

# Does Technology Make a Difference in Student Success in an Accounting Classroom?

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Received August 14, 2015; Revised August 26, 2015; Accepted August 28, 2015

**Abstract** This study compares the academic success of students enrolled in two separate sections of an introductory accounting course. One course taught in a tradition classroom with little technology assistance and the other with a much greater amount of technology available to the students. The goal of this quantitative research was the investigation of a relationship existing between the amount of technology used in the accounting classroom and the success of the students as shown through the scores on their assignments, quizzes and tests. Sixty six students from various degree programs from a private university in the Southwest enrolled in 2 separate sections of a beginning accounting course. There were 31 participants in the morning section and 35 participants in the afternoon section. Both classes utilized the same textbook, the same online homework and quiz requirements, and had access to the class website on the university's learning management system. Findings showed there is statistical significance at the .05 level, between the traditional classroom and the advanced technology classroom in some areas. The Standard classroom scored significantly higher in the average test, quiz, and midterm exam scores; while the advanced technology classroom scored significantly higher in the percentage of homework completed and the percentage of extra credit completed. There was no significant difference in the average final exam grade, the percentage of attendance, or the overall final score in the class.

**Keywords:** *technology, education, accounting, classroom*

**Cite This Article:** Cindy Greenman, and Karuri Mwangi, "Does Technology Make a Difference in Student Success in an Accounting Classroom?" *American Journal of Educational Research*, vol. 3, no. 9 (2015): 1138-1141. doi: 10.12691/education-3-9-11.

## 1. Introduction

For hundreds of years the source of knowledge in the classroom was the educator and the textbook. The knowledge held by the teacher was passed on to the eager students through lecture and through reading the textbook by the students. However, the abundance of technology and the impact that social media has had on our culture over the last several years has changed the way educators teach, how the students actually learn, and how educators and students communicate. Universities are constantly trying to keep up with the latest in learning technology.

Educators and researchers around the world continue to look at the use of technology in the classroom. Much of this research, however, has focused on comparing online classrooms to the more traditional, on-campus courses. Only a few studies have done comparative research on the use of technology in a standard classroom and the more traditional teaching approach.

When studying for a business degree most universities require at least one, if not two, accounting courses. Usually these courses are taught using the traditional lecture style of teaching; power point slides, quizzes, exams, and written homework. Many courses are utilizing a web based homework manager. In this study we

examined the effectiveness of using a broad range of technology by analyzing student performance in an entry-level financial accounting course. In the other section of the same course, a more traditional approach was used.

## 2. Purpose of the Study

The purpose of this study is to compare the achievement of students in the classroom-based environment with those students who are provided with extensive technology to assist in the learning process at the college level. While previous researches compared online-classrooms to on-campus classrooms, few have examined the relationship between student success in the classroom and the access to advanced technology. Other research studies focused on elementary, middle school or high school students and their access and usage of technology, while this research focuses solely on college students, on-campus. With the hope of a gaining a better understanding of this complex relationship, we aspire to better facilitate learning for all students.

## 3. Research Question and Hypothesis

This research examined the relationship between technology and the learning success in an undergraduate

accounting classroom. Specifically whether there are significant differences in the learning success of students who have access to extra technology and those students who do not have such access.

The following research questions and hypotheses directed this study:

1. Is there a difference in student achievement between those students offered greater technology in the classroom and those not offered the advanced technology?

H<sub>10</sub>: There is no difference in the level of student achievement between those students who were offered access to greater learning technology and those who were not offered access to the advanced learning technology.

H<sub>1A</sub>: There is a difference in the level of student achievement between those students who were offered access to greater learning technology and those who were not offered access to the advanced learning technology.

## 4. Literature review

Educators from around the world have conducted extensive research on the use of technology in teaching accounting classes. With the advances in education technology, it is not surprising that researchers have been studying the effects of technology on learning since the 1960's. The research ranges from the effect technology has on general performance of students to the psychological impact on attendance and enthusiasm towards learning. Information technology has played a major role in the evolution of teaching accounting classes. There has been a trend in the use of increasingly advanced technology to teach accounting. Students have the ability to do all their work online with various resources. They also have access to video streams of the lectures for reference and are able to ask anonymous questions in real time through features such as lecture tools and lecture capture. The results from past research is not conclusive, showing different opinions on the effect that technology has on students.

In a study conducted by de Lange, Suwardy and Mavondo, from Monash University responses from 292 on-campus undergraduate students provided data which associates four factors of a virtual learning environment with improved student motivation. These include lecture notes, bulletin boards, on-line assessments and other tools such as chat and video summaries. The study found that the increase in motivation was accredited to "the fact that students were enthusiastic to learn via the Internet as using (surfing) the Internet is a popular past-time with a large proportion of young adults." These results were subject to bias as data collection was through surveys and it was felt that some respondents were concerned that their final results in the class would be influenced by their responses. The study concluded that further research is required as proven by the contradicting results found previously [1].

