



WPI

Transitioning During COVID-19: Student Perspectives

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This report represents the work of WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its website without editorial or peer review. For more information about the projects program at WPI, please see <https://www.wpi.edu/project-based-learning/global-project-program>

Abstract

COVID-19 has caused most universities in New England to move to online learning in March 2020. Higher education institutions all made similar changes to their operations, but student perceptions of the unique experience of this transition exposes nuances in the preparedness of different universities. We surveyed and interviewed students at WPI to understand how they felt these changes were handled, as well as their opinions on the quality of remote education. We also interviewed students at other universities in the New England area and compared these results. Students were asked about how they had managed the transition, the measures taken at their respective universities, and what impact the changes have had on them. We highlight the main points of comparison between the universities, in order to gain a comprehensive understanding of the effects COVID-19 has had on higher education. The main takeaways from the results include:

- At every school, students were originally sad and disappointed to move to remote learning, but they now are more understanding
- Students perceive the quality of education has decreased in the online environment.
- Learning styles affect students' work progress online. In order to best satisfy all students, they prefer options to choose what best suits their learning style.
- The schools which provided extra time for the transition and adequate resources for both the professors and students had a smoother transition to online
- Students are not only affected this academic year, but they are uncertain of the future, whether it's their internships, jobs, or next year's schooling.

The 2020 breakout of COVID-19 has forced universities to modify their classes to fit an online format in the span of a couple weeks. Due to the suddenness of the changes, students have had to adapt their expectations of academics, living situations, and financial situations alongside the abruptness of decision-making. This report analyzes the survey responses of students at WPI. It compares the results with interviews from students at WPI and other New England schools, to add context to the quantifiable data of the survey.

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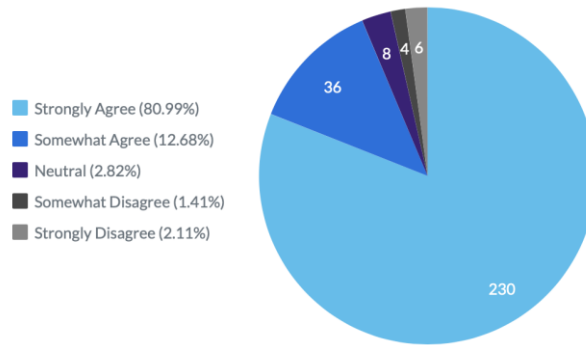


Figure 3: WPI Made the Correct Decision

Students responded favorably to the way that WPI handled the move to online learning. However, students overwhelmingly felt that their current classes online were not up to the same quality academically as the traditional in-person setting as seen in response to two questions: 65% agreed or strongly agreed that WPI adapted well to online learning, but 83% disagreed or strongly disagreed that the quality of education online is the same as in person. The full results to these questions are shown below.

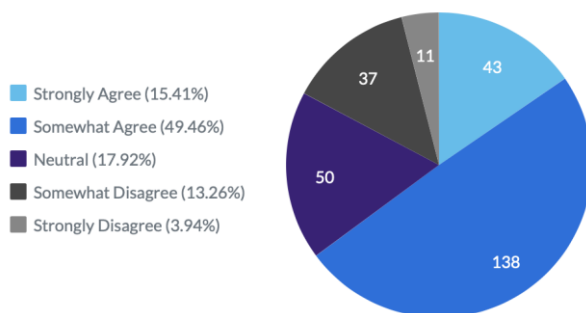


Figure 4: WPI Adapted Well to Online Learning

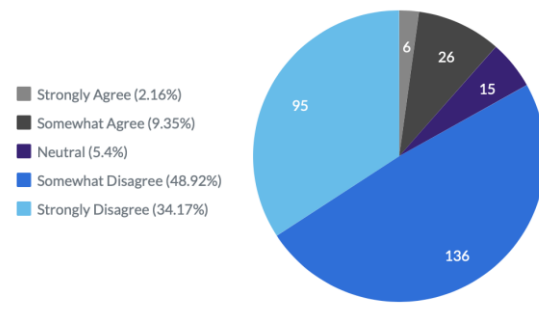


Figure 5: Quality of Education is the Same Online as in Person

These two sets of answers lead to a sharp contrast in student opinions. We wanted to explore the dichotomy in the pattern of these results. Student interviews and qualitative survey data divulged the nuances in different experiences, especially laboratory courses and WPI qualifying projects, such as the Interactive and Major Qualifying Projects (IQP and MQP, respectively). Even with maximum efforts made by administrations and faculty, the standard of completing “hands-on” work is much lower now that remote completion is required.

Students living on-campus in dorms were negatively affected by the campus closure. Some were told to leave their rooms with very short notice, or just not to return to campus until after spring break. In either case, students disagreed strongly or somewhat with the statement that

they were given enough time to move out when the campus moved to remote operations, with 75% of on-campus students believing this, as shown below.

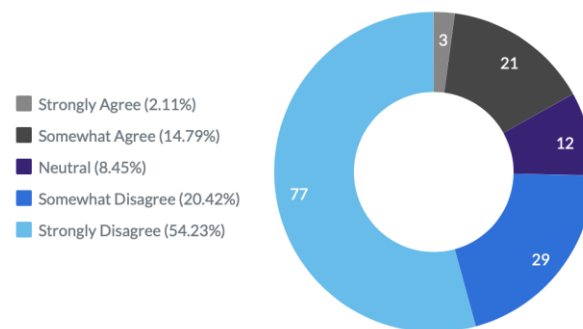


Figure 6: Enough Time to Move Out (On-Campus)

Students at WPI were on spring break when it was announced that campus was closing for the rest of the term. Those that went home with only some items wished they had received information sooner so that they could have better prepared for the changes when they initially left campus. Students at other universities felt that even though the time given to move out was announced abruptly and with little flexibility, they appreciated being able to take their belongings before they would have been locked inside.

Learning style in this transition was another area we investigated to determine how it would influence students who were managing the changes. Group learners and self-learners have adapted differently. Self-learning students have generally been successful in maintaining the same level of effort, being able to motivate themselves without the pressures of other students working around them. Those that rely heavily on external motivators, such as the social environment of a college campus, have had a harder time maintaining a schedule and the same work ethic in an unstructured setting. With the prevalence of classes at WPI that revolve around group work and hands-on learning, it makes sense that many WPI students identify as group learners. With that learning style, they may face greater disadvantages in an online setting. Figure 7 compares the quality of education to WPI students' learning styles.

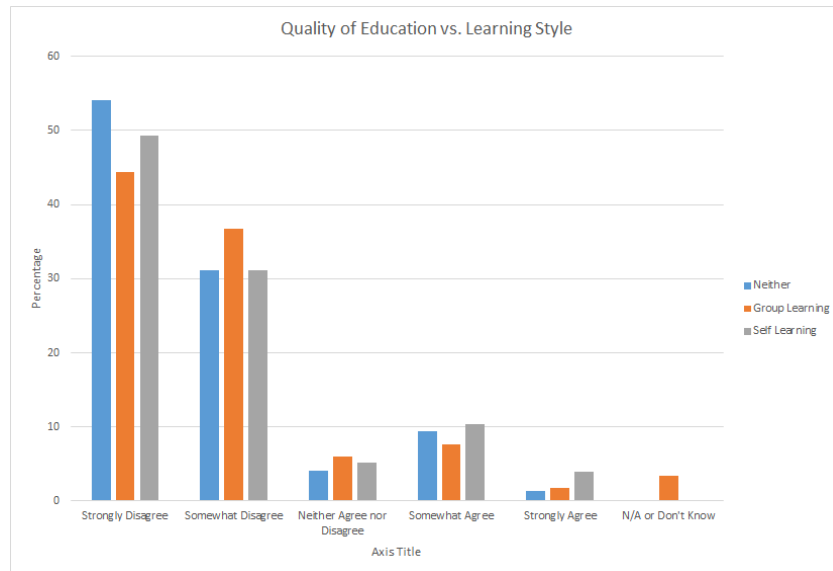


Figure 7: Quality of Education Opinion Separated by Learning Styles

Through interviews with students at other schools, we found that engineering and science courses at WPI face fewer obstacles in transitioning online than other areas of study, so long as they are not lab-based. Lab-based courses have faced difficulties at WPI and elsewhere, being less engaging and lacking variability in an online setting. Discussion-based courses, such as seminars, have faced similar troubles. Many students agree that it is difficult for these courses to be comparable to their in-person counterparts. Likewise, schools primarily focused on the arts and communications have had universal issues in the translation of classes to online forms. We investigate some particular cases of students in these studies, who have found it challenging to learn art online with a barrier preventing immediate feedback.

The faculty and staff of higher education institutions have made tremendous efforts in moving students online as a way to continue learning through a pandemic. Most of these decisions were inevitable due to a lack of foresight into the gravity of COVID-19's progression. Students largely understand these decisions had to be made, but otherwise would have hoped for more empathy from respective administrations in particular cases.

For those who want a comprehensive look at the specific effects at New England schools, our research and analysis will offer some insight into the student perspective. We have examined the nuances of each school's unique situation thoroughly, and as a result, have found a consensus among many students about the changes that had to be made. For additional material on our project work, please visit www.sites.google.com/view/covidst.

Acknowledgements

Our team would like to thank our advisors, Professor Peter Hansen and Professor Bruce Bursten, for all the guidance and support they have given us throughout our IQP, in both our initial project and transition to our current project. We appreciate the empathy and kindness they have shown throughout this term, as we are navigating this new environment together.

We would like to thank Professor Holly Ault for sharing her knowledge of Denmark with us and providing support with our previous project. We would also like to thank Professor Sarah Stanlick for her instruction and direction in developing our original project proposal, as it made the transition smoother when developing our new report.

