

Recommendations on the Extension of Involuntary Remote Learning (May 2020) Impacts on Students' Motivation

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Abstract—Amidst the global pandemic of COVID-19, universities have been forced to operate remotely. Remote learning has harshly impacted the academic careers of students. In order to make a data-driven recommendation to the Pennsylvania State University, a study was performed to investigate the change in motivation in students. The study found that students' motivation (as well as other facets) have been greatly impacted. The decline in motivation was shown to be a negative impact on the students' abilities to perform in class. The students' success is very important to academic establishments. The decline in motivation could potentially reflect poorly on the University. Proper academic intervention must occur to address the issues.

I. INTRODUCTION

IN the Spring 2020 semester, the Pennsylvania State University (as well as universities around the U.S.) was faced with an unprecedented situation that impacted every staff, instructor, and student at the university. The COVID-19 virus and government response forced the Pennsylvania State University to switch to remote learning involuntarily. There was little time to prepare for this change since the university acted swiftly in abandoning in-person learning to protect the health of the community. This change in environment greatly impacted the students in a variety of ways. Although there are many ways in which students' education was impacted, this study will focus on the impact on students' motivation (as that is a determinant of academic success). In understanding the impact on student motivation, a proper recommendation can be formed. Currently, there are no published research available on how students are impacted by COVID-19 due to the recentness of the topic.

II. LITERATURE REVIEW

Since the late 1990s and early 2000s, the topic of the effects of distance learning on students has been researched. Recently, campuses across the United States were forced to operate remotely due to COVID-19. Researchers have not had adequate time to prepare research related to the effects of remote learning on college students. University's feedback and online blogposts will fill the gap of knowledge until researched material becomes available.

A. Student Motivation

Recently, a team at the University of Colorado Boulder

conducted a survey on the impact on students in a remote learning environment [1]. The results of this survey were explicit in that students felt less motivated after the switch to remote learning. Not only did the new environment stress students out, but the environments also distract the student in numerous ways.

Students at the University of Wisconsin at Whitewater's were also surveyed before the switch to remote learning took place. Many students did not find remote learning appealing and were anxious about it [2]. It is attitudes like these that can affect the motivation of a student through the remote learning period. As there was much uncertainty at this time, students were mainly worried about final grades and the impact on their learning. This worry may be warranted. Previous research on the performance gap shows that both course persistence and standardized course grade have negative relations in online courses [3]. This indicates that success in online courses is more difficult than traditional in-person classes.

B. Teachers' Role in Student Motivation

There are many factors that play a role in student motivation. These factors become more complicated when examined in quarantine. However, previous research can shed light on underlying principles of student motivation in distance learning that does not seem to change. G. Wettergren's research provides clear results in how student motivation is affected by distance learning [4]. In remote learning settings, it may seem the responsibility of maintaining motivation solely lies on the backs of students. But according to G. Wettergren "Students feel that teacher involvement is important in motivation..." The switch to remote learning fundamentally changed the way courses were being taught. Without adequate preparation, professors were not able to provide a well-constructed learning environment, nor were they able to motivate students. Most professors are not experienced in conducting class remotely. Therefore, they should be educated on efficient strategies. Some teachers have given up on the new delivery method, therefore, did not attempt to adapt the curriculum. A. Pinantoan derives the basic techniques all teachers should prepare for distance learning [5]. Pinantoan demonstrates the need for clear communication at the start of distance learning. Clear communication and set guidelines at the start of remote learning set clear goals and provide structure for students. This was not available to many students, as the professors also

found themselves in an unprecedented predicament.

C. Lack of Student Participation

Student participation in remote learning is the cornerstone of a student's motivation. Without proper engagement, students start to become disinterested. Teachers need to provide clear guidelines for student participation [6]. This takes effort on the teacher's end to create a grade based on participation. This may already be present in traditional classes, but must be adapted for remote learning. Simply showing up to a Zoom lecture is not sufficient. An effective participation method in remote learning could be hypothesized to break through the distractions of the student's environment. The University of Massachusetts Amherst provides helpful tips on how to effectively bolster student participation [7]. They recommend a fervent use of discussion boards, pairing students together (to independently check up on each other), and content-related questions. Moreover, there are many online applications designed to aid in remote learning that are available to the professors.