Margaryan, Littlejohn and Vojt investigated the extent and nature of university students' use of digital technologies for learning and socializing. The study employed a mixed methods research approach, with a quantitative phase followed by a qualitative phase. Quantitative data focused on what technology students use

and was collected through questionnaires. Qualitative data focused on how the technology was used with data collection through interviews. The study found that students of a technical discipline (Engineering) used more technology tools when compared to students of a non-technical discipline (Social Work). This relationship may be mediated by the finding that engineering courses required more intensive and extensive access to technology than Social Work courses.

However, the use of technology between these groups is only quantitatively rather than qualitatively different. The study concluded that the students in their sample appeared to favor conventional, passive and linear forms of learning and teaching [4].

In an article by Oliver McGarr from the University of Limerick, McGarr concluded that "podcasting has the potential to enhance learning, but the reason given to justify its use in education, namely as a tool to support mobile learning, does not appear to be apparent in the studies that were reviewed. Educators need to be cautious of the claims made in relation to new and emerging technologies, particularly in the assumptions made by proponents of the technologies." [5].

In a study conducted by Obaidat and Alqatamin aimed at investigating accounting students' perceptions toward the use of four IT tools, Email, Internet, MS PowerPoint, and MS Excel in the learning process. Results indicated that accounting students consider the four IT tools necessary for the learning process with MS Excel earning the highest positive perceptions by accounting students [6].

Senik and Broad assessed the intervening conditions on the use of information technology skills for accounting graduates and found multiple educator-related and student-related factors that should be tackled in order to prove IT skills enhancement and innovation in accounting degree programs. Educator related factors included educators' interest, knowledge, skills and age profile and traditional type university among others. Student-related factors included inactive participation of students' in IT-based activities and perception on IT skill-equipped students moderated and sometimes prevented educators from IT skills inclusion in teaching [10].

In an article in the National Math and Science Initiative, Timothy Huneycutt discusses the benefits of blended learning. He writes about how technology can keep students focused for longer periods of time, how it makes students more excited about learning in general, and how the students can learn at their own rate [2].

A recent study done at the London School of Economics supported the argument that technology can be more of a distraction than an aide to education. The study found that where cellular telephones were banned there was a 6% increase in the test scores than over those schools where the cellular phones were allowed. The same study found that in four different school systems that implemented a ban on cellular phones, they saw an increase in test scores than in comparable schools in the same region that had no cell phone policies [9].

## 5. Methodology

In this study, the authors used a cross-sectional quantitative research method. The cross-sectional method

was chosen for its ease of use. The research took place over a much shorter time span than other methods. The disadvantage to this approach is the lack of comparability.

Data analysis for this study used a standard Student *t*-Test, which tests whether the means of the measurement variable are different in two groups. In this case we took the means of the scores from each course and used those means as our measurement variable.

### 5.1. Sample

The subjects of this study consisted of 66 undergraduate students in various degree programs from a private university in the Southwest. In the Fall of 2014 the students enrolled in 2 separate sections of a beginning accounting course, both taught by the same professor. Of these 66 participants, 46 (69.7%) were male students, and 20 (30.3%) were female students; 27 (40.9%) were business majors, 39 (59.1%) were business minors. Among the 66 participants were 15 (22.7%) international students. All 66 participants were full-time students ranging from freshman to senior ranking.

### 5.2. Procedures

The two class sections were split into one morning section and one afternoon section. There were 31 participants in the morning section and 35 participants in the afternoon section. Both classes utilized the same textbook, the same online homework and quiz requirements, and had access to the class website on Black Board through the university's website. The students were not randomly assigned to the section. The students registered for their section of choice, however they had no way of knowing whether they were registering for a more technologically advanced course or the standard section.

The morning section had additional advanced technology tools available that the afternoon section did not have accessible to them. This included each lecture being video recorded and saved onto the class Black Board website. Also, the morning section was held in a computer classroom where each student had their own terminal and was able to access the class power point

slides as class was taking place. They could take notes on the those slides and have them save with the video recording of the session; enabling the students to go back, review the lecture, review their notes and ask questions if there were something not being understood at that point.

The afternoon section was placed in a traditional classroom, no computer terminals, but did have access to the power point slides through the university's learning management system website for review. There was no video capture of the lectures and no computerized note taking happening during class.

The same material was covered in both sections at the same pace. Each section had the same homework, quiz, and review assignments. Their examinations were also the same. Office hours were the same for both sections and both sections had access to the same on-campus peer tutors.

