

# **The Impact of Online Education**

by

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## EXECUTIVE SUMMARY

I wrote this paper as a spring 2023 term paper for my Engineering Management 52, Technical and Managerial Communication class, taught by Amy Hirschfeld at Tufts University. The aim of this paper is to inform the audience about the advantages and drawbacks of online education, enabling them to make informed decisions about their education.

I first provide an (1) overview of online education and its history. This is followed by the (2) benefits and drawbacks of online education, including that from an educators' perspective. I then provide (3) recommendations for both educators and students to incorporate to improve the online learning environment.

Online education is a form of education which is administered using the internet. Online education became prominent in the 1950s and continues to develop as technology advances. The covid-19 pandemic brought online education to a new level of popularity and it's important to learn about the form of education we are partaking in.

There are many benefits of online education. These include:

1. **Accessibility** - Students can take online classes anywhere as long as there is internet connectivity.
2. **Flexibility** - This allows students to study without jeopardizing their other obligations.
3. **Ability to record lectures** - Students who miss class or have a hard time keeping up in class can watch lectures at their own pace.
4. **Development of technical skills** - Online learning requires the usage of multiple digital tools and proficiency in these tools are valuable in future careers.

Online education also comes with some drawbacks. These include:

1. **Technical Issues** - Internet connectivity issues and computer malfunctions may disrupt learning.
2. **Limited Social Interaction** - lack of face-to-face interactions with classmates and educators may cause students to feel isolated and disconnected, impacting students' mental health and academic performance. Without their peer's support, students may find it challenging to stay motivated and engaged in online learning.
3. **Distractions** - the lack of a structured learning environment causes access to many distractions such as family members, pets, and social media. This causes students to struggle staying focused on their tasks and the lack of accountability without the educator present may cause students to procrastinate.

Here are some recommendations to improve online education. First 3 recommendations are for educators, followed by recommendations for students:

1. **Promote student interaction** - group discussions and provide opportunities to meet outside class settings.
2. **Improve tracking of well-being of students** - use questionnaires and set up meetings with individual students to identify areas for extra support.
3. **Improve efficiency regarding supplemental support** - utilize platforms such as Piazza to support a large group of students who require similar help.
4. **Create a structured learning environment** - minimize noise around you and turn off notifications for social media. Set goals and follow a strict schedule for study sessions. Additionally, ask someone to hold you accountable if you are having trouble maintaining a schedule.
5. **Evaluate self-learning habits** - evaluate whether they can adapt to an online learning environment and effectively manage the challenges that come with it. Asking other students or educators that have experience with online education may be helpful.

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## **1.0 Introduction**

### **1.1 Purpose**

The purpose of this paper is to educate the audience about what online education is, particularly its benefits and drawbacks. This allows students to make informed decisions about their education and whether online education is the right choice for them. Additionally, this paper aims to provide actionable recommendations to improve the online education experience. These recommendations are for students and educators who are both currently in or interested in online education. As online learning is becoming increasingly popular, it is important that we are aware of the form of education we are partaking in.

## **2.0 Background**

### **2.1 Definition and Brief History of Online Education**

The federal definition of online education is “A course provided by an institution under which the institution provides instructional materials, by mail or electronic transmission, including examinations on the materials, to students who are separated from the instructors.” Or in simple words, “A form of education which is delivered and administered using the Internet.”

Online education can be traced back to the early days of the internet in the 1950s, when educational institutions began experimenting with computer-based learning and online communication. In 1959, Daniel Alpert and Don Bitzer, a Physicist and PHD student respectively at the time, developed PLATO, acronymed for Programmed Logic for Automatic Teaching Operations. PLATO was one of the earliest examples of computer-based education.

PLATO was a self-paced learning system which allowed students to interact with the system at their own pace by submitting assignments, answering quizzes and receiving feedback from the computer. While PLATO did not offer live or synchronous interaction, the development of PLATO was a significant step towards creating a more flexible form of education.

In 1995 came the Virtual-U program at the University of Illinois at Urbana-Champaign. The Virtual-U program is generally credited as the first online college program with real-time instruction and participation. The program had live video and audio feeds, interactive chat rooms and virtual whiteboards. The Virtual-U program set a new standard for what criterias online education should incorporate. Its success paved the way for the development of similar programs at other universities as technology continues to develop. By 2019, there were over 30,000 online degree programs in the United States alone. Then, in 2020, the Covid-19 pandemic hit.

