

# Is Remote Learning Becoming the New Norm? A Survey-based Study on the Causes Behind the Poor In-person Classroom Attendances During the Pandemic

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**Abstract**—The COVID-19 pandemic has impeded the education process in many ways. It has been reported that both instructors and students have dreaded the transformation to online platforms and have deemed the emergency classes ineffectual. However, by the end of the first year of the pandemic, when in-person attendance was permitted through hybrid classrooms, poor in-person classroom attendances were commonly reported. In this study, the instructors and students are surveyed to reveal the challenges of the transformation to online classes, and to induce the causes behind the poor in-person attendance of classes during the pandemic. This study is a work in progress.

**Keywords**—remote learning, COVID pandemic, emergency classrooms, in-person classroom attendance.

## I. INTRODUCTION

Since mid-March of 2020, most schools in the US have shifted to remote learning as a recourse to face the COVID-19 pandemic. Amid the chaos, it seemed that no one was ready for shutdown. Schools have changed lectures, labs, and course-assessments from physical classrooms to online platforms [1]. Faculty and staff were anxious and unsure of how this transition would affect their jobs. In addition, instructors repeatedly complained that without in-person interactions with their students the teaching process became less engaging and boring [2-5]. Students too were worried about how the remote classes will affect their education and the quality of service that they received from a non-online based university [6, 7]. It certainly appeared then that there would be an influx of instructors and students rushing back to workplace and filling classrooms when circumstances permit [8]. However, the opposite happened when hybrid classes became an option.

When the school hosting this study adopted hybrid systems and asked students to reconvene for in-person classes, following strict safety measures and a maximum classroom occupancy limit, in-person participation was far below expectations. Classrooms have been reported to have occupancies as low as no attendance and as high as 30% of the allowed COVID-safe capacity, in a school where students mostly resided on campus. Similar observation was noted in other schools. On the other hand, students appear quite comfortable going out on campus as they frequent places like restaurants, grocery shops, and gymnasiums that pose a greater risk of catching the disease.

In this article, the causes of the poor in-person attendance, despite the strict sanitary measures in the school, were

investigated both from faculty and student perspectives. Over 300 students and faculty members of the Freshman, the Electrical Engineering, and the Computer Engineering programs at the hosting Engineering school were surveyed over the Fall and Spring semesters of 2020 and 2021, respectively.

## II. FACULTY OPERATION DURING THE PANDEMIC AND CHALLENGES OF THE TRANSFORMATION TO REMOTE TEACHING

In response to the WHO declaration of the pandemic, all faculty members were asked to immediately seize normal classroom meetings and continue the spring semester of 2021 using online platforms like Microsoft Teams®, Skype for Business®, and Zoom®. It is important to state that the majority of the faculty of the school of engineering were new to using online platforms and have only practiced traditional teaching-delivery methods in a physical classroom. Hence the common referral to virtual classrooms as “emergency classrooms” [9]. The faculty were offered crash courses on how to setup a virtual class, and in that, how to make the transition to online platforms as seamless as possible [2]. Luckily for most instructors in engineering school, the courses’ contents, lectures and laboratories, were already in slides for presentation. Also, the school have generously bought tablets and touch-screen laptops to the faculty, so they can offer hand-written explanations, or annotate slides, in a similar way to in-person classrooms.

### A. Faculty Response to the Transformation to Online Platforms

Fifteen assistant professors of the school were surveyed to understand how their lecture and lab classes have been transformed to online platforms. It is important to state that the surveyed faculty were all under the age of 40 and 40% of them were newly hired in the past two years. The faculty in this study are of the Electrical and Computer Engineering department, so, it is objective to assume an easy transformation to online platforms. Only 40% of the surveyed faculty have opted for flipped classrooms, where they had to redesign their course material, record videos, and prepare pre- and in-class exercises [10]. On the other hand the remainder of them (60%) have chosen a more traditional pedagogical way of teaching. This reveals that most of the faculty and students in this study experienced very little variation in delivery and pedagogical methods, apart from using an online platform instead of the physical classroom.

### B. Challenges of the Transformation

Of the 15 surveyed faculty, 13 have complained that the remote classrooms lacked student engagement and interactivity [11]. Four complained about the reduced students' attention spans and three reported a lowered online classroom attendance in comparison to the physical classroom. Moreover, three of the faculty reported academic integrity infractions when students were caught copying assignments or cheating on online exams. There were also four instructors involved with transforming regular laboratories into remote labs [12]. The challenges for this endeavor were substantial: kit preparation, mailing and remote lab installation and instruction.

### III. STUDENTS USING EMERGENCY REMOTE LEARNING

Akin to the instructors, students too have been anxious at the onset of transformation to remote classrooms. Most of whom have voiced their concerns during online class meetings, in end of semester surveys, or e-mailed their professors directly. The main concern was that the emergency classrooms is affecting the quality of education they were receiving. As students who have enrolled in classes in a non-online based school, the experience/service they were getting was not up to their expectations.