We would like to thank our fellow Denmark cohort, as we were all planning to travel together. We are saddened that we didn't have that experience together, but we are glad to have worked with you all through this process and are excited for the future experiences we may share.

Finally, we would like to thank our survey and interview respondents who took the time to share their experiences. Our project would not have had the same impact if we did not have your contributions. Thank you to our friends, family, and peers, who have also helped us during this time of transition.

Authorship Page

Nicholas Boggiano	Worked to transition into the new project from the previous one. Wrote about the coronavirus in the background section. Researched other schools and helped to write the background on Northeastern and UMass Lowell's transitions. Conducted and analyzed interviews with students at Northeastern University, UMass Lowell and WPI. Analyzed survey data to create the results sections. Worked to develop the questions for the survey and the interviews and assisted in the creation of the other appendices. Edited the report and each of the deliverables. Formatted the final report in word.
Olivia Lattanzi	Worked with the team to transition the project and identify areas of COVID-19 to examine. Conducted research on COVID-19, universities of interest, and data visualization, with an extensive focus on learning styles and their application to an online environment. This includes supplemental information found in Appendices A-C. Expanded on general methodology with the team. Compiled background information for Emerson College, Northeastern University, and UMass Lowell. Conducted interviews with students at WPI, UMass Lowell, and Emerson College. Analyzed interview and survey data in making comparisons between student experiences. Developed and completed project deliverables as described in Appendix M, including the website and booklet. Edited the final report and deliverables in their entirety.
Megan McCoole	Wrote the transition of our project from working in Denmark with Eco-Net to now working on our IQP remotely portion of the introduction. Researched and typed part of the coronavirus section background, and wrote the section on university closures and online learning during COVID-19. Expanded on general methodology with the team. Typed majority of chapter four (background, methodology, and results) and created most graphics. Wrote the background of Saint Anselm timeline. Typed methodology for chapter five. Conducted, analyzed, and wrote upon Saint Anselm Interviews. Wrote majority of chapter six and seven. Created some citations for the reference page. Wrote In-Depth Methodology (Appendix D) and survey and interview best practices (Appendix E). Worked with the team on survey and interview questions. Developed the qualtrics survey. Wrote survey and interview security and helped on other appendix aspects as well. Contributed in the creation of the poster and presentation. In the end, read through the entire paper for grammar and spelling.

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1. Introduction

The world is currently in crisis with the spread of the novel coronavirus and COVID-19 disease. Unprecedented measures have been taken and continue to be made to stop the spread until treatments and vaccines are made available. The disease is extremely contagious, and many people can be asymptomatic, and clear evidence has been shown that those who don't know they are sick are contributing to the spread. In order to contribute to slowing the growth and curve of infection, colleges have made difficult decisions that have impacted students, staff, their respective families, and how higher education will be conducted going forward. Most colleges in New England, and all of the United States, have moved the remainder of the academic year online.

This transition to a new learning environment has brought many unexpected challenges to students and faculty alike. In the United States overall, 12.1 million college students were attending university full-time in fall 2019. In the New England area alone, more than 250 colleges and universities enroll around 800,000 undergraduate students (New England Board of Higher Education, 2015). Many students no longer have the housing they expected or must face financial burdens due to the coronavirus (National Center for Education Statistics, 2018). A lack of preparation for campus closures and the cancelation of study abroad programs has led to a variety of responses from the public.

The coronavirus pandemic upended our plans when WPI announced, following guidance from Massachusetts Governor Baker, that all international travel and global programs were canceled, on March 4, 2020. We had planned to travel to Copenhagen, Denmark, to complete WPI's Interactive Qualifying Project (IQP). We were going to be immersing ourselves in the Danish culture while working with Eco-Net, an environmental nonprofit that brings locals together on sustainability initiatives. Our goal was to create a holistic operational plan, which included a business plan, marketing plan, and a business model. Eco-Net's mission is rooted in a balance of incorporating the main components of the organization that all strengthen each other: practice, culture and life, information, learning, and networking. We hoped to leave Eco-Net financially sustainable with the plan being implementable for years to come as their organization grows.

Our group, alongside many others, is now completing our project remotely, shifting our objectives and mission participating in the IQP. The limitations in communicating with Eco-Net solely online and not seeing their initiatives and projects in person lead us to take a different route. We are now investigating the impact COVID-19 has had on higher education, through the student perspective. We draw connections between class year, area of study, learning style, the announcement of changes, and how all these areas culminate in each student's overall success in the new environment. The unique timeframes of each institution are also considered in impacting their student populations.

Online learning has been established for a long time. A research study showed that online courses were both more and less effective for students depending on their learning styles (Stern, 2004). Students that were more extroverted in nature were seen to have done worse in online courses, while more introverted students were seen to have done better. Schools rushing to convert normal classes, labs, and projects to remote versions may disproportionately impact students due to the many ways personality, instructor style, and motivation impact academic success in this new setting.

Student opinions on the changes implemented are not well known, as the effects are developing right before our eyes. The survey and interviews used to collect data will get to the

root of issues faced by students. Collecting this information will be useful to faculty and future students who wish to understand this unique perspective during COVID-19. It will also provide some insight into common thoughts and ideas students had in regards to the transition.

The result of these studies will be data describing how WPI students feel about the transition to online learning that can be categorized by several distinguishing factors, and a set of interviews with students from other schools to hear their stories of the transition. Comparing WPI to other universities in the area will allow for a comprehensive understanding of the student perspective in this unique moment of higher education. We can also determine how WPI ranks among these other institutions and give a wider context to the situation at New England universities.

2. Background

The colleges that will be investigated throughout this study, in addition to WPI, are St. Anselm College, Northeastern University, Emerson College, and UMass Lowell. We will examine how these universities compare in maintaining student engagement and knowledge of COVID-19's progression. There are also multiple factors to consider in how students have been impacted in their transition to a new learning environment. Their variations in learning style will be highlighted as one of these factors, in addition to living situation, major, class year, and initial coursework expectations.

2.1. Coronavirus

Coronaviruses are a family of respiratory viruses and throughout history have been spread from animals to humans (WHO, 2020). Three strains of coronavirus have spread throughout the world involving respiratory problems in more recent years. Severe Acute Respiratory Syndrome (SARS) began in February of 2003, originating from bats (Texas A&M University, 2017). Of all the people infected, 10% were killed by the virus. Another similar virus began in 2012, called Middle East Respiratory Syndrome (MERS), and likely was transmitted to humans from camels (Texas A&M University, 2017). MERS was more deadly than SARS, killing around 30% of the people who were infected (Saey, 2020).

The new coronavirus, known as SARS-CoV-2, is a virus more commonly known as COVID-19. This coronavirus is a mutated strain of the SARS virus and is believed to have spread to humans from bats through another animal source. COVID-19 originated in Wuhan, China, in December 2019 (WHO, 2020). Due to it being a respiratory virus, COVID-19 has the ability to spread from person to person through close proximity. Coughs, sneezes, talking, and even just breathing can release virus particles into the air, spreading the disease (Begley, 2020). The disease can also survive on surfaces, increasing the spread. It is able to exist on some surfaces, like stainless steel and plastics, for up to three days, while on others, like cardboard, for about one day. It is able to spread to new hosts through this type of contact (van Doremalen, Bushmaker, Morris, Holbrook, Gamble, Williamson, ... Munster, 2020). With most cases of the disease being mild or asymptomatic, the ability for people who have the disease unknowingly to spread it is very high.

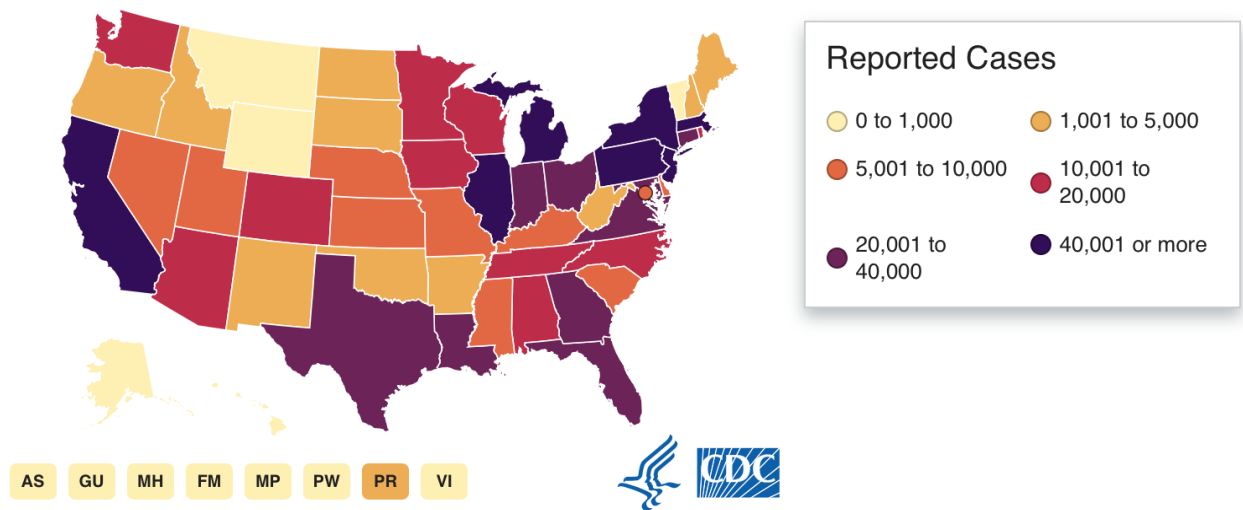


Figure 8: Cases of COVID-19 in US by State and Territory as of 4/11/20 (CDC, 2020)

The first confirmed coronavirus case in the US was on January 22nd, with the illness onset being on January 14th (CDC, 2020). The virus has since spread exponentially across the US, especially in places of high population density, as shown in Figure 8. As a vaccine does not exist, there are few countermeasures to stop its spread. Good hygiene and physical distancing have been the most prominent measures taken. Limiting the number of interactions that people have can reduce its infection rate.