## **2.2 Effect of Covid-19 Pandemic on Online Education**

As we've discussed, online education had been around for many years before the Covid-19 pandemic. Much of the research into online higher education that was done pre-pandemic concluded that students in online programs performed worse than students in in-person courses. The findings showed that online students had lower grades and higher dropout rates in subsequent classes. The problem with these studies is that they were limited by "self-selection bias", which meant that the people who chose to take courses online also shared certain characteristics that may have affected their academic performance. For example, pre-pandemic online students often belonged to demographic groups that were older, studying part-time, and

had existing work and family responsibilities. As a result, these students would have additional obligations that may have made it harder for them to perform well academically, skewing the results. [1]

However, when the pandemic happened, the population of online learners increased drastically, with undergraduate students enrolling online increasing from 2.4 million to 7 million between 2019 and 2020. This large increase in online students also means that the demographic groups became generalized. Online learners suddenly consist of students from all age brackets and many full-time students with no work or family responsibilities entered the online learning community. These new students eliminate self-selection bias, making it easier to objectively determine “who seems to benefit and who struggles the most.” [1] With the sudden shift to digital learning during the pandemic, it is now more important than ever to evaluate the effectiveness of online education and identify ways to improve the experience for all involved.

### **3.0 Benefits of Online Education for Students**

#### **3.1 General Benefits: Accessibility and Flexibility**

There are countless benefits that online education offers. One of the general benefits that the majority of people know is accessibility. As long as there's internet connection, students can take online classes from anywhere they are. This internet connectivity is especially helpful for students who have accessibility needs to access education, such as mobility issues or living far away from campus. And of course, in the covid case, for the purpose of social distancing. Another benefit is flexibility. This benefit is mostly seen in part-time programs whose students

consist of those in the middle-aged population who may have other obligations such as jobs or having to take care of family. Online education allows them to continue furthering their career and educational development without jeopardizing the other obligations in their life.

### **3.2 Specific Benefits: Ability to Record Lectures and Development of Technical Skills**

We now look into the specific technical benefits that online education has to offer. One of the best features of online education in my opinion is the ability to record lectures. In traditional face-to-face courses, students are required to attend lectures at scheduled times and take notes while the instructor presents the information. This activity can be challenging for certain students, particularly those with learning difficulties or those who struggle to keep up with note-taking. Through the recording of lectures, students have the opportunity to watch the content at their own pace and review it several times to ensure complete comprehension. This opportunity is particularly useful for students who have missed a class due to illness or other reasons, as they can catch up on the material by watching the recording at a later time.

Another benefit of online education that I feel not many people even realize is the opportunity for students to develop technical skills. As technology becomes increasingly important in today's job market, proficiency with digital tools is becoming a valuable asset. Online education requires the use of various technologies, such as learning management systems, video conferencing, and online collaboration tools. Students who participate in online education are exposed to these tools and can develop skills that will be useful in future careers.

## **4.0 Drawbacks of Online Education for Students**

### **4.1 General Drawback: Technical Issues**

While online education comes with many benefits, it also comes with some drawbacks. Technical issues are a common challenge that students face in online courses. Technical difficulties such as internet connectivity issues or computer malfunctions can disrupt the learning experience, leading to frustration and a loss of valuable study time. Educators can help students by providing general technical resources such as troubleshooting guidelines and common steps to improve internet connectivity.

### **4.2 Main Drawbacks**

#### **4.2.1 Limited Social Interactions**

We now discuss the impact online education has on students' mental health. One of the significant challenges I have noticed in both my personal experience and research papers is the absence of social interaction that online students experience. When taking online classes, students lack the opportunity to interact face-to-face with their classmates and instructors. The lack of interactions often causes students to feel disconnected and isolated and may even affect their academic performance negatively. An example of negative affect is that students may find it more difficult to form study groups and receive immediate feedback on their work, as students are not comfortable enough with one another to reach out. Without the support and encouragement of their peers, students may find it challenging to stay motivated and engaged in their coursework.



#### **4.2.2 Distractions**

Distractions are another significant drawback of online education and I struggle with distractions constantly still. When studying from home, it is easy to get distracted by a variety of things such as household chores, family members, pets, or even social media. With no set schedule or designated study space, students may struggle to stay focused on their coursework. The lack of a structured learning environment can lead to procrastination and a lack of accountability, making it more difficult for students to stay on top of their assignments.

Online education requires a great deal of self-discipline and self-motivation. Without the structure and routine of attending in-person classes, students may find it difficult to stay on track and may fall behind in their coursework. It is important for students, who have the option to choose online vs in-person education, to carefully evaluate whether they can adapt to an online learning environment and effectively manage the challenges that come with it.

### **5.0 Educator's Perspective on Online Education**

#### **5.1 Benefit of Online Education: Ability to Record Lectures**

Having discussed extensively the benefits and drawbacks of online education from a students' point of view, we now discuss online education from an educators' point of view. We previously discussed how the ability to record lectures is beneficial for students. We can also say that recording lectures benefits educators. Educators can use the recorded lectures as a teaching resource for future classes, which saves time in preparing lectures. Assigning pre-recorded

lectures also allows educators to focus on answering questions and engaging with students during class time, rather than simply delivering the content, which benefits both parties.