The results are clear that motivation has been severely affected by online learning. Lack of student motivation will result in a lack of success. Teachers are also implicated in the student's motivation. With proper preparation, they can create courses that support students in participation, which in turn, supports motivation. Adapting to the new circumstances is the only way students and teachers can continue to succeed in academic endeavors.

III. METHODS

The survey was conducted using Google Forms. The survey was distributed to 11 students in the Pennsylvania State University's ENGL202C Technical Writing class. Of the 11 students, 10 replied.

The questions were developed to gain insight in students' experience of remote learning in regards to motivation, mental health, professional development, and instructor intervention. The questions included eight multiple choice questions, four linear questions, and two open-ended questions.

A. Questions Posed to Students

Question 1: I am doing better in school since remote learning started.

- Yes
- No

Rationale: To gather data on the self-efficacy of the student through definite opinion of "yes" or "no".

Question 2: Have you struggled to maintain motivation?

- Yes
- Somewhat
- No

Rationale: To gather data on the student's change in motivation during remote learning through definite opinion.

Question 3: Did you feel distracted in your remote learning environment?

- Yes
- Somewhat
- No

Rationale: To gather data on change in students' environments affecting education through definite opinion.

Question 4: The switch to remote learning has impacted my mental health.

- Yes
- Somewhat
- No
- Prefer not to answer

Rationale: To gather on the change of students' mental health conditions through definite opinion. (The option of not answering was offered to respect privacy).

Question 5: The remote learning environment has changed the amount of stress in my life.

Linear Scale from 1 to 5. 1 being "It has decreased my stress", 3 being neutral, 5 being "It has increased my stress".

Rationale: To gather data on the stress levels of students. Presented in a linear range to quantify data.

Question 6: Since the switch to remote learning, my sleeping habits have been impacted.

- Yes, in a positive manner
- Yes, in a negative manner
- Somewhat
- No, I have not experienced any change in sleeping habits

Rationale: To gather data on the change of sleeping habits in both positive and negative manners.

Question 7: I feel that I have lost out on professional opportunities and networking opportunities during remote learning.

- Yes
- Somewhat
- No

Rationale: To gather data about students' ability to participate in professional development activities.

Question 8: The lack of hands on learning (like classes with laboratory components) has greatly interrupted my learning. *Linear Scale from 1 to 5. 1 being "Has not impacted me", 5 being "Has greatly impacted me."*

Rationale: To gather quantifiable data on disruption of the students' learning experience.

Question 9: How were your plans for the summer affected? (Please select the one that best fits your circumstance.)

- I have an internship and it will be in a remote environment.
- I have an internship and it will be in person.
- I had an internship, but my offer was rescinded.
- I could not find an internship.
- I was not planning on having an internship. I was planning on taking summer courses.

- I was not planning on having an internship for other reasons.
- Other

Rationale: To gather data representing the disruption of professional development through summer internships.

Question 10: My university prepared students and professors to switch to remote learning.

Linear Scale from 1 to 5. 1 being “They did a poor job preparing us”, 5 being “They did a great job preparing us”.

Rationale: To gather students’ opinion on the preparation the university provided for the switch to remote learning.

Question 11: Were questions posed to professors or teaching assistants answered in a timely manner?

- Yes
- No

Rationale: To gather data on remote learning’s impact on communication between professor and student.

Question 12: Professors have made changes to courses after the switch to remote learning, and I am overwhelmed with the workload.

Linear Scale from 1 to 5. 1 being “Not overwhelmed”, 5 being “Very overwhelmed”.

Rationale: To determine if remote learning’s workload differs from previous workload. Presented on a linear scale to provide quantifiable data.

Open-ended Question 1: Please detail some of your personal experiences with the technical difficulty of switching to remote learning. Were there professors that could not handle using technology? Did you struggle with using technology? Rationale: To gather student testimony on difficulties with technology from the students’ perspective. The open-ended format allowed students to detail personal stories.

