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Original Paper

The Economic Impact of Online Education

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Abstract

During the past fifteen years, the increase in enrollment in online courses at institutions of higher education worldwide, which has accelerated since the COVID-19 pandemic, invites an analysis of the factors that have fueled this growth. The present study considers evidence of the economic and pedagogical advantages of online courses over face-to-face courses taught in classrooms. It concludes that creating and expanding online programs will provide a significant return on investment to institutions and students for the foreseeable future.

Keywords

online education, asynchronous online courses, higher education, economic impact of online education, online pedagogy

1. Introduction

In the early days of what was then a potential pandemic, a study (*Learning on Demand: Online Education in the United States, 2009*) was published to assess the state of online education at institutions of higher education in the United States. One issue considered was the economic impact of online education, which was found to be "mixed" for institutional budgets: "50 percent have seen their budgets decrease as a result [of a greater demand for online courses], but 25 percent have experienced an increase" (Allen, 2010, p. 1). At the same time, the authors of the study concluded: "Academic leaders at all types of institutions report…[that] demand for online offerings is greater than that for the corresponding face-to-face offerings" (Allen, 2010, p. 1). Moreover, well before the potential pandemic, the authors found that contingency plans were already in place in many institutions, and that "[s]ubstituting online for face-to-face classes is a component of 67 percent [of these plans]" (Allen, 2010, p. 2). Fortunately, the contingency plans were unnecessary because a pandemic did not occur in 2009 when fear of an outbreak of H1N1 was pervasive. During the following decade, factors unrelated to the potential outbreak of a pandemic contributed to growth in online education, and this fact provides a point of departure for reaching conclusions concerning the economic impact of online education in the wake of

the COVID-19 pandemic of the early 2020s.

The definition of an online course has changed somewhat since the publication of *Learning on Demand: Online Education in the United States, 2009*:

> Online courses… are those in which at least 80 percent of the course content is delivered online. Face-to-face instruction includes courses in which zero to 29 percent of the content is delivered online; this category includes both traditional and web facilitated courses. The remaining alternative, blended (sometimes called hybrid) instruction is defined as having between 30 percent and 80 percent of the course content delivered online. (Allen, 2010, p. 4)

More than a decade later, the term "blended" has been completely replaced by "hybrid", a modality that continues to describe courses with both online and classroom meetings. However, at today's institutions of higher education, online courses are typically delivered 100% online according to one of two modalities. These courses are delivered either as asynchronous courses, in which students learn on their own time without interacting with the instructor, or as synchronous courses, in which the instructor interacts with students online at scheduled times. The conclusions advanced in the present study concern asynchronous and synchronous courses because of the main difference between them and face-to-face or hybrid courses, namely, because asynchronous and synchronous courses function without the need for classrooms.

2. Method

2.1 The Advantages of Online Education for a Mobile Workforce

In his study, "How the Online Education Market Can Save the Economy", A. Skonnard draws a parallel between online education and the current needs of employers worldwide:

> The global economy has transitioned into a mobile workforce enabling business to be conducted no matter the location or the device being used. Why isn't education conducted in the same way? How can students be prepared to join the global, mobile economy if they don't have global, mobile education? In addition to how individuals are learning, there is a growing gap between what businesses need from their employees and what the education industry is teaching students and professionals. Online education can solve these problems and we're now beginning to see the possibilities more clearly. (Skonnard, 2013)

Studies of online education outside of the United States have confirmed its positive influence on the workforce. For example, greater access to online education in the six countries that form the Cooperation Council for the Arab States of the Gulf, as B. K. A. Omari observes, "help[s] students in making proper evidence-based decisions which is critical in the management of modern organizations" (Omari, 2017, p. 15). During the decade before the COVID-19 pandemic, access to courses fueled the growth of the global online education market. For example, the market size of online language learning increased globally from 3.5 billion euros in 2015 to more than five billion euros in 2020 (*Statista Research Department*, 2022).

The positive influence on the workforce of online education can be attributed to the advantages of online courses, which "provide students with greater flexibility in terms of time and location, [and] which can enable them to balance their studies with work or other obligations" (Altindag, 2023, p. 4). I. Koskal underscores several economic advantages of online education for working students: "Online courses prove a more affordable option than traditional ones and there are no commuting costs, and sometimes required course materials, such as textbooks, are available online at no cost" (Koskal, 2020). Considering the affordability of online education and its appeal to a mobile workforce, it is instructive to highlight some pedagogical benefits of online courses for students.