## **5.2 Challenge of Online Education: Lack of Motivation from Students**

In an interview conducted by students to their teacher, the question “Do you think students can still improve their Spanish through online classes” was asked. The teacher answered: “I’m very sure that learning via online classes has the same effect as the in-person classes, it all comes down to the attitude and motivation of the individual students, which is the same for in-person classes”. From an educator’s perspective, in terms of providing course content, there are many online tools that augment in-person experience. These online tools such as interactive whiteboards, online discussion forums, and collaborative document editing tools allow for interactive activities, simulations and multimedia content that can promote the same learning as in an in-person environment. [4]

The problems that educators face in online education relates back to the problems faced by students, which is reduced motivation by students. In summary, in terms of providing content, online learning is not so different as compared to in-person learning. Whereas engagement-wise, it’s a big problem in online learning.

## **6.0 Recommendations to Improve Online Education**

### **6.1 Recommendations for Educators**

### **6.1.1 Promote Student Interaction and Improve Tracking of Well-Being of Student**

From what we've discussed above, online education still has many areas for improvements. One of the biggest challenges I highlighted was the lack of social interaction among students and educators. Educators can use a variety of strategies to promote such interaction and collaboration through small group discussions, peer review, and online forums. It is also important for Educators to provide opportunities for students to meet outside of class times. This activity is to encourage students to interact with one another in a non-class context. I found this activity of meeting outside of class to be especially helpful during one of my online courses here at Tufts. In our first week, the professor gave us a task to meet our groupmates over the weekend in person and simply get to know each other. From that interaction, it allowed me to feel more comfortable working with my peers and I allowed me to start off the course with a better mindset.

Additionally, mental health is a big issue that is impacted by the lack of social interactions, due to the increased feeling of isolation. To address the mental health issue, educators need to take steps and emphasize better tracking of the well-being of students. Addressing the issue can be done in numerous ways, through questionnaires as a way to voice their concerns anonymously or setting up check-in times with individual students. This allows educators to gain insights on how their students are coping and identify areas where they need additional support. Overall, it is important for educators to create a supportive and inclusive online learning environment.

### **6.1.2 Improve Efficiency Regarding Supplemental Support**

Another room for improvement that I have not discussed is efficiency and here is a specific example I read and that I have personally encountered. Online office hours are times outside of

regular lectures where students have the chance to ask teachers questions. Educators have spoken up regarding the inefficiency of office hours, especially in the department of Computer Science where classes consist of dozens of students. Office hours can have long lines and long wait times, and in many cases, there are always multiple students with the same questions. Without ways for students to find other students with the same questions, time is wasted for both educators and students for having to explain the same concept and for having to wait a long time respectively. Piazza is a great platform that educators are utilizing to try improving efficiency. However, the lack of efficiency for supplemental support is still an ongoing problem.

## **6.2 Recommendation for Students**

### **6.2.1 Create Structured Environment and Evaluate Oneself's Learning Habits**

Improvements can also be made from the student's perspective in order to improve their overall online education experience. As mentioned in section 4.3, online education requires a great deal of self-discipline and self-motivation. When doing online learning, it is important to create a structured studying environment that minimizes distractions and find ways to stay motivated.

There are many ways you can minimize distractions, including creating a designated study space that is free from noise. For example, if you take your online class at home, make sure to communicate with the people at home beforehand to create a calm environment. Additionally, make sure to turn off your notifications from social media. To stay motivated during online education, you can set up achievable goals and deadlines, creating a schedule that breaks up your study sessions throughout the day. If following a strict schedule is something that you have problems maintaining, it is also advisable to ask someone such as your parents, siblings or

friends to hold you accountable. Having said that, it is also important to take regular breaks and make sure that you are getting enough rest.

If you have the option to decide between online learning and in-person learning, it is important to evaluate your own learning habits and determine whether you are well-suited for the online learning environment. You should consider factors such as learning styles, study habits, and preferred modes of interactions for your own learning habits and compare them with the specific online program you are considering. You should also evaluate whether you can effectively manage the challenges that come with online education. It may be helpful to talk with other students or educators who have experience with online courses. By carefully evaluating your own learning habits and weighing the benefits and drawbacks of online learning, you can make an informed decision about whether the online learning approach is right for you.

## **7.0 Conclusion**

To conclude, we have identified the many benefits that online education has to offer such as flexibility and accessibility. However, we should not overlook the drawbacks of online education such as reduced motivation and increased distractions, as these drawbacks not only negatively impact the students' education but also their mental well-being. Both students and educators should take steps into mitigating these drawbacks by improving the online learning environment.

As previously mentioned, research in online learning before the covid-19 pandemic mainly consisted of students in the middle-aged population studying part-time with other obligations such as jobs or family. Since the pandemic, online education is becoming more popular in all age

brackets including undergraduates students like me, highschool students and even elementary school. Because of the new demographic within the online education community, “It’s going to take years for us to really be able to see, out of the things coming out of the pandemic, what works well, what works well in some settings and what works well for some students and not for others”. [1]

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