The raw scores on the quizzes, tests, mid-term exam, and the final exam were calculated as group averages or means. Since homework and the extra-credit was scored on a complete or non-complete status, the percentage of students who completed the assignment was used. Attendance was calculated as a group average attendance. The Final score was a cumulative total number of points and this was totaled and averaged for each section. These means were used to compute *t*-test, a statistic used to determine if there is statistical significance between two sample means. SPSS version 22.0 software was used to calculate the statistics.

### 5.3. Findings

As Table 1 shows, there is statistical significance at the .05 level, between the traditional classroom and the advanced technology classroom in some areas. The Standard classroom scored significantly higher in the average test, quiz, and midterm exam scores; while the advanced technology classroom scored significantly higher in the percentage of homework completed and the percentage of extra credit completed. There was no significant difference in the average final exam grade, the percentage of attendance, or the overall final score in the class.

**Table 1. T-test Data for Standard Classroom and Advanced Technology Classroom Comparison**

	Technology Section	Standard Section	Statistically Significant at the .05 Level
Average Quiz Grades	75.21	77.42	Yes
Percentage of Homework completed	91.67	89.92	Yes
Average Test Grade	80.33	82.91	Yes
Average Midterm Exam grade	83.23	88.4	Yes
Average Final Exam Grade	94.56	92.01	No
Percentage of Extra credit completed	61.93	59.03	Yes
Percentage of Attendance	87.99	89.41	No
Average Final Score	92.71	93.66	No

The findings of this study add to the body of knowledge that students given access to advanced technology did not have a significant difference in their overall final score, although it did influence certain aspects of their grades.

## 6. Discussion

For those students in the standard teaching section, their scores were significantly higher on the quizzes, tests, and the midterm exam. However, they did not complete as

much of the homework or the extra-credit opportunities. The students in the advanced technology classroom completed both the homework and extra-credit at a significantly higher rate. In the end, however, the overall final score in the class showed there was no significant difference between the two classes. This leads to the question of, what actually has the greater effect on the final exam? Did the students in the standard classroom feel more comfortable with the material and not feel the need to complete as much homework and extra-credit? Did the technology make it easier for the advanced

classroom to complete more of the assignments? The article by Huneycutt [2] discussed how technology, when integrated in to the class, can keep students more interested in the topic, hold their focus, and the students become more engaged with the topic. This research seems to support that idea.

Much of the research reviewed on this topic mentioned how students are “distracted” by technology and how it seems pull them “off-task”. Educators are heard complaining that their students cannot concentrate, they have no analytic skills, and that their memories are “disorganized”. This research did not support this idea, but did not deny it either.

The quick access to information may explain why the advanced technology students were able to complete more of the homework and extra-credit. While the standard classroom students were obligated to develop skills to search for the correct way of completing the task, therefore taking more time.

## 7. Limitations

Advanced technology was offered, but that does not imply that it was utilized. We can only offer the technology; the students must be the ones to use it, and use it for its intended purpose. Although every student in the advanced technology class did utilize the tools, it is not known to what extent they utilized it. Also, there are limitations on generalizability, including the small sample size from only one university. We did not take into account the fact that the advanced technology class was taught in the morning, where the more traditional class was taught in the afternoon. In addition, we did not consider the effects of any demographic components, such as age, gender, computer skills, or background.

## 8. Conclusion

This study’s focus was to compare the achievement of students in the classroom-based environment with those students who are provided with extensive technology to assist in the learning process. The subjects of this study consisted of 66 undergraduate students in various degree programs enrolled in 2 separate sections of a beginning accounting course, both taught by the same professor. All 66 participants were full-time students ranging from freshman to senior ranking. The two class sections were split into one morning section and one afternoon section. There were 31 participants in the morning section and 35 participants in the afternoon section. Both classes utilized the same textbook, the same online homework and quiz requirements, and had access to the class website on Black Board through the university’s website.

The findings of this study were mixed. There was a statistically significant difference in all of the categories, except the final exam score, the attendance, and the overall score. This suggests that perhaps technology helps the students in the short-term, but when it came to the final exam and understanding the information as a whole, it did not have a significant impact. The research question: *Is there a difference in student achievement between those students offered greater technology in the classroom and those not offered the advanced technology?* has been answered with the decision that we cannot reject the null hypothesis of: *There is no difference in the level of student achievement between those students who were offered access to greater learning technology and those who were not offered access to the advanced learning technology.* This is based on the results in the final overall grade category.

In all, this study serves as a starting point for further research. Everyone agrees that technology can be used in the classroom to the benefit of the students, and there is no stopping the advancement of technology. The challenge is in how the technology is implemented, utilized, and monitored. Additional studies should be done on the impact of technology, breaking down demographics, how many students are utilizing the access to the technology, and involving a larger sampling of students from around the country.

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