Most Electrical and Computer Engineering courses were either lab-based or had a lab component. At the spring semester of 2020, when the school suddenly shutdown operation, there was only a month and a half left until the end of the semester. Certainly, no time for the instructors of the hardware lab courses and part-lab courses to send lab equipment to students' homes to resume lab. Even most simulation and modeling software packages, to substitute the hardware labs, needed more time to install on the students' different computer systems. The emergency labs were deemed a failure, by both students in the end of semester surveys. One student commented "I paid to get hands on experience, but It seems like I'm taking ECE0257 (a regular book course) all over again. If that's the case I might as well get a refund for the semester because that's not what I paid for." It became no surprise the lawsuits launched against schools around the country.

Nevertheless, in the latter semesters, more carefully planned remote-labs were constructed, and the students were able to carry-out hardware and software labs remotely. The delivery of book courses also has been improved upon, with instructors getting acquainted to the online platforms and optimizing their new teaching tools.

#### A. The Students' Experience of the Transition to Online Education

The students as well were stunned by the change to online learning. Most of the students resided on campus, but were not allowed to appear at school for the whole duration of the shutdown. Consequently, they had to attend school remotely, experiencing different styles of online lecture delivery methods. Seven hundred and seventy students from different classes and spanning freshman, sophomore, junior, and senior years of study at the school of Engineering were surveyed to gauge the level of satisfaction of online lecture delivery methods [13].

Figure 1 illustrates the students' perspective for each delivery method on a scale of five level, ranging from complete satisfaction to complete unsatisfaction. For the

methods with a recording component, at least 70% of the students were satisfied with the corresponding method. This percentage drops down to about 60% for the synchronous method without recording. In addition, this method has the highest unsatisfied number of students, at about 25%.

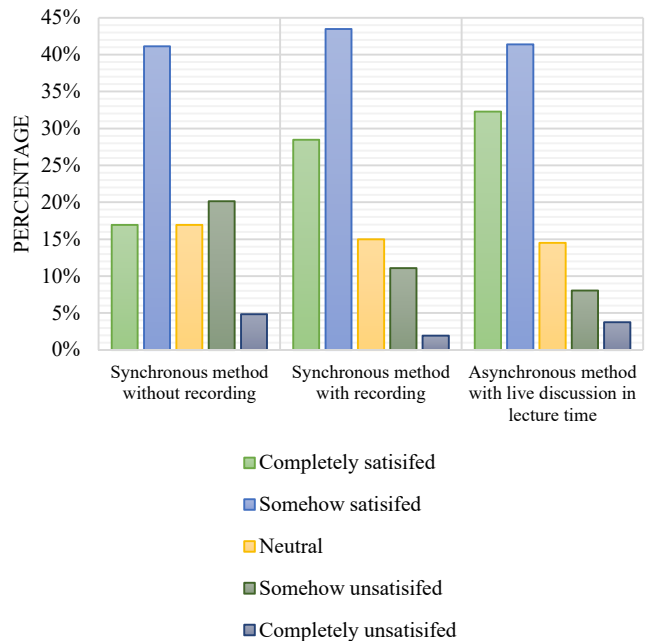


Fig. 1. Students' overall satisfaction with the presented remote lecturing method.

### B. Challenges Reported by Students

Seven hundred and seventy students were surveyed to account for the challenges that faced them in remote learning. Most students have indicated their preference of live (synchronous) recorded lectures to the asynchronous ones.

Twenty-one students (2.73%) out of the surveyed students have complained about different time zones causing problems and 158 (20.52%) complained from slow internet problems. The majority of these students were presented by the live lecturing method with and without the lecture recording. On the other hand, 163 (21.17%) complained about remote learning in general, saying that it increased their workload, compared to traditional in-person learning. Figure 2 shows some other challenges that the students reported. Additionally, in the feedback section of the survey, some students have reported the difficulty of tuning onto online lectures, when there were distractions from family members or roommates.

### IV. FACULTY AND STUDENTS RESPONSE TO HYBRID CLASSES

In the fall of 2020, the school administration decided to allow classes to partly reconvene in school while keeping the online classes. This is called hybrid classrooms, where students are given the choice to tune-in online or attend physically at school, following very strict health safety measures. Those who are physically present in the classroom must always wear face masks and be at least six feet apart. Gloves and face shields are additional requirements for attending physical labs. A maximum class capacity was determined for each classroom. The body temperatures were measured at all entrances of the school buildings. The school was poised for resuming activity.