Open-ended Question 2: Please detail how the remote learning environment has impacted your motivation.

Rationale: This study is focused on student motivation, therefore, students’ testimonies are required to provide students’ narrative.

IV. RESULTS

After the Spring of 2020 semester, ten college students were polled in response to their experience in remote learning. These students had backgrounds specific to engineering and science majors.

A. Student Success and Motivation

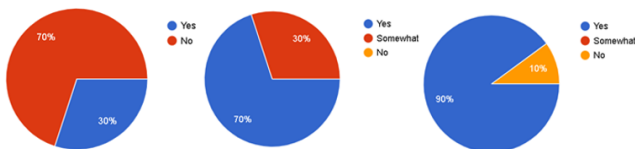


Fig. 1. Pie charts depicting respondents’ answers regarding success and motivation. Refer to Questions 1-3, respectively.

It is difficult to measure success, however most students lacked self-efficacy in the Spring 2020 semester. A total of 70% of students felt they did not do better in school since remote learning started. The key statistic of this research was whether or not students’ motivation was affected. Fig. 1 shows that all students struggled somewhat to maintain motivation through the remote learning period. Fig. 1 also shows that 90% of respondents reported that they feel distracted in their remote learning environment.

B. Stress and Mental Health

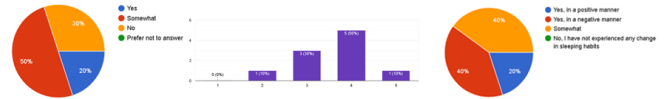


Fig. 2. Graphs depicting respondents’ answers regarding stress and mental health. Refer to Questions 4-6, respectively.

Although not all students’ mental health was affected, 70% noticed somewhat of a change in mental health. Numerous students feel that the amount of stress in their life has increased due to remote learning (Fig. 2). In regards to mental health, sleeping habits also have changed in 100% of the students (Fig. 2). Of the students, 20% noticed somewhat of a change, 40% noticed a negative change, and 40% noticed a positive change. This implies that there are students not sleeping as much as they used to, and some getting more sleep.

C. Stunted Professional Development



Fig. 3. Graphs depicting respondents’ answers regarding their stunted professional development. Refer to Questions 7-9, respectively.

Shown in Fig. 3, the switch to remote learning has altered the professional development of students. Almost all students found their summer plans for internships affected in some way. Most students hoped to intern this summer, but were unable to intern for multiple reasons. Professional opportunities during the spring semester were also stunted. Many students prepare for the professional world through hands-on lab experience. Students laboratory experience was forfeited this semester.

D. Preparedness and Professor Involvement



Fig. 4. Graphs depicting respondents’ answers regarding preparedness and professor involvement. Refer to Questions 10-12, respectively.

Students felt that their university had not prepared professors and students. The results on whether professors and teaching assistants promptly responded to students was vastly mixed, and resulted in a fifty-fifty split. This represents an

interruption in communication during remote learning. There were also changes in course curriculum after the switch to remote learning that overwhelmed students.

E. Open-Ended Questions

In the open-ended Question 1, students expressed that they themselves did not struggle with using technology besides having poor internet connection. However, they expressed that classes and their learning experience was impacted. One student said, "Complete lectures have been wasted due to the professor being unable to find a way to effectively deliver the lecture beforehand." Students described professors struggling to adapt to remote learning, Zoom lectures being interrupted, and professors struggling to annotate slides. Students noticed professors' lack of training for the increased use of technology. A student noticed a decline in quality of education and stated, "I had multiple professors who could not use technology to its capabilities. The quality of my education decreased immensely."