2.2. Higher Education Institution Closures and Online Learning During COVID-19

Higher Education Institutions play a key role in trying to stop COVID-19. Hundreds, if not thousands, of students and faculty gather on each individual campus. The decisions that schools have made consist of transferring to online learning, working remotely, and closing all campus buildings and dormitories. There are discrepancies in how the steps colleges have taken to ensure safety are being perceived by their respective campus communities, especially when it comes to the time allotted for students and faculty to adjust to the changes.

In the US, there are a total of 5,300 higher education systems (Jeffrey J Selingo, 2015). The higher education systems can be classified as colleges, institutes, and universities. In New England alone, there are over 250 higher education institutions (New England Board of Higher Education, 2020). All New England states presently have in place state-wide lockdowns with stay at home orders. Boston and Connecticut were the first in the region to initiate the orders on March 23rd, with Maine as the last on April 2nd, 2020 (Secon & Woodward, 2020). Of New England institutions, there are about 230 schools that have transitioned to online learning, with students at the schools being asked to vacate the campus (New England Board of Higher Education, 2020).

By responding to CDC guidelines and information from public officials, colleges have made choices in order to best benefit their respective communities in extremely slim timeframes. School curricula and calendars played a factor, and the placement of spring break impacted how much time certain institutions were able to give their faculty to prepare for online learning.

2.2.1. Profiles of the Universities of Study

For our investigation into the student experience, we wanted to pick universities of comparison that are different from WPI. They are public, private, arts oriented, experimental, and distinct in a variety of other ways. They focus on students across a wide range of academia: business, arts, theater, health science, and more.

St. Anselm is a liberal arts college in Southern New Hampshire. It has just over 2,000 undergraduate students who study on campus (U.S. News, 2020c). It has a small, tight-knit community feel. The curriculum requires several philosophy and theology courses for all students. It offers 32 areas of study, with pre-professional programs in law, medicine, dental, veterinary, and theology.

Northeastern is a global, experimental research university that was founded in 1898, located in Boston, Massachusetts. With over 21,000 students enrolled, and campuses located across the United States and the world, it has a large and diverse student body (U.S. News, 2020b). It is distinguished by its integration of the cooperative education program into students' yearly schedules, with many graduating after five years as opposed to the standard four. Northeastern places about 5,000 students annually into co-ops in Boston and around the world. Student research, service learning, and global experience are key components of the experiential learning opportunities offered.

Emerson College is a higher education institution in Boston, Massachusetts, founded in 1880 and known for its liberal arts curriculum with specializations in the arts and communications. It has an undergraduate population of nearly 4,000 students, and offers 31 undergraduate majors. The curriculum is also rooted in a liberal arts and sciences model, requiring students to take courses from other academic disciplines (U.S. News, 2020a).

The University of Massachusetts, Lowell is a public research university with over 18,000 students, established in 1894. It has several nationally recognized programs in engineering, criminal justice, education, music, and science and technology. In-state enrollment represents nearly 90% of undergraduates, with 3.5% of the undergraduate enrollment being international students (UMass Lowell, 2020).

2.2.2. Social Media for Continued Student Engagement

Worcester Polytechnic Institute has been providing resources in order to give more support to the WPI community in these turbulent times. One of the resources includes "Just in Time Tips". These tips are sent out to support students through transition and their remote learning, in addition to finding more success in working online. Weekly emails are usually accompanied by graphics, upcoming events, and links to different resources on campus. One of the commonly featured graphics is shown in Figure 9.

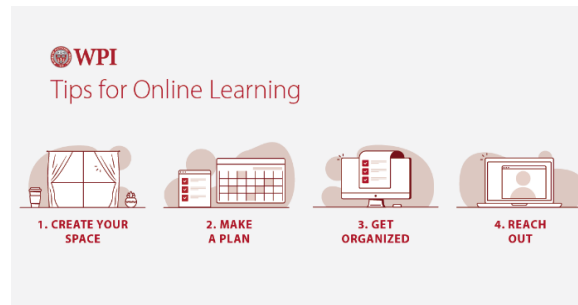


Figure 9: Just in Time Tips for Online Learning (WPI)

WPI also utilizes its Instagram account to inform students on global projects progress, and overall make sure students still feel like a part of the WPI community, even as work continues remotely.

Like WPI, other institutions in the New England area have been using online platforms to convey information. At St. Anselm College, the community has been receiving announcements via email, as well as through their website, which includes a specific page for COVID-19 updates and messages. There are many other resources to help aid professors and teachers online. This includes a list of remote instruction resources that can be used for online learning and teaching, such as Microsoft Office, Citrix, Canvas, Zoom, and Google Hangouts (St. Anselm College, 2020).

On March 7th, Emerson college announced a website specifically for updates on COVID-19, as well as an FAQ page and email alias (Emerson Today, 2020).

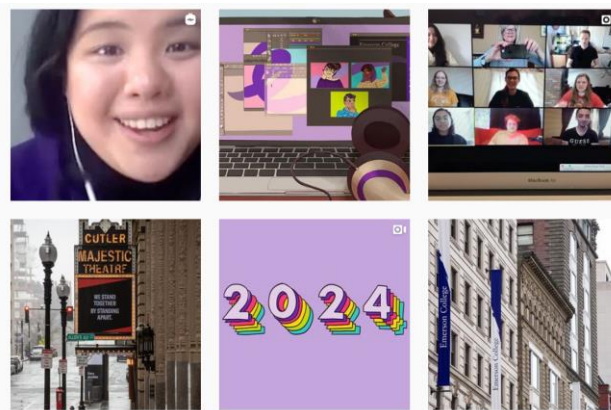


Figure 10: @emersoncollege Instagram as of 4/16/2020

The Emerson College Instagram has been keeping students updated visually since the campus has closed. As shown in Figure 10, a post on March 19, 2020 (bottom left) shows the marquee outside the Cutler Majestic Theater: "We stand together by standing apart" (Emerson College [@emersoncollege], 2020b). There is also a post showcasing student work and collaboration over a Zoom call (top right) (Emerson College [@emersoncollege], 2020a). Like many institutions, Emerson is trying to keep their students engaged in university life and the changes in operations through social media.

UMass Lowell has a comprehensive webpage on coronavirus updates. At www.uml.edu/alert/coronavirus, members of the community can find information on COVID-19,

school specific updates, and other changes in academics. Social media is also used to engage students in this information.

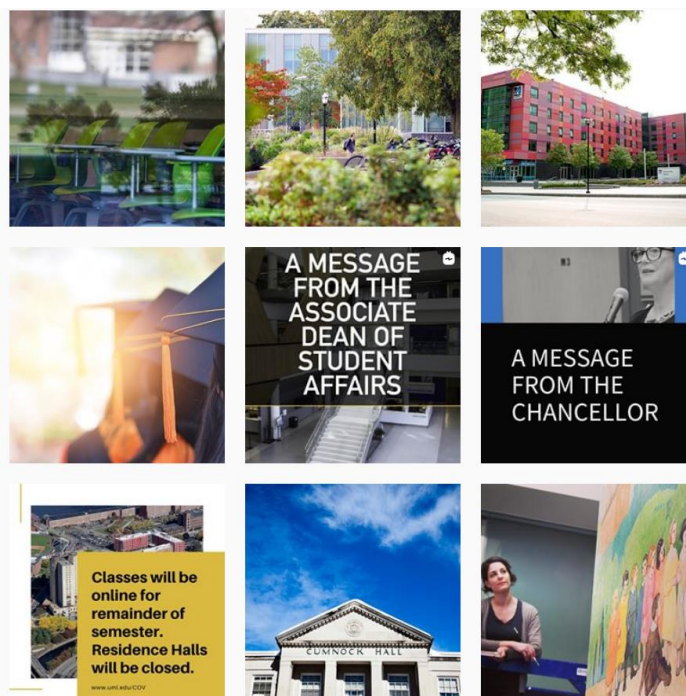


Figure 11: @umasslowell Instagram as of 4/17/20

Their Instagram page has been continually updated with posts on many topics, as seen in Figure 11, surrounding the changes to operations, with both formal announcements and photographs of campus featured. Included in the captions of some of the posts are information on social distancing and maintaining healthy habits (UMass Lowell [@umasslowell], 2020).

2.3. Learning Styles and Online Learning

Learning style has been identified as the way in which someone reacts to their learning environment. Their unique hereditary and life experiences generally fuel this reaction. These preferences are contingent on both instructional practices one has already been exposed to, in addition to the influence of personality and social-interaction tendencies (Mestre, 2006). Thinking styles, cognitive styles, and learning modalities are terms all used interchangeably with learning styles. Some terms evoke a greater sense of unique information processing for each individual, especially when addressing cognition. “Thinking” and “cognitive” styles are emblematic of this. Learning “modalities” evokes a sense of unique expression on the individual's part when they react to a particular learning experience. These nuances in title still encompass all that culminates in one’s particular style of learning, and the different types can be informative on why some people will be more successful in certain learning environments over others. The theory of interest for our work is that of Witkin, but supplementary material that informed our project can be found in Appendices A, B, and C.