2.1.1 The Pedagogical Value of Online Learning

The growth in online education has continued after the COVID-19 pandemic. For example, the global market size of online language learning is projected to reach 7.5 billion euros in 2025 (*Statista Research Department*, 2022). This growth comes at a time when "the post-pandemic differences in student performance between FtF [face-to-face] and online instruction are much smaller in the post-pandemic period [than they were in the pre-pandemic period]" (Altindag, 2023, p. 31). This is a conclusion drawn from evidence collected over twelve semesters (from 2016 to 2022) in a study involving thousands of undergraduate and graduate students at a medium-sized public R1 university in the U.S. with face-to-face classes and "a longstanding, well-established online education program" (Altindag, 2023, p. 3). Other success stories at U.S. universities with recently established programs testify to an expanding U.S. market in online education. One example is the development of an online education program at Syracuse University (Syracuse, NY) that offers "flexible formats" and "academic and personal support" to help students "follow the same curriculum as on-campus students" (Note 1). Kansas State University (Manhattan, KS) has established an online program with courses that employ "easy-to-use platforms" and provide students with "the same support and resources as on-campus students" (Note 2).

Another recent success story is the creation of an online course, asynchronous Spanish 331, at the University of Tennessee (Knoxville, TN). Spanish 331 is an upper-level course taught entirely in Spanish that is required for majors and minors in Hispanic Studies at the University of Tennessee. Spanish 331 was taught exclusively in a classroom format until the COVID-19 pandemic, which caused the need for an online offering that was designed as an asynchronous course. After offerings during the pandemic

from 2020 to 2023, asynchronous Spanish 331 continues to be offered along with face-to-face classroom sections of Spanish 331.

Anecdotal evidence of the pedagogical success of asynchronous Spanish 331, including student comments on course evaluations and increased enrollment, is corroborated by data collected from version histories of assignments submitted via Google Docs, the platform used by groups of 5-8 students to submit 31 assignments in asynchronous Spanish 331. The version history of a group Google Doc, visible only to the instructor (as the "owner" of the Google Doc), records the entries made by students to the document and the times of day when they are made. As portrayed in Figures 1, 2, and 3, the different colored highlighted text corresponds to the dots on the right of each image, which are entries made by individual students to the documents. The unhighlighted text was present before the students who entered the highlighted text began working on the document together. The students' names (hidden in the Figures) are listed to the right of the dots, which enables an instructor to know when they work on the assignment. Figures 1, 2, and 3 are screenshots of the same Google Docs assignment conducted in asynchronous Spanish 331 during offerings of the course in 2022, 2023, and 2024. The assignment first required each student to view a video online about the University of Salamanca (Salamanca, Spain) and take a graded quiz on the video. Students then collaborated online in groups using Google Docs to compose an essay in Spanish of 375-400 words comparing Salamanca, Spain, and Knoxville, TN, USA (the location of the University of Tennessee) as "university towns".

In 2022, students had the entire day of April 20 (12:01 AM to 11:59 PM) to complete the essay, which they accomplished between 4:27 AM and 5:45 PM. Figure 1 reveals this period, which is couched between entries from April 19 and April 21 that correspond to other assignments due on those days. The time of 4:03 PM is highlighted in a dark gray color to indicate a particular moment in the Google Docs version history, namely, when the five students whose names are hidden to the right of the different colored dots were collaborating on the assignment and contributing or correcting the different colored text. During the times not highlighted in dark gray, students had been (4:27 AM, 8:29 AM, 11:49 AM, 12:59 PM) or would be (5:45 PM) collaborating or working individually.

The time range from 4:27 AM to 5:45 PM during which the assignment was completed is significant because it extends beyond peak teaching hours (10 AM to 2 PM) when university classrooms are at their highest capacity. The fact that several entries were made by students at non-peak times (4:27 AM, 8:29 AM, 4:03 PM, 5:45 PM) speaks to the flexibility of online courses and the lack of flexibility in the case of a face-to-face classroom course. This flexibility may have allowed some students who made non-peak entries in Figure 1 to be involved in something other than an academic course, such as work, athletics, or family matters, during peak hours.

