly assignments and exams, which might directly cause low weighted average scores in many evaluated items in the spring and fall semesters of 2013. Since adopting *Explain Everything™* to make video tutorials in the spring semester of 2014, students felt they received more instructions and support from the instructor, and also felt more confident in doing weekly assignments and exams. As a result, higher student satisfaction contributed a significant increase in the course evaluation in the Spring 2014, and my course evaluations maintained at the high level thereafter. The evaluation scores for all of the nine questions are clearly shown above the school means (which are shown in parentheses) since the Fall 2014 when they are first available.

As an instructor, I feel that student satisfaction, which is measured by the last question (Item #9) "Would highly recommend this course to other students," as well as their perceptions of the course (Item #7) and instructor (Item #8), is highly correlated to the instructor's immediate teaching methods in the online learning environment. This conclusion has also been supported by past literature (Debourgh, 1999; Bolliger, 2004; Sargent et al., 2011).

**Table 1: The Weighted Average Scores for Selected Course Evaluation Items in Econ E103 and E104 Online Sections**

|  | SP13<br>(E103) | FA13<br>(E104) | SP14<br>(E103) | FA14<br>(E104)  | SP15<br>(E103)  | FA15<br>(E104)  | SP16<br>(E103) | SP16<br>(E104) | SU16<br>(E104) | FA16<br>(E104) |
|--|----------------|----------------|----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| 1. Course contributed to my understanding of relevant business concepts              | 4.3            | 3.92           | 4.64           | 4.7/<br>(4.44)  | 4.76/<br>(4.44) | 4.88/<br>(4.44) | 4.8/<br>(4.4)  | 4.7/<br>(4.4)  | 4.5/<br>(4.4)  | 4.6/<br>(4.4)  |
| 2. Class materials such as the text, videos, and learning labs were useful           | 4.6            | 4              | 4.31           | 4.73/<br>(4.33) | 4.71/<br>(4.33) | 4.88/<br>(4.34) | 4.7/<br>(4.3)  | 4.6/<br>(4.3)  | 4.5/<br>(4.3)  | 4.7/<br>(4.3)  |
| 3. Course was well structured and organized  | 4.7            | 4.62           | 4.67           | 4.8/<br>(4.38)  | 4.89/<br>(4.38) | 4.88/<br>(4.39) | 4.9/<br>(4.4)  | 4.7/<br>(4.4)  | 4.8/<br>(4.4)  | 4.7/<br>(4.4)  |
| 4. Teaching methods used helped me to learn well                                     | 4.2            | 3.85           | 4.51           | 4.69/<br>(4.23) | 4.7/<br>(4.23)  | 4.88/<br>(4.25) | 4.8/<br>(4.2)  | 4.5/<br>(4.2)  | 4.7/<br>(4.2)  | 4.6/<br>(4.2)  |
| 5. Instructor clearly communicated ideas and concepts                                | 4.1            | 4.23           | 4.64           | 4.76/<br>(4.36) | 4.71/<br>(4.36) | 4.88/<br>(4.35) | 4.8/<br>(4.4)  | 4.6/<br>(4.4)  | 4.7/<br>(4.4)  | 4.7/<br>(4.4)  |
| 6. My instructor was engaged in the subject matter and the instruction of the course | 4.3            | 4.23           | 4.73           | 4.84/<br>(4.41) | 4.84/<br>(4.41) | 4.92/<br>(4.40) | 4.9/<br>(4.4)  | 4.7/<br>(4.4)  | 4.8/<br>(4.4)  | 4.7/<br>(4.4)  |
| 7. Quality of the entire course was excellent  | 4.3            | 3.92           | 4.36           | 4.64/<br>(4.25) | 4.71/<br>(4.25) | 4.83/<br>(4.27) | 4.8/<br>(4.3)  | 4.6/<br>(4.3)  | 4.6/<br>(4.3)  | 4.6/<br>(4.3)  |
| 8. Quality of my instructor was excellent  | 4.6            | 4              | 4.71           | 4.78/<br>(4.33) | 4.77/<br>(4.33) | 4.92/<br>(4.34) | 4.9/<br>(4.3)  | 4.7/<br>(4.3)  | 4.8/<br>(4.3)  | 4.7/<br>(4.4)  |
| 9. Would highly recommend this course to other students                              | 4.1            | 3.92           | 4.51           | 4.77/<br>(4.25) | 4.84/<br>(4.25) | 4.75/<br>(4.24) | 4.8/<br>(4.2)  | 4.6/<br>(4.2)  | 4.6/<br>(4.2)  | 4.6/<br>(4.2)  |
| Response Rate  | 15%            | 20%            | 65%            | 87%             | 65%             | 86%             | 74%            | 85%            | 65%            | 72%            |
| Class Size   | 66             | 67             | 69             | 55              | 138             | 69              | 80             | 74             | 52             | 76             |