2.3.1. Models and Theories for Examining Learning Style

For our particular interest in online learning, one theory that can provide a clear indication of what type of people will be more successful in this environment is Witkin's theory of field-independent versus field-dependent cognitive styles (Witkin & Goodenough, 1977). Its implications for cross-cultural learning also suits a college learning environment, as higher education across the United States is a conglomerate of varying cultures, perspectives, and walks of life. Summatively, the theory is able to determine how apt an individual is in restructuring information based on particular cues and field arrangement (Mestre, 2006). Witkin himself was one of the most cited psychologists of the 20th century, and one of the first to identify and study how personality reveals itself through the ways in which an individual perceives their environment. Since personality and learning styles are very much intertwined, this is one of the more common theories used to explain variations in students' learning styles.

Field-independent individuals perceive objects as separate from their environment, whereas field-dependent individuals rely on their environment to give clues about an object. Field-independents impose their own values and personal structures on the environment, set self-defined goals, and are self-encouraging in their work, often opting to work alone. They can process information more efficiently due to their narrow focus, but may miss a wider social context that can be easily perceived by others. Field-dependent people prefer structure to be provided by the environment they are in. They define their goals externally, prefer to work with others, and respond better to receiving reinforcement from others (Mestre, 2006). Class discussions and group work generally cater to the preferences of field-dependent individuals.

Studies confirm that some demographics are more likely to fall into one category over the other. Witkin's work is the first of psychological sex differences that examines the area of human perception. His research found that women were more dependent on the external stimulus field in interpreting visual stimuli, making them more field-dependent than men (Haaken, 1988). However, there are differences in where men of different ethnic and racial backgrounds fall. Studies have concluded that white and Asian-American men tend to be field-independent learners, as they are "rather linear in their thinking and problem solving" (Mestre, 2006). White females, African-Americans, Native Americans, and Latinos of both sexes tend to be field-dependent. They must see the big picture, seek to find personal relevance in tasks, and rely on a personal relationship between the instructor and student to be established (Anderson & Adams, 1992).

The exploration of field independence and dependence on learning style has been heavily examined, and most recently, researchers have applied these implications to an online environment. The strengths of field-independent learners tend to be favored in an online setting, as they are more efficient at search-and-navigation tasks, while field-dependents may feel lost or disoriented in that setting (Kerka, 1998). Their higher self-efficacy and confidence also allows field-independents to better maneuver online technologies (DeTure, 2004). Large portions of particular demographics that fall in the field-dependent category could have significant disadvantages in online learning. The nature of their strengths and reliance on external motivators causes many difficulties in succeeding online.

2.3.2. Instructor Understanding of Learning Style

Learning style has also been shown to indicate students' preferences in teaching strategies. Likewise, the learning style of a professor is related to their preferred style of teaching (Witkin, 1973). Field-dependent individuals are more likely to have a teaching style that fosters

interaction and discussion and use questions to establish the learning experience of students. Less feedback is provided, any negative evaluation is avoided, and their goal is to have a warm and personal setting centered around the students (Graham, Garton, & Gowdy, 2001). Field-independent learners will be more likely to use impersonal teaching strategies, an environment that is teacher-oriented (in which the instructor talks and the students listen), and corrective feedback methods.

The latter correlates to a traditional lecture-style as seen at the introductory level at WPI, where there are often 100 students or more. With fewer students in the more advanced courses, the learning environment has the potential to foster that personal, discussion-based learning that better caters to the needs of field-dependent students. Even with these considerations made, sometimes the circumstances cause extreme difficulty in creating a teaching style universally beneficial to all students. Suggestions can still be made to instructors in improving their techniques and catering to a wider group of learners.

2.4. Adaptation to Online Learning

One of the most significant disadvantages that face field-dependent learners is the lack of interaction and perceived support from the instructor in an online environment. As they work better in groups and in an environment that fosters relationships, online education can be jarring for field-dependents. These students also have been shown to need greater assistance outside the formal learning environment and view the instructor as less approachable for this assistance (Graham, Garton, & Gowdy, 2001). It can be suggested to instructors that they should clearly communicate their availability to meet outside formal class time for additional assistance as needed. Due to the COVID-19 crisis and its impacts on higher education operations, it would likely be beneficial that professors continually offer this support, as students at many schools were forced into an online learning environment that many would not have chosen otherwise.

It has also been shown that modifications in an instructor's teaching after mid-semester evaluations has a significant positive influence on the students' perceptions of the instructor's overall performance, especially when the changes made are directed towards those who are field-dependent learners (Graham, Garton, & Gowdy, 2001). In one study, students' learning styles were analyzed to assist the instructor in meeting their specific needs: "By analyzing the relationships between learning styles and mid-semester instructor evaluations, and modifying teaching strategies, this instructor was able to raise her feedback evaluation scores by nearly half a point (0.5), on a five-point scale, on 12 of the 13 evaluation items" (Graham, Garton, & Gowdy, 2001). Instructors being receptive to change and encouraging feedback during COVID-19 would likely have a positive impact on student adaptation to online learning. This also allows instructors to gauge what kind of learners are present in each of their courses.

3. General Methodology

Our team used surveys and interviews to determine what courses of action have been taken by universities in response to the COVID-19 pandemic. This information can be used by colleges, students, and others in future crisis communication situations, including leading up to and after the operations decisions are made, to best accommodate the student body and all types of learners.

The objectives which guided us through the project were as follows:

- Objective 1: Analyze the WPI student response during the changes in college operations due to coronavirus, by survey and interviews.
- Objective 2: Gather and examine student responses to change at universities of choice in New England through interviews.
- Objective 3: Compare WPI student perspectives to those of other colleges on the changes made in response to the COVID-19 pandemic.

These objectives gave us a framework for examining the college response to this pandemic, and furthered our understanding of student perception on the actions taken.

The boundaries for our project fell into a few different categories: spatial, temporal, and conceptual. The spatial boundary for this project was the online environment that reached college students outside WPI. The data collected were aimed to understand college responses specifically in New England. Due to government recommendations, there was no in-person contact with project participants. The conceptual boundaries for the project involve having sufficient information that can culminate in the undergraduate student experience during the coronavirus. The framework for the project can offer a glimpse into higher education operations during a pandemic, and allow researchers in the future to understand the actions taken at specific schools. An in-depth methodology can be found in Appendix D.

The research questions that we will be targeting in our methodology to accomplish our objectives are:

- How are students responding to college and university decisions?
- How have students been affected by the decisions?
- Is there a preferred mechanism that schools should use in making decisions and informing the university community of changes?
- How did the timing of spring breaks play a role in decisions related to this pandemic?
- What is it like to live and take college courses at home during the COVID-19 pandemic?
- What new challenges does the situation cause for students and parents?
- Has the response from colleges been adequate in supporting students through the adjustment to online learning?

- Have colleges provided the resources necessary to keep their students informed on the progressing situation?
- Are there particular types of learners who are better equipped to transition to online learning, and how can that experience be adapted to all learners?
- What role does class year, major, and future plans have in a student's response to these extreme conditions?

4. Coronavirus Response at WPI - Survey

WPI is one of many schools that has tried to limit disease spread through its campus closure. The timeline and approach for transitioning their community during the crisis has been recorded and analyzed from the perspective of students.

4.1. Background: Worcester Polytechnic Institute Timeline

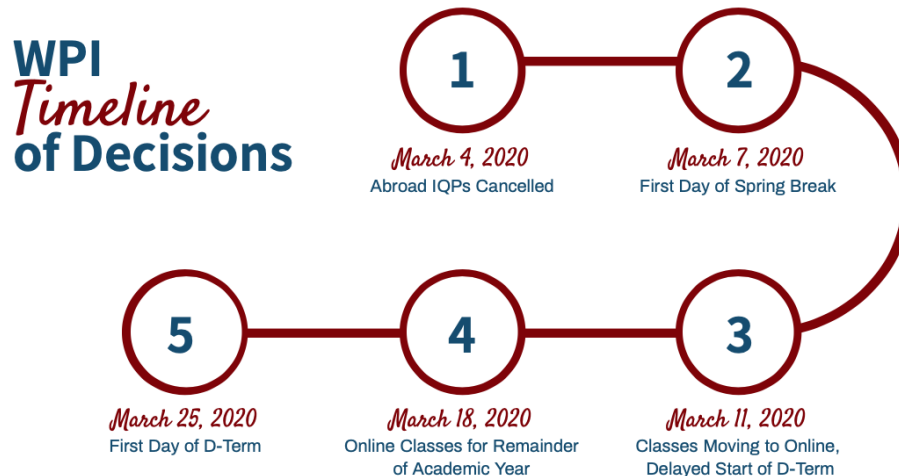


Figure 12: WPI Timeline of Decisions

The first announcement regarding cancellations of international programs due to COVID-19 was sent to the school through email on the evening of March 4th, as highlighted in Figure 12. The reason for this decision had been influenced by Massachusetts Governor Baker, who strongly urged colleges to suspend their study abroad programs earlier that day. There were 284 students and 23 faculty planning to travel to 12 unique countries in D term (Leshin, 2020b). Students would be refunded for the price of the project center, including abroad housing. This did not include any personal items bought or flight costs. WPI urged students to reconsider traveling for spring break, which would begin three days later, on Saturday March 7th.

In response to Governor Baker's declaration of a state of emergency on March 10th, WPI announced a delay to D-term classes in order to transition courses online. Spring break was extended by a week and a half, with classes beginning on March 25th. The end of the term was extended by a week to May 13th (Leshin, 2020a). The plan at this point was to complete courses online classes for at least two weeks and then reevaluate the situation in April. In regards to on-campus and nearby housing, students in Worcester were directed to go home, while those not on campus were asked to not return. At the time of this announcement, the campus was still open for faculty and staff. WPI also notified students that any domestic travel involving the school was canceled.