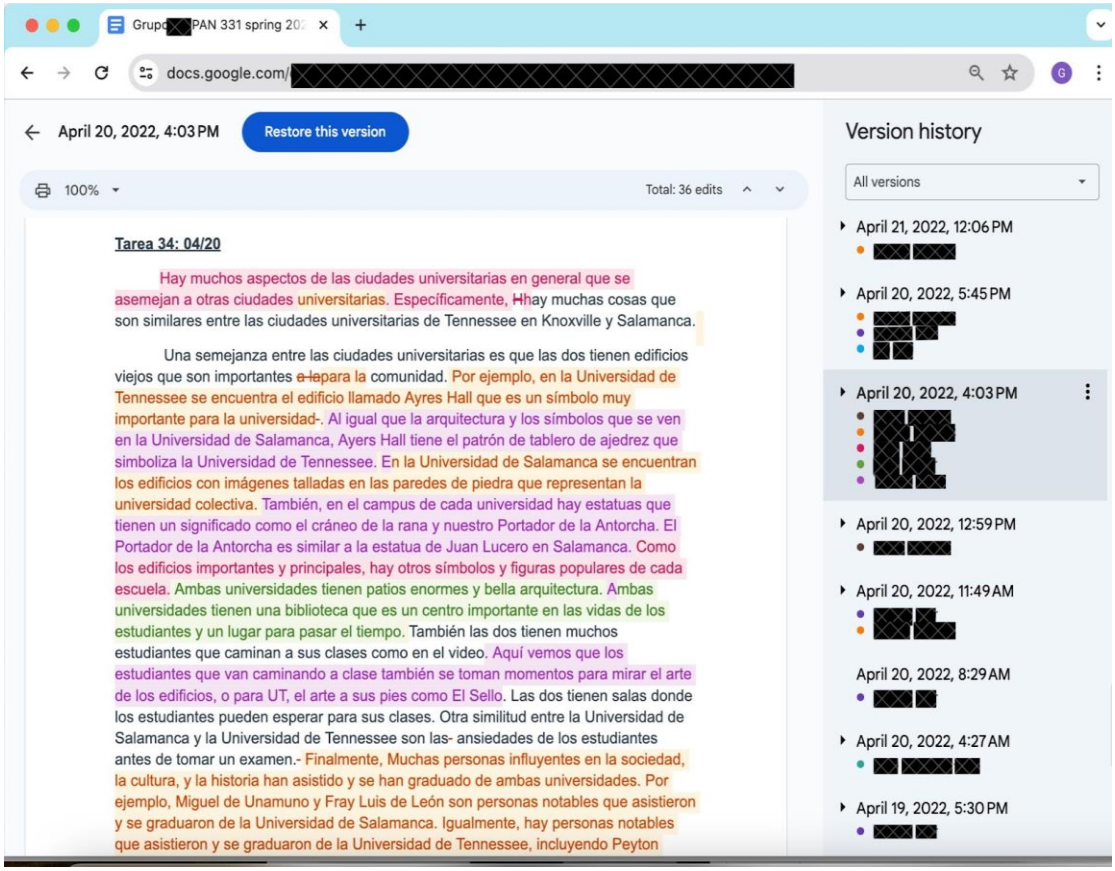

Figure 1. Collaboration at 4:03 PM on a Google Docs Group Essay in the Spring of 2022

In 2023, students had the entire day of April 19 to complete the same assignment, which they accomplished during the non-peak hours of 4:15 PM and 10:28 PM as revealed in Figure 2. The fact that groups of two to five students collaborated at non-peak times (4:15 PM, 5:47 PM, 6:44 PM, 9:20 PM, 10:28 PM) suggests, as in the case of Figure 1, that students were able to engage in activities unrelated to asynchronous Spanish 331 during peak hours.