In the open-ended Question 2, students expressed a lack of motivation once the switch to remote learning occurred. A student described remote learning environment as environment that was previously, exclusively a relaxation environment. One student claimed, "With remote learning, the seriousness of class, to me, has taken a big hit. The responsibility of waking up every day to go to a physical classroom setting is very rewarding. Waking up 5 minutes before a lecture is not. A college campus is designed to encourage the learning process; however, when this is all suddenly stripped away, that encouragement becomes a yearning for what was once had. Zoom University simply does not give the same inspiration to a student as a college campus." This added to the difficulty for a student to stay motivated. A student remarked that there was ample time to finish assignments even though the student did not always finish the assignment on time. Another student stated, "I have zero motivation. I always forget deadlines and I feel that I'm not learning."

V. DISCUSSION

From the results of the study, it can be seen that students' education has been affected by the remote learning environment in many negative ways. The results show the change in environment and lesson format has caused a decline in motivation. Students are having trouble staying engaged in remote classes. They may be distracted by their environment, mental health, or other factors. Professors are having trouble teaching these classes. Professors are missing a component of engaging content in virtual learning. Students have lost a quality in education through the lack of professional development. The loss of hands-on activities deprives students of the academic experience that is pertinent to professional careers. These results suggest that to mitigate the decline of motivation in students, academic intervention is required. As pointed out in the literature review, teachers play a role in students' motivation. Students have no control over the learning environment they are placed. Professors are struggling, but they are the ones in control of constructing a

meaningful learning environment. Many do not know how to embed student engagement activities throughout their course. The results of this study can be used to provide a foundation for data-driven recommendations.

Limitations

There are many limitations to this study. The corpus of this study was limited to ten respondents. The corpus of this study was also biased to only include engineering and science students which can skew the opinions of the results. Another study should be done to include students from different backgrounds. The study was also limited in the quantity of questions asked to the students. With more questions, more data could be collected on the students' experience with remote learning. There were also limitations in outside literature and supporting research due to the lack of time for advanced studies to be conducted.

VI. RECOMMENDATIONS

The Pennsylvania State University cannot be held responsible for every aspect of the students' lives that have been affected. Based on the data collected, I propose the University make changes to what they do have control over.

Recommendation 1: Conduct a campus-wide survey

Due to the lack of variety of student participants in this study, further analysis should be conducted to investigate the severity of the academic issues arising at the university. Students from different backgrounds may be experiencing different scenarios impacting their education.

Implementation: Create survey to collect students' experience during the Spring 2020 semester. Distribute survey to every student on every Penn State campus.

Justification: The results in this study were limited by the number of students invited to participate. Additional recommendations could be made with further participation and data.

Recommendation 2: Form a task-group

A task group should be formed to research methods to effectively prepare the students, faculty and staff at the Pennsylvania State University.

Implementation: This task group should be comprised of team members knowledgably in effective teaching strategies. This team will research methods to add student engagement and participation into classes. This task force will also create guidelines for remote learning classes dependent on nature of the class. This will create a cohesive learning environment that will become easy for students to navigate. By keeping professors on the same page, it will be easy to trouble-shoot issues. A trouble shooting guide should also be prepared based on issues that professors faced in the previous semester. Training modules should be

developed to help faculty adjust to teaching in a remote environment.

Justification: Based on the findings of the study, most students felt that the University had not prepared professors and students. Therefore, preparation for professors should be created for the continuation of online learning. (Preparing professors will allow professors to prepare their students.)

Recommendation 3: Distribute training modules to faculty

Implementation: Training materials should be distributed university-wide to all faculty and staff to aid in their transition. Faculty should participate in training material before the start of the upcoming semester.

Justification: Based on the responses of the open-ended question 1, students felt that professors did not possess an adequate working-knowledge of the technological tools they were using. Therefore, proper training should be available before the next semester begins.

Recommendation 4: Collect Feedback

Implementation: After the following semester, feedback should be collected and documented.

Justification: If the University is forced to continue remote learning, the feedback can be used to make adjustment to the program. A study should be conducted to make preparations for the university in case an event like this should ever arise again.

These recommendations do not directly apply to every factor affecting students' motivation and success in the remote learning environment. However, it is in the best interest of the University, the faculty, the staff, and the students for the University to address the factors they do have control over. These recommendations directly relate to the preparedness of the professors and the structure they build within the remote learning environment.

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