On March 13th, there was an update regarding information for financial reimbursements for housing and food during the unexpected time away from school (Leshin, 2020c). Students who were employed by the school were notified that they would get two weeks of free pay for the hours they were expected to work. Faculty and staff were encouraged to stay home and work remotely in order to complete online instruction. The community was made aware on March 16th that all buildings would require key cards upon entry, with only a select few personnel who were granted access.

On March 18th, WPI announced learning would take place remotely for the remainder of D-term, and students should not return to campus (Leshin, 2020d). For the many students who had their belongings in on-campus housing, residential services would reach out and provide further details on what the next steps were for collection. All students with on-campus housing who were able to depart would receive a partial refund for the housing costs. All scheduled events were canceled for the remainder of the academic year. Seniors were notified that commencement was most likely to be delayed, but a final decision was to be made by the end of March. Employees of WPI, including student workers, were to be paid as usual for the rest of the academic year. The hiring of faculty and staff was to be put on pause for the time being (Leshin, 2020d).

Due to Massachusetts Governor Baker placing an emergency order for non-essential businesses to close until April 7th, residents were told on March 23rd that there was no time in place for students to retrieve their belongings from the on-campus housing. Residential Services announced they would try to give an as advanced notice as possible when the time comes for students to retrieve their belongings (WPI Residential Services, 2020b).

WPI Health Services announced on March 25th, that two students in the WPI community had tested positive for COVID-19, but they had not been on campus within the last 15 days. Regardless of this, WPI detailed the measures they were taking to disinfect the school, in order to ensure the safety of the community. On April 13th, there was a message sent out stating that the WPI community had five confirmed COVID-19 cases, but all of these people had not been on campus in weeks (Roberto, 2020).

On May 1st, a Residential Services update was sent to students living on campus. It reported how the move-out process was to be conducted. Starting on May 8th, students who live in Massachusetts could begin retrieving their belongings. Students who live in New England could sign up to collect their belongings between May 19th and June 5th (WPI Residential Services, 2020a). They were sent a form to sign up for a three-hour time slot, with a few conditions. Only three students can retrieve their belongings from a residential building at a time. Each student will be assigned specific staircases and hallways to use. Each student can only bring one other person to help them move out. The residential buildings will be cleaned after each time slot. Most importantly, if anyone feels sick, they are not to go to campus to collect their belongings (WPI Residential Services, 2020a).

4.2. Methodology: WPI Survey

In order to collect responses from WPI students on their reaction to the transition and changes in operation, a survey and interviews were conducted. The survey questions fall under a few different categories: perception of notifications and overall reaction, transitional phase, learning style, and impacts (current and future). The specific questions asked in the survey are listed in Appendix F. After the survey was performed, interviews were conducted in order to collect information for the same purpose, except for more qualitative data from random survey participants. The interviews with WPI students were performed to further the conversation and collect qualitative information that the survey may not have fully captured. After gathering some responses and doing a quick analysis of the WPI survey, some of the interview questions were modified in order to maximize the quality of questions that were being asked in the interview.

A majority of the undergraduate students in the WPI community were sent the survey through a variety of online platforms, including email and social media. The survey would then be analyzed in order to determine how students compared in reaction and the challenges they

have specifically faced. The content, structure, and distribution of the survey and interviews are further discussed in Appendix D, as well as how they were analyzed and developed into a set of deliverables.

4.3. Results and Analysis

After conducting the survey, the results were accumulated and analyzed. **There were a total of 298 completed surveys.** A sample of the survey responses can be found in Appendix K. The full data set can be found at www.sites.google.com/view/covidst. Of the students who identified their class year, the distribution is presented in Figure 13. There were 39, 76, 76, and 87 students who identified themselves as members of the classes of 2020, 2021, 2022, and 2023, respectively. There was one student who identified as the class of 2024, who is most likely a first year student completing their degree with a five year program.

There were 35 different majors represented by the students who responded to the survey, as shown in Figure 14. The largest number of respondents were the Mechanical Engineering majors at 20.6%; This is not a surprising outcome as 17.8% of undergraduate students at WPI are Mechanical Engineering majors (WPI Office of Institutional Research, 2019).

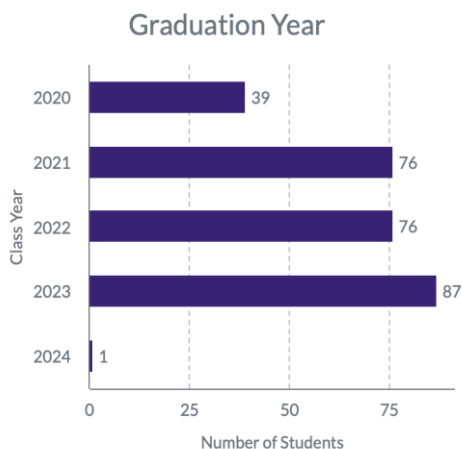


Figure 13: Graduation Year of Student Respondents

Majors Of Respondents

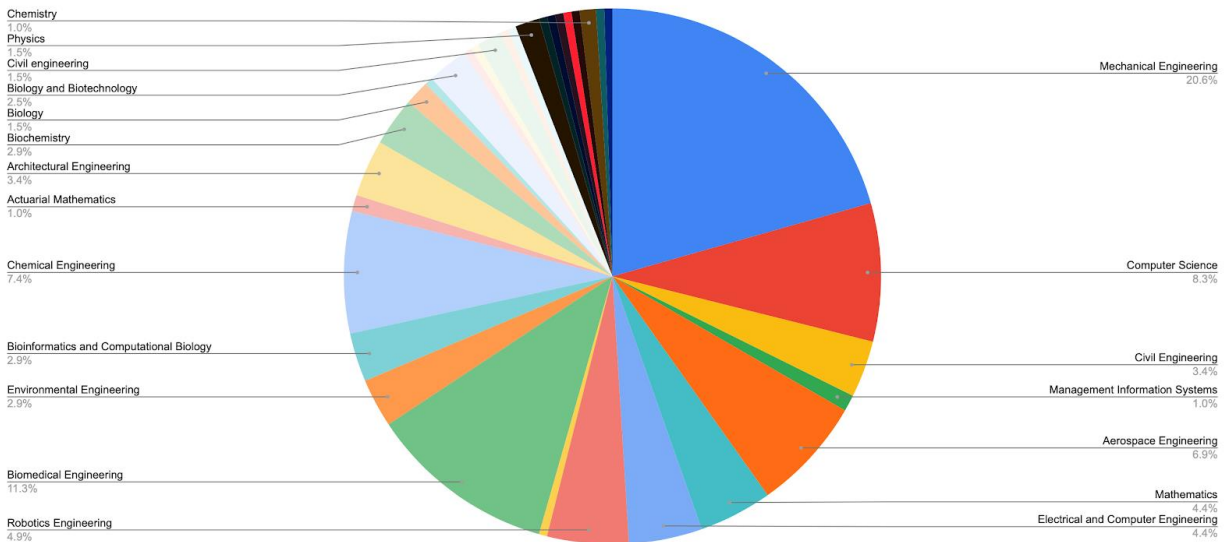


Figure 14: Majors of Student Respondents

Students who were completing their degrees in residence at WPI are now doing remote learning from various locations all over the world, with two survey respondents completing their degree outside the US. The location pins shown in Figure 15 represent where students were located when they responded, as recorded by the Qualtrics survey platform.