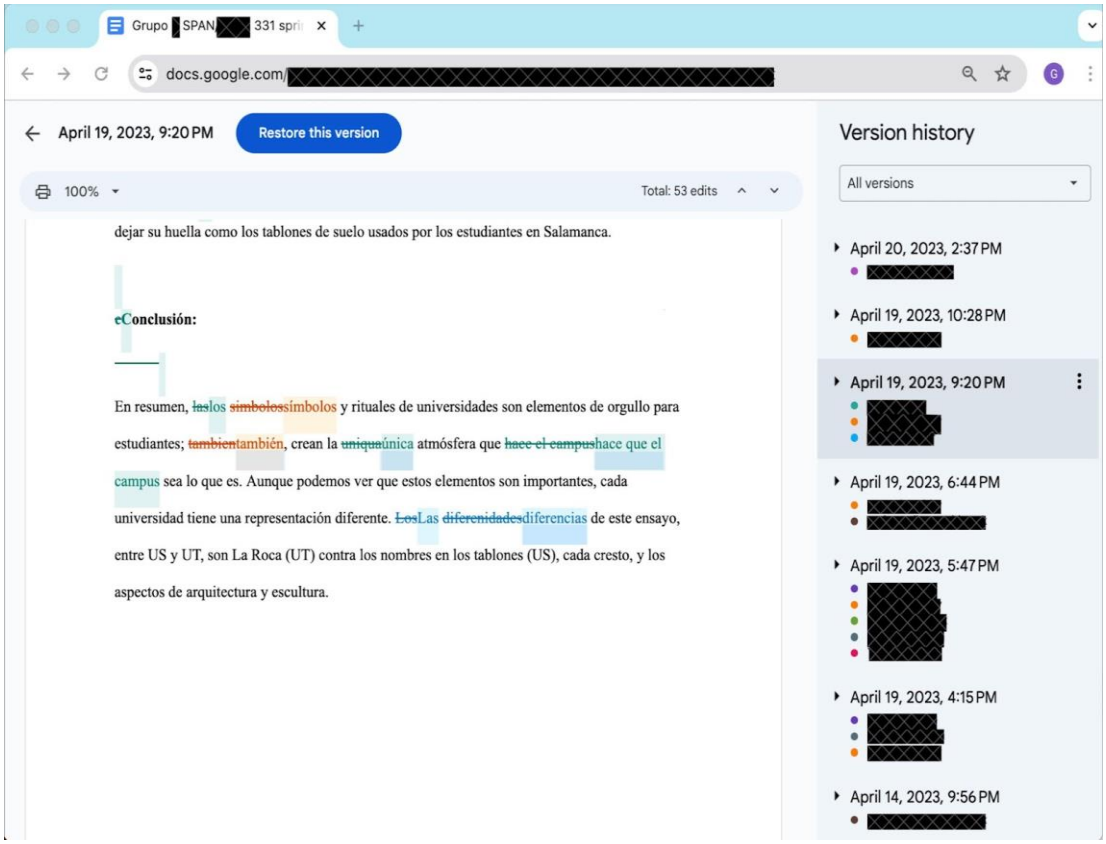

Figure 2. Collaboration at 9:20 PM on a Google Docs Group Essay in the Spring of 2023

In 2024, students had the entire day of April 17 to complete the assignment, which they accomplished between 12:28 AM and 10:48 PM as revealed in Figure 3. In Figure 3, two entries were made during peak hours (10:42 AM and 12:32 PM), while seven entries were made during non-peak hours (12:28 AM, 8: 49 AM, 4:02 PM, 6:21 PM, 7:35 PM, 7:52 PM, 10:48 PM). As in Figures 1 and 2, the flexibility of the asynchronous modality that is not possible in the case of a face-to-face classroom course is revealed in Figure 3 by the wide range of times that the entries were made.