Table 2 shows the correlations among the selected evaluation items since the instructor-made video tutorials are available. Clearly, student satisfaction (item #9) is highly correlated with the overall quality of the course (item #7) and quality of the instructor (item #8) with 71.7% and 55.7%, respectively. To be more specific, all of the evaluation items (#1 to #6) that were related to the instructor’s teaching effectiveness were revealed as having a high correlation with student satisfaction (item #9): item #1 (“Course contributed to my understanding of relevant

business concepts,” 71.5%), item #2 (“Class materials, such as the text, videos, and learning labs, were useful,” 58.3%), item #3 (“Course was well-structured and organized,” 85.2%), item #4 (“Teaching methods used helped me to learn well,” 85.0%), item #5 (“Instructor clearly communicated ideas and concepts,” 61.6%), and item #6 (“My instructor was engaged in the subject matter and the instruction of the course,” 78.6%).

**Table 2: The Correlation of Selected Evaluation Items**

|    | #1    | #2    | #3    | #4    | #5    | #6    | #7    | #8    | #9 |
|----|-------|-------|-------|-------|-------|-------|-------|-------|----|
| #1 | 1     |       |       |       |       |       |       |       |    |
| #2 | 0.826 | 1     |       |       |       |       |       |       |    |
| #3 | 0.608 | 0.434 | 1     |       |       |       |       |       |    |
| #4 | 0.559 | 0.593 | 0.860 | 1     |       |       |       |       |    |
| #5 | 0.629 | 0.642 | 0.763 | 0.921 | 1     |       |       |       |    |
| #6 | 0.653 | 0.556 | 0.938 | 0.944 | 0.878 | 1     |       |       |    |
| #7 | 0.864 | 0.724 | 0.839 | 0.863 | 0.882 | 0.872 | 1     |       |    |
| #8 | 0.605 | 0.495 | 0.833 | 0.951 | 0.923 | 0.934 | 0.890 | 1     |    |
| #9 | 0.715 | 0.583 | 0.852 | 0.850 | 0.616 | 0.786 | 0.717 | 0.557 | 1  |

Note: Selected Evaluation Items are

#1. Course contributed to my understanding of relevant business concepts. #2. Class materials such as the text, videos, and learning labs were useful. #3. Course was well structured and organized. #4. Teaching methods used helped me to learn well. #5. Instructor clearly communicated ideas and concepts. #6. My instructor was engaged in the subject matter and the instruction of the course. #7. Quality of the entire course was excellent. #8. Quality of my instructor was excellent. #9. Would highly recommend this course to other students.

In addition to the quantitative analysis, ample praise from the students exists in the course evaluations to emphasize the effectiveness of the instructor-made video tutorials as related to the students’ learning. Below are some excerpts of the open-end comments in the course evaluations.

*“The videos were useful when coming across a topic that was a little more complex in nature and the textbook did not elaborate or explain the subject matter in detail or in a way that the material could be easily understood.”*

*“The instructional videos were very helpful, and all of the suggested resources in addition to the text, were very relevant. They helped to support the topics covered in each section.”*

*“The videos were a huge help for me to understand the course and made the material of the book clear.”*

*“The videos you make are awesome!”*

*“The instructor posted tutorial videos on concepts in every chapter that I thought were very useful and helpful.”*

*“...once you started posting the videos my grades improved and my overall knowledge of each subject increased.”*

*“At the beginning of the semester I felt like I struggled a bit, but after you started posting the videos, I felt like it helped me a lot. I think that is a good idea to post those videos from the instructor so students can further excel in the course.”*

*“The instructor went the extra mile and took time to record weekly introductory videos. He took the time to record and post study videos with helped to supplement the e-Text, which was also very effective. This really helped me succeed and do well in the course.”*

## CONCLUSION

In the era of booming online education, improving teaching effectiveness is a long-term mission for online educators. Indisputably, many different approaches exist in regard to improving student satisfaction and teaching effectiveness in the online setting; however, this paper focuses on the approach of instructor-made video tutorials. Instead of using popular video-making tools, I introduced a little-known, but still convenient and user-friendly tool, *Explain Everything™*, to produce high quality video tutorials for two fundamental online economics courses. The

multiple and convenient functions of this tool make the video production much easier and more enjoyable for the instructor. In addition, the students appreciated the video tutorials as they helped place them in the face-to-face classroom setting.

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