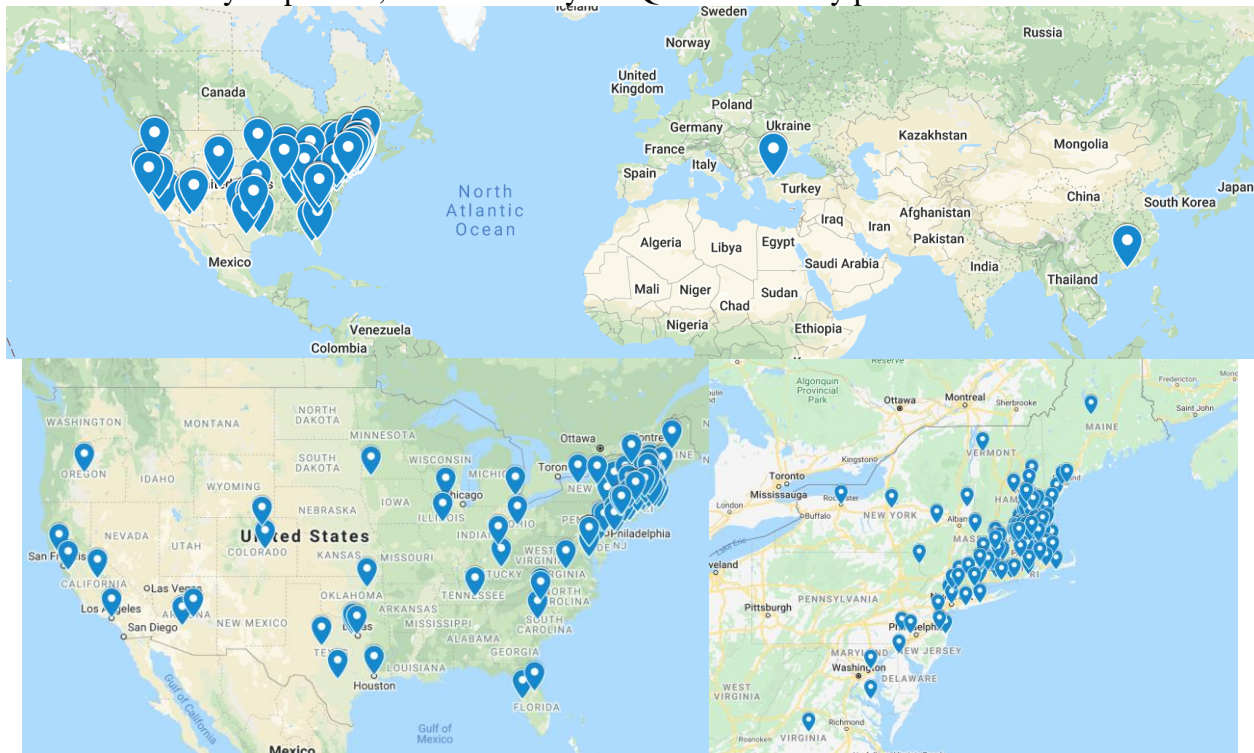


Figure 15: Current Location of Respondents

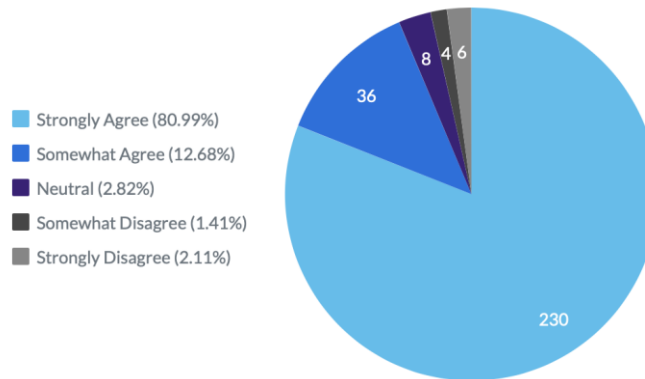


Figure 18: WPI Made the Correct Decision

Responses to the questions about the timing of the decision were favorable but not as overwhelmingly supportive. Of the respondents, 63% strongly agreed or somewhat agreed that they were given effective and timely advisory notifications that WPI would be changing their operations. Many students did take issue with a lack of compassion initially projected to them via the announcements made. A class of 2022 Mathematical Science student wrote:

“WPI did what it needed to do for all things COVID. What WPI did wrong, in my opinion, was prepare the students for possible decisions being made and then the initial follow up with resources... Since a lot of the emails had to be information based, they forgot to be compassionate and emotional at first and didn't advertise resources like the SDCC until later.”

On the other hand, when asked about the timing of moving out of their apartment or dorms, the response was just the opposite: 64% of the student responses strongly disagreed or somewhat disagreed that they were given enough time to move out. The reason for this can be demonstrated in the words of an on-campus BCB student from the class of 2022:

“Because of the way they had said it, I wasn't really sure if I should get all my stuff, so I didn't ... I don't know when we are going to be getting [our stuff], but then they offered some sort of packaging that was really expensive where you can ship it. I'm like, I'm not doing that, I live an hour away. When you let me come back, I'll get my stuff... I mean, I appreciate it, but also, Noooo.”

A total of 142 students living on-campus responded to the question about whether they were given enough time to move out. **77% of on-campus residents disagreed they had enough time to move out.** In comparison, 47% of off-campus residents responded that they did not have enough time to move out. Figures 19-21 show the survey results for how students feel about the amount of time they were given to move out.

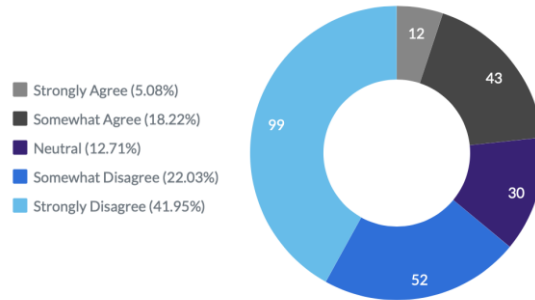


Figure 19: Overall - Enough Time to Move Out

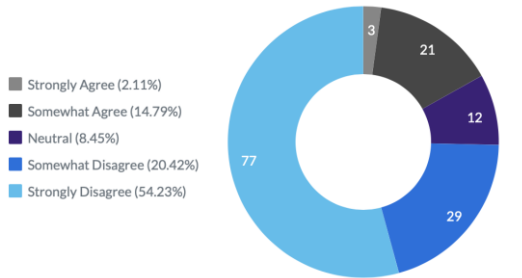


Figure 20: Time to Move Out (On-Campus)

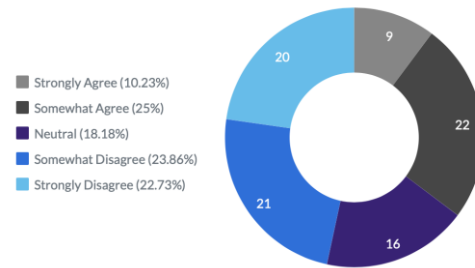


Figure 21: Time to Move Out (Off-Campus)

4.3.2. Transition Phase and Learning Style

Some of the major findings in the survey concerned the transition to online learning and student's opinions of their new class format. **64% of students agreed that WPI had adapted well**, displayed in Figure 22. A BCB student from the class of 2022 agreed that WPI had adapted well to online learning: "I think overall, yes, they have... I think they're doing the best with what they can do. It's just unfortunate because it's just not gonna be the same." Similarly, around **65% of students strongly or somewhat agreed that they had been given the resources** to be successful in their online classes.

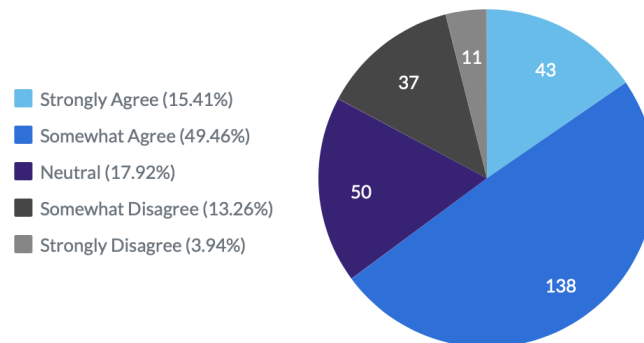


Figure 22: WPI Adapted Well to Online Learning

On the other hand, even though the overall transition and online resources were viewed favorably, a majority of students took a very different view of the quality of learning online. **A total of 82% of the students strongly disagreed or somewhat disagreed with the statement, "I am getting the same quality of education online as in person,"** with 48% of the total

respondents strongly disagreeing. Figure 23 visualizes the distribution of responses to the statement. A Mechanical Engineering student from the class of 2022 wrote,

“I personally think Engineering classes should not be taken online. The quality of education is lowered during this pandemic, especially with the social distancing mandates and turmoil in the world. I find it difficult to get the motivation to do work alongside the fact that I’m not in the environment to focus solely on school. I seem to can’t stop thinking about my family, friends, and my own health, which is vulnerable to COVID-19.”

In addition to a changed learning environment, students are facing unprecedented stresses at home during the crisis, which has negatively impacted their schoolwork. This sentiment of missing out on the social nature of campus life is explored in section 6.6, as we make some connections between this and learning style. Comparisons for students at other schools are also investigated.

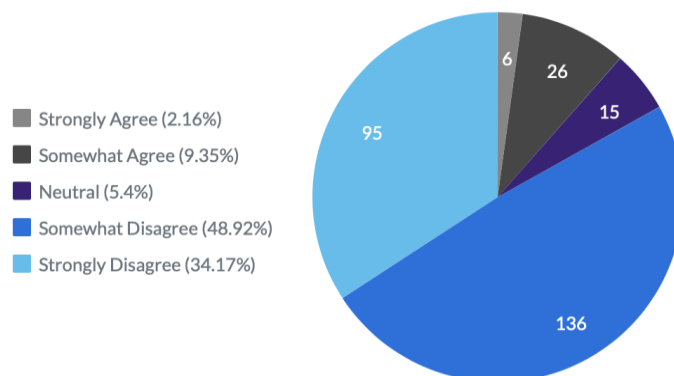


Figure 23: Quality of Education is the Same Online as in Person

Several responses clarified that certain course enrollments, in particular those that rely heavily on laboratory work, would more likely elicit a negative response on the quality of education online. The quintessential “hands-on” component of lab classes is lost in an online environment. However, students do acknowledge that the way many labs are being presented in video format is best for the current situation. This still allows students to understand concepts, but several of the major components of completing a lab, including failure as a learning tool, can not be translated. A BCB student from the class of 2022 said, “I wanted more lab experience since I'm not particularly great at labwork and I don't get it this term.”

The change in format also impacts lecture courses. Depending on the instructor, they take a form ranging from synchronous Zoom lectures, to pre-recorded explanations of concepts. The latter leaves students on their own in creating a structure for completing work, and based on our survey and interviews, is less favored than professors hosting lectures live. A Mechanical Engineering student from the class of 2022 wrote about this distinction:

“Some professors are doing a much better job transitioning online than others. For

me, one class has daily Zoom lectures, and the other two are videos and homework. The Zoom lecture class is much easier for me to learn in...”

Another student, with the same area of study and class year, had a different opinion: “Recorded classes are a real boon to assist with learning.”

Because of the varying degree of transition style for each professor, there are nuances in the quality of education each student feels they are receiving. **Based on our research that a student’s reaction to their environment is influenced by their own life experiences, as well as personality, we looked at learning style as a crucial factor in transition.** In Figure 24, there is an increase in the percent of students that agreed they were getting the same quality of education who also identified as self-learners, though the margin is relatively small, and a much larger trend still exists for all learners.