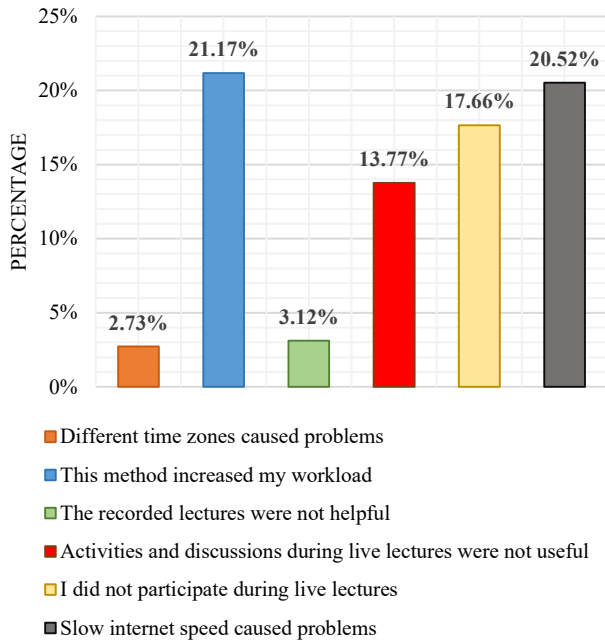


Fig. 2. Some of the challenges the students faced and the corresponding percentages.

Faculty have showed up at school and setup up the hybrid classrooms, and all emails from the school administration prompted the instructors to enforce the maximum classroom capacity limit and split the students into cohorts to attend in different days if need be. Prior to the fall semester, 255 students were surveyed whether they will show up to class when in-person classes are resumed. One-hundred and forty-two responded that they will show up to class, while 51 students intended to only attend the online meetings, as illustrated in Fig. 3. The remaining 62 students were uncertain whether they will attend in-person or remotely via an online platform. Surprisingly, the attendance figures were quite the opposite to the survey figures and those projected from students' earlier response to the shutdown stage.

The classrooms were expected to be filled up to the maximum allowable capacity, but the highest occupancy in a class at engineering school was a rounded 30% of the maximum occupancy. Other classes had no physical attendance at all. This could have been written off as fear of the pandemic, but all signs point to the contrary. Students were often seen on campus on different outings. The gymnasiums were always booked to the allowed capacity. The restaurants did not enforce face masks at all times. The safety measures of the school building surpassed all the other places that the students frequented.

Instructors too, mostly did not prefer going back to school. Only three out of 48 faculty members have continued to offer in person classes during the fall of 2020. The rest of the faculty members have either stopped showing up to class when no student showed up to class.

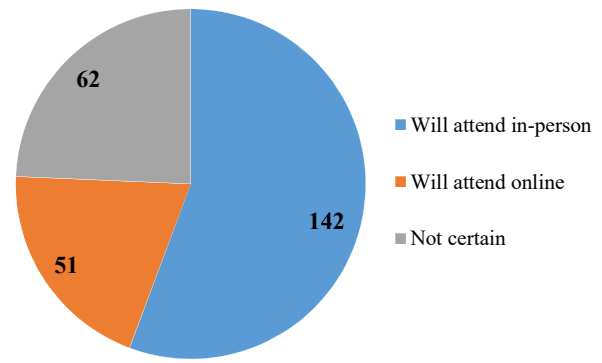


Fig. 3. An illustration of the response of 255 students to whether they intend to the hybrid classes in-person, remotely, or still are not sure.

## V. DISCUSSION OF THE POOR IN-CLASS ATTENDANCE DURING THE PANDEMIC AND CONCLUSION

From the choice of virtual classrooms and delivery methods, most school faculty have attempted to make the online meetings as close as possible to the physical meetings. This may be due to the lack of time as the faculty transitioned to emergency classrooms, so there was not much time to change to courses materials and format to better fit an online platform. Another speculation is to make the transition as seamless as possible for the students. In anyway, the result is the students now are preferring online meetings to in-person meetings in a classroom.

Following the difficult start in the spring of 2020, the transition to online platforms seemed like a temporary solution, but after a semester into the pandemic, online lectures seem more like a contemporary solution. The online classrooms when carefully planned for have mitigated the emergency-state of the classrooms, started to look more like a traditional one. Instructors have focused on how to boost students' participation and optimize their learning experience by incorporating online platform functions like polling, and breakout rooms. Students also have reaped the benefits from having lab equipment sent to their homes, and independently carrying out experiments on their own. A student testified to the benefits of remote labs: "I have learned more from implementing the experiments on my own than from copying what others do in class."

Online classrooms became an acceptable alternative to traditional classrooms at school. The results showed that over 73% of the students surveyed are now more accustomed to remote learning and feel more comfortable tuning-in from their homes or dorm rooms. The results also showed that ~65% of the surveyed students find the remote class environment less daunting for participation, and ~80% find the remote classes less demanding of their time.

Instructors too have started looking at online classes differently. In the later semesters, after the lectures were recorded and lab kits were determined, course organization and management was easy. Other advantages to online meetings, from faculty members perspective include better time management and a cut-down in commute time to work. The latter have been the most ubiquitous response recorded, for the school is in an urban setting.

It may be early to speculate if remote learning will become the new norm, and whether the new way of life during the

COVID-19 pandemic will prevail after getting vaccinations, and after the pandemic winds down. What is certain here is that online learning has been around for decades, and online platforms and technology is very developed it withstood the transformation of all learning activities of its platforms. Instructors now possess online teaching skills and have developed materials and techniques for online teaching. The students are experienced in online learning.

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