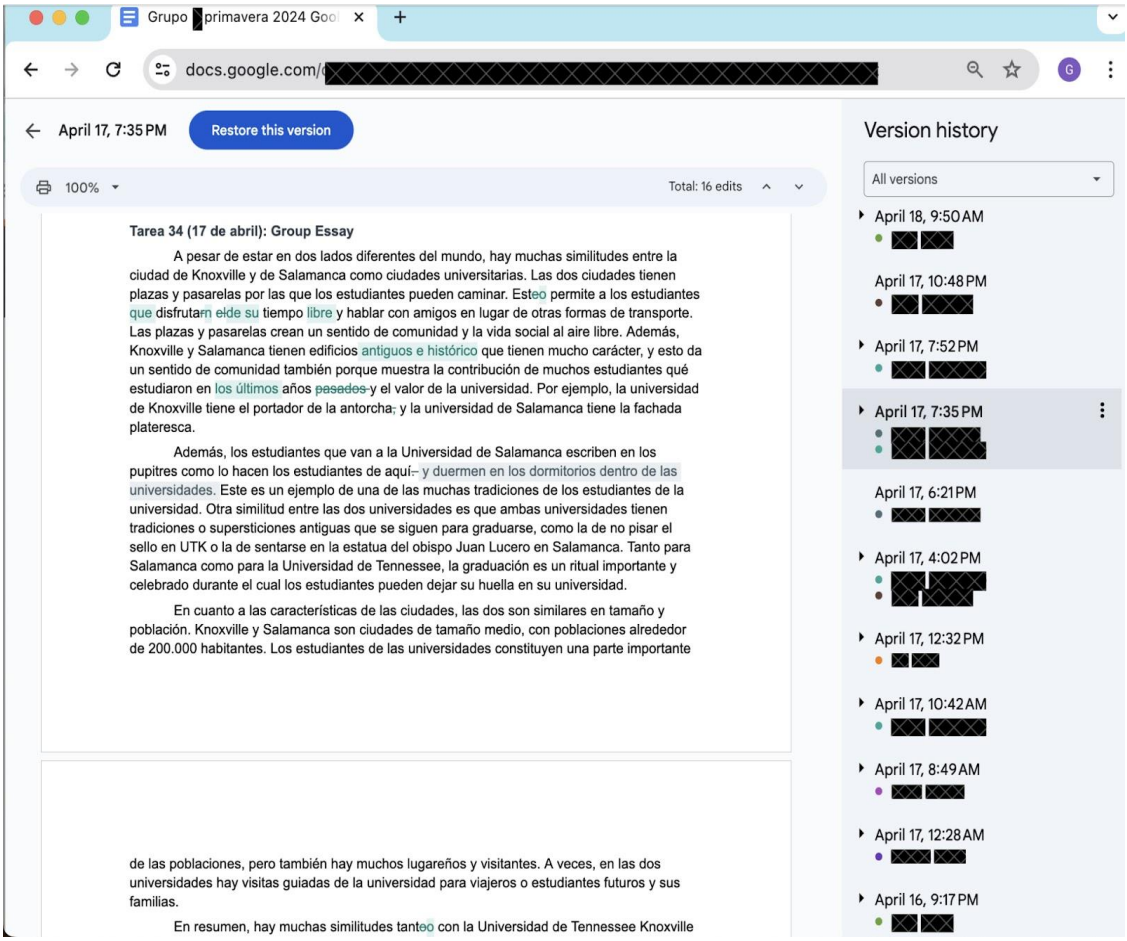

Figure 3. Collaboration at 7:35 PM on a Google Docs Group Essay in the Spring of 2024

3. Result

The fact that students in asynchronous and synchronous online courses do not occupy classrooms is something that institutions should consider when scheduling courses. A solution typically implemented at colleges and universities to find classrooms for face-to-face courses is to schedule them at non-peak times. However, this solution may not be beneficial economically. Non-peak courses may not reach capacity if students have work or family obligations at non-peak hours, which can result in classrooms with empty seats.

It is instructive to envision seats in a classroom economically as if they were seats on an airplane. According to a survey conducted more than a decade before the COVID-19 pandemic forced airlines to leave middle seats empty, “Eighty percent of travelers say they try to avoid the middle seat and only 1% say they prefer it” (“Do You Really Hate the Middle Seat That Much”, 2009). However, the reverse of the 2009 survey has always been true from the perspective of U.S. airlines, which “need to sell about 75 per cent of a plane’s seating capacity. That is 8 percentage points higher than an aeroplane where every third seat is empty” (Bushey, 2020). In other words, a plane full of empty middle seats translates into a

maximum of 67% of seats being sold, which is not enough to generate a profit. This became a stark reality during the COVID-19 pandemic when, as an airline official declared, "If you leave the middle seat empty… you're not going to make money" (Bushey, 2020).