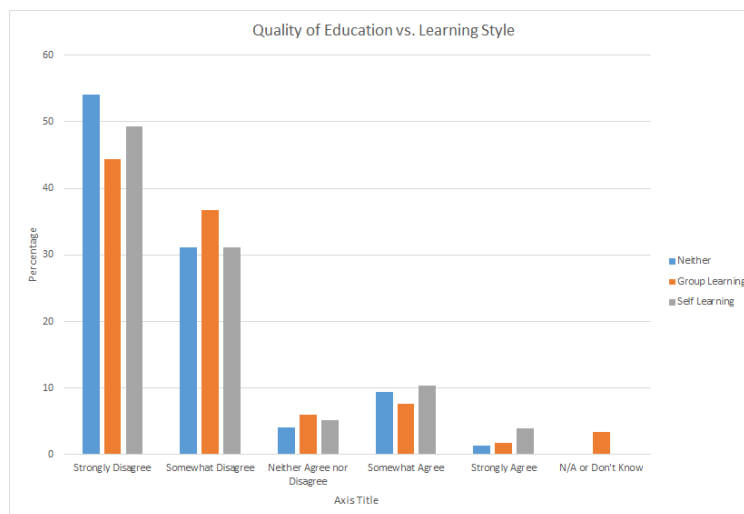


Figure 24: Quality of Education vs. learning Style

Students who were completing the two largest projects at WPI, the IQP and MQP, have felt very disheartened in not seeing their work come to fruition as they expected it to. Many students come to WPI mainly for the project experience, and feel they are missing out on a large opportunity to learn and grow by having to work remotely. A class of 2021 Mechanical Engineering student, who is no longer going abroad for IQP, said:

“It’s not the school or anyone’s fault, but it’s still saddening to think about the fact that the global project program for IQP was one of the big reasons I wanted to come to WPI, and now I’m never going to actually get to participate in it.”

The Interactive Qualifying Project is something anticipated by students for years and is a major factor for some to come to WPI. Some even feel that IQPs should have been canceled completely. “I believe the IQP should have been dropped. Myself and many other students I’ve talked to believe that their time would be better spent taking real courses,” a Mathematics student

from the class of 2020 expressed, as well as:

“Also, the way WPI handled announcements was terrible. They informed us that they were canceling all travel two days before the end of the term. Some students were likely leaving for their destination as soon as that Friday. Not a dollar of my flight was reimbursed, and because the decision was so late, only half of my accommodations were reimbursed. I am VERY disappointed in how WPI has been going about this and hope that in the future, they handle things like this more differently. At the very least, they could've kept us up to speed on their COVID meetings as they progressed instead of leaving us all guessing. So ultimately, I agree with their overall decisions; I just believe it was handled very poorly.”

As for seniors, their work, or lack of, in the MQP has resulted in disappointment and frustration. A Mechanical Engineering senior wrote:

“We were not allowed to finish our device as we lost all access to the shop, as well as to all the parts we had previously finished. We were almost done. We had to make four pins and attach two pieces. Now instead, we have to write about what we imagined would happen.”

Like other class years, the class of 2020 understood why WPI made the decision it did as COVID-19 was progressing, but still feel upset at what impact that has had on the final moments as undergraduate students. A senior Civil Engineer expressed a bittersweet sentiment:

“I know WPI did everything it could for its seniors and I appreciate the work that has been done and being done to give us a commencement ceremony. Unfortunately, the reality is that no matter what is done cannot replicate the expectations and hopes we all had for our final term at WPI. I will always be grateful for the 3.75 years I did have on campus.”

COVID-19 has impacted the present moment for everyone, but for students studying and preparing for a full-time career, it feels like the opportunities lost are extremely significant.

4.3.3. Current and Future Impacts

The impacts of COVID-19 are extensive and cover many facets of the college experience, adding more stress than what would have been expected in working remotely. Our survey included questions about the financial impact of the transition to remote learning. As seen in Figure 25, 41% of students and/or their families were negatively impacted financially by the school's decision. 48% of respondents believed they are getting compensation for some or all of their planned expenses for the remaining portion of the academic year. One Biomedical Engineering student from the class of 2022 disagrees that they are getting their money's worth:

“While I am happy that the school has reimbursed D term campus housing costs, there

should also be a partial tuition refund. I did not pay \$12k+ a term for an online education and administration should see that we are not getting the same level of education that we paid for. At the moment, I have not learned a single thing. I get up and do what I have to do for the class, I'm not retaining information and I feel like this is setting me up really badly for my junior year."

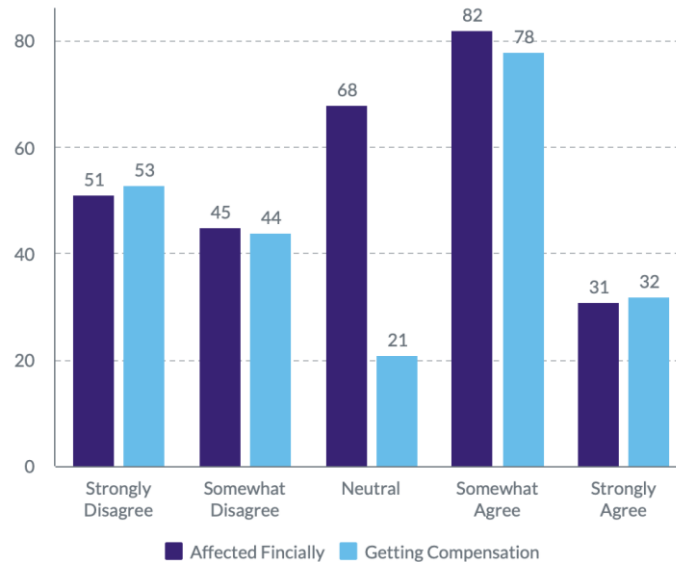


Figure 25: Financially Affected and Recieving Compensation

The results show, as seen in Figure 26, that **students and families who have been strongly impacted more often disagree (81%) they are not getting compensation relief.** A Chemical Engineering student from the class of 2022 expressed frustration: "I had to pick a job at a grocery store as a result of the pandemic, making this especially difficult for me. I also don't think I'd be able to focus on my classes very well, even if I had enough time."

This coincides with previous points made about students facing more unexpected stress than they would experience under normal conditions.

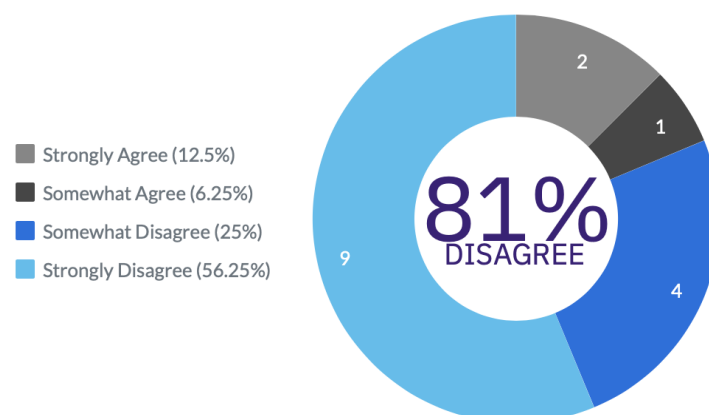


Figure 26; Respondents Most Affected Financially: Opinion on Getting Satisfactory Compensation

Not only have some students at WPI been financially affected, but others have had their work suffer from their current living situation. Figure 27 breaks down responses to the statement, “My work is not affected by my current living situation.” Students continuing to live in on-campus housing more often agree that their work has not been affected. Students living at home, off-campus, and ‘other’ more often disagree that their work has not been affected by their current living situation. With the majority of students living at home, **more students believe their work has been negatively impacted in some way, at 61%.**

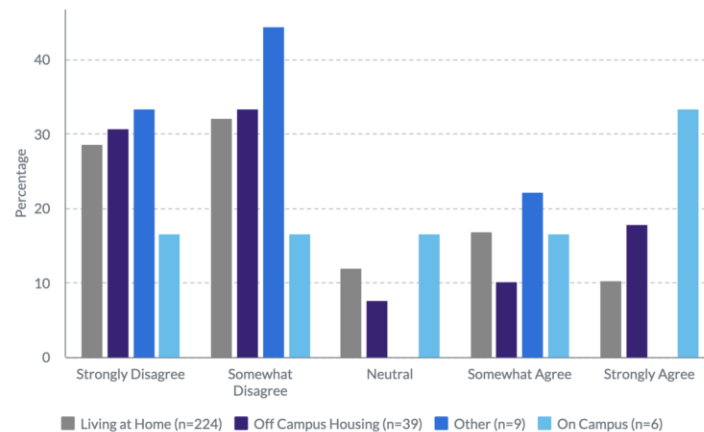


Figure 27: Work is Not Affected by their Current Living Situation

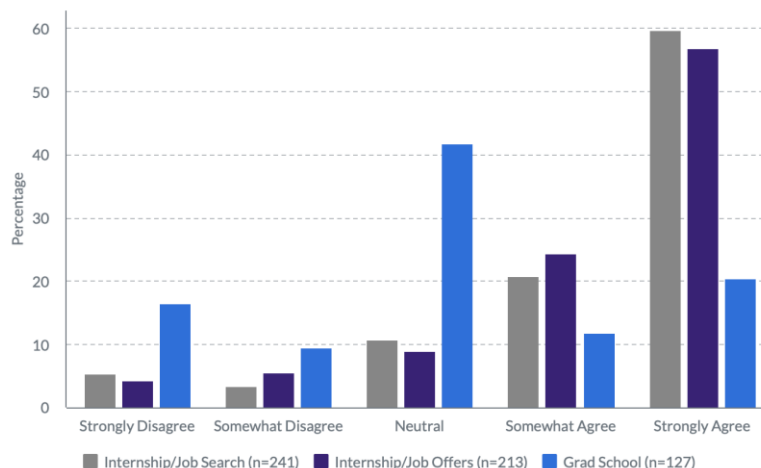


Figure 28: Internship, Job, and Grad School Impacted by COVID-19 Pandemic

Future endeavors are also being impacted by COVID-19, as shown in Figure 28, such as job searches and offers. Students have had a hard time finding available positions, and students who have already signed contracts don’t know if they will ever start. “I still have an internship at the moment, so I had to push the start date back a week,” a WPI junior studying Computer Science said. A sophomore studying Civil and Environmental Engineering wrote, “Will I get to move back to Massachusetts in August? Will I actually get to work at my summer job? ... All of the unknowns are very stressful to deal with right now.”