Empty classroom seats in a face-to-face course are unprofitable, like empty middle airline seats, because they are unoccupied physical spaces. A classroom with low enrollment needs electric lighting, like the jet fuel needed by an airplane full of empty seats. The same electric lighting and the same jet fuel would be used if the classroom and the airplane were at full capacity, which would produce a greater return on investment from the resources used. However, empty seats in an online course are not as unprofitable as empty seats in a face-to-face classroom course. The reason is that participation in an online course has no impact on the expenditure of resources needed by students who attend class face-to-face in a classroom. Moreover, course materials, such as textbooks, are "another expensive reality of traditional college education that online education alleviates… [because they are often] included in the curriculum" (Piletic, 2018).

4. Discussion

Considering the economic advantages of online education, colleges and universities should make greater investments in developing new programs. One example inspired by the success of courses such as asynchronous Spanish 331 is an initiative developed at the University of Tennessee in four academic disciplines: Business, Technology/Data, Liberal Arts, and Social and Human Sciences (Note 3). In addition to growing existing graduate programs, the initiative will involve launching twenty to thirty new undergraduate online programs by the fall of 2026. The primary aim of this initiative is to attract new students to the university who cannot attend class on campus, including part-time students and former students who left the university before completing their degrees.

The ability of such students to complete their degrees by taking online courses offered by the University of Tennessee will address a nationwide problem in the areas of retention and degree completion. According to a recent study: "At four-year [U.S.] colleges, the first-to-second-year retention rate for students 24 and younger is 72% for full-time students vs. only 40% for those attending part-time. For older students, the first-year retention gap is 56% (for full-timers) vs. 43% (part-timers)" (Nietzel, 2022). As the same study also explains: "Only 21% of part-time students at four-year colleges and 19% at two-year schools were able to complete a credential in six years" (Nietzel, 2022). The benefit of online courses to part-time students who are unable to complete their degrees in the classroom is both academically and economically beneficial insofar as those who possess a college degree earn salaries that are "86 percent higher than those whose highest degree is a high school diploma" ("How Does a College Degree… Earnings Potential", 2024). Throughout a lifetime, this amount can be close to $1,000,000 according to the U.S. Social Security Administration ("Research, Statistics & Policy Analysis", 2015).

Of course, the number of students enrolled in a course, whether the course is taught online or face-to-face

in the classroom, is usually a significant number to instructors and administrators. Online or classroom courses that are under-enrolled may not produce sufficient revenue to cover the costs of instruction. However, because online courses use no classroom space, they can be populated simultaneously by residential and off-campus students and thus increase the chances that minimum enrollment requirements will be met, which is how the University of Tennessee initiative will operate.

Because the online courses will be available to residential students who are also enrolled in face-to-face courses on campus, the University of Tennessee initiative may also produce an economic benefit, namely, that technology, operations, and overhead expenditures may not need to be increased as residential programs grow. This is exactly the opposite of programs that depend on the availability of classroom space to grow. Since no classroom space is required for online courses, investments in technology, operations, and overhead–including course sites such as Canvas (which is used at the University of Tennessee)–may increase minimally, or not at all, as more students enroll.

It is logical to speculate that consistent or increased enrollments in online courses that recycle technology will be profitable for institutions of higher education in the way that privately held businesses profit from their investments in technology. This situation may, in turn, encourage institutions of higher education to more closely scrutinize the manners by which they reinvest surpluses gained from revenue-producing online programs. The profitability of these programs may resonate differently among public, private, and for-profit institutions of higher education, which operate according to different business models. One current view is that this distinction should be eliminated and that not-for-profit institutions should adopt a for-profit business model. This is the view advocated by a recent study, *Using ROI for Strategic Planning of Online Education*, in which the contributors argue that by becoming for-profit today's non-profit institutions will be able to combat rising tuition costs and declining enrollments (Ives, 2022). Students, in turn, might also be able to limit student loan debt by taking less expensive courses. The evidence considered in the present study suggests that the same benefits might be gained by investing more resources in online education, which would not only be pedagogically profitable for students but also profitable economically for both for-profit and non-profit institutions of higher education.

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Notes

Note 1. Information on online education at Syracuse University can be found at: https://www.syracuse.edu/admissions-aid/application-process/online/.

Note 2. Information on online education at Kansas State University can be found at: https://online.k-state.edu/.

Note 3. Information on online education at the University of Tennessee can be found at: https://volsonline.utk.edu/.