5. Coronavirus Response at Universities of Interest- Interviews

Other colleges in New England have also made tremendous efforts in response to the coronavirus, in order to increase the safety for everyone on campus and around the world. The other colleges that will be investigated along with WPI are Saint Anselm College, Northeastern, Emerson College, and UMass Lowell. Student perspectives of transition before, during, and after the move to online learning were investigated.

5.1. Background: School Timelines

Every college had a different timeline for the decisions that were made. The timeline of how the schools made the decisions and where their spring break falls may have played a role in the announcement prior to transitioning to online learning. The timeline of each school is discussed in detail below, and the calendar summarizing the timelines of events for all the schools can be seen in Appendix L.

5.1.1. Saint Anselm College

St. Anselm's timeline of decisions varied in comparison to WPI. Students were halfway through the term with their spring break being Saturday, February 29th until Sunday, March 8th, 2020. Students who were studying abroad in Italy were sent home prior to the start of spring break on February 27th. Students who were studying in Spain were sent home during St. Anselm's spring break. There was no notice to the students that the school was considering changing on-campus college operations while students were on spring break. They also did not suggest canceling spring break traveling plans unless they were traveling to level one countries, and they sent out precautions for staying healthy (Finn, 2020b).

St. Anselm sent out notifications to the students on March 5th, explaining that anyone traveling to high-risk countries must stay home and quarantine themselves for 14 days before they return to school. They also ask anyone with flu-like symptoms not to come back to school. Anyone who returned back to campus and then became ill was to report to health services immediately (Favazza, 2020b). Leading up to returning to campus, the students were told a Pandemic Incident Management Team was assembled.

The first notification after spring break regarding COVID-19 to the students at St. Anselm College was on Tuesday, March 10th, with the students now returned to campus. It was announced, "At this time, there is no interruption to on-campus class activity and extra-curricular events," but the situation was still being monitored (Finn, 2020b). The following day, March 11th, a notification was sent out to address the rumors that were circulating about the college possibly closing. The notification was sent out to put an end to the rumors stating that it was untrue. At this point, they were hoping to remain on campus for the whole semester. The notification referenced that Massachusetts had already declared a state of emergency, and most Massachusetts colleges had either closed or transitioned to online. There were only a handful of confirmed cases in NH at the time, so the campus was to remain open and continually monitored (Finn, 2020a).

On March 12th, St. Anselm Health Services sent out an update that there were no expected students with COVID-19, but there were many students experiencing influenza symptoms who were being sent home until they were symptom-free for at least 24 hours (St. Anselm Health Services, 2020). A third notification was sent out on this day in order to inform the community that there were only six identified cases in NH, of which none were community

spread, therefore classes were to still be held as normal with no visitors allowed on campus.

On Friday, March 13th, 2020, St. Anselm leadership sent out an announcement that they were retracting their prior decision, and will be transitioning to online classes for the time being. Everyone had to move out of the on-campus housing by 9 PM on March 15th, so a deep cleaning could take place. Potentially, students could move back in before the end of the semester. St. Anselm would give another week off for students from March 16th to 20th, in order for professors to transition their classes online.

An email was sent to the student body on March 20th, notifying everyone that classes would continue online for the remaining time left in the academic year (Favazza, 2020c). Everyone who had on-campus housing would receive a 25% reimbursement of the semester housing and any unused meal plan money back. On March 31st, a notification was sent out regarding commencement. At this time, commencement was going to be pushed back to an undetermined day (Favazza, 2020a). Senior days and senior formal were canceled, and reimbursements would not be given. Another notification was sent out regarding reimbursements and why the decisions were made for certain reimbursements, but not others. The college was transparent on how much money they were giving away to students and all the income that was no longer being made by the school.

5.1.2. Northeastern University

Since February 5th, Northeastern has been regularly updating its student body about the COVID-19 pandemic and its effects on the school's operation. The first notifications that were sent out, over email and on the Northeastern website, were based on the situation in other countries. They warned their students of the risks of traveling to the countries that the CDC had graded as having high risk for catching the virus (News @ Northeastern, 2020). They also urged students that were completing co-ops to return and those returning from spring break to self-isolate for the recommended 14 days, prior to coming back to campus. Spring break for the school began on March 1st and extended to March 9th (NU Office of the University Registrar, 2020). On March 5th, Northeastern began what would eventually become a full move to remote learning, by closing their Seattle Campus and moving those students online (News @ Northeastern, 2020). The trend was continued on March 7th, when the San Francisco area campus followed suit. On March 11th, the decision to move Boston, their biggest and main campus, to online learning would be effective the next day. At the time of the announcement, students were not being told to leave their on-campus residences (News @ Northeastern, 2020).

Students were informed on March 14th that residence halls would be closing and that they would either need to return home, or find other housing accommodations for the rest of the semester by March 17th. On that same day, commencement was canceled and would later be postponed to a future date (News @ Northeastern, 2020).

5.1.3. Emerson College

Emerson has been notifying its student population on the threats of the coronavirus since January 24th, 2020, in which they made recommendations on how to avoid the spread of respiratory viruses, including washing your hands, avoiding touching your face, and staying home if you feel sick (Powers, 2020). After several minor updates that continued on this theme, on March 2nd, the university announced they were bringing all students on their campus in the Netherlands back to Boston. These students would complete their studies for the remainder of

the year, and would be provided housing (Pelton, 2020b). These announcements were made with the recommendations of the Center of Disease Control (CDC) in mind.

On March 8th, Emerson posted about recommendations for students coming back to campus after spring break, and two days later, announced the remainder of the year would be completed online. Additionally, the campus would remain open for the rest of the spring term. Friday, March 13 was the last day of in-person classes, and after a one-week hiatus for preparation, online learning commenced on March 23rd (Pelton, 2020c).

On March 13th, the university announced a suspension of all theater activity, and closing of theater spaces, while adding, “We want to amplify wisdom in the CDC anti-stigma guidelines issued recently regarding coronavirus. Collectively, we must focus on the disease that is causing the problem and avoid casting blame on individuals, cultures, or nationalities” (Emerson Office of the Arts, 2020). On March 13th, after the President announced a national emergency, further measures were taken. All students who could safely leave campus were told to do so by March 20th. Parents could assist in the move-out up until that date, within a two-hour window. Partial credit would be issued towards spring semester room and board charges (Pelton, 2020a).

Many updates followed on credit policies, shipping, and other financial logistics. On March 24th, the university announced they would be postponing their commencement. All recent updates have encompassed condemnations of xenophobia, reports of COVID-19 within the Emerson community, and student work online (Ertischek, 2020).

5.1.4. University of Massachusetts Lowell

UMass Lowell has had formal updates on the virus dating back to January 28th, 2020, including the information on the immediate measures students and faculty can take to reduce the rate of infection (Siegel, 2020c). A post on March 4th asked students to understand the risks of international travel over spring break, citing the CDC’s announcement that all non-essential travel to China, Iran, Italy, and South Korea should be avoided, with additional suggestions on what to do if you become ill during or after international travel (Siegel, 2020a). On the same day, they announced that travel for students groups and faculty to CDC Level 3 countries is banned until further notice (Hartman, 2020a). On March 11th, they announced all classes would be taught online until at least April 3rd “as UMass continues to work to minimize health risks,” and extended online learning to the end of the year on March 14th (Siegel, 2020b)(Hartman, 2020b). Students still living on campus as of March 25th were informed of housing consolidation, while the majority of the campus population was asked to move out prior and could only stay with formal approval (McCarthy-Latimer, 2020).

UMass Lowell continued with frequent announcements online and by university email. On April 14th, they announced their campus recreation center would serve as a field hospital, making the university involved in aiding the health care system in the face of the pandemic (McCafferty, 2020). Their coronavirus updates webpage is comprehensive, with links to potential symptoms, financial adjustments, changes in academic policy, and information for the limited number of remaining residential students (UMass Lowell, 2020). It also has easy access for students to apply for funds, donate to the student emergency fund, and the Massachusetts Department of Health website. The university has made clear efforts to keep its students informed on the many facets of the issue (UMass Lowell, 2020).

5.2. Methodology: Interviews

We performed semi-structured interviews with students at WPI, and at the other highlighted colleges in New England. The questions asked during the interviews were similar in content to the survey of WPI students, but the flow of the interview allowed for more qualitative data to be gathered as deemed relevant by the interviewer.

After examining the gaps in our understanding of the student experience following the survey, some of the interview questions were modified. Throughout the interviews, we asked questions to determine how students reacted and perceived the notifications sent out by their school. We determined how they have handled the transitional phase and how helpful their colleges have been. We were able to determine the individual students' learning styles and examine how that played a role in their reaction. Future impacts of COVID-19 were also considered. The interview questions are listed in Appendix G.

By conducting interviews, we were able to hear stories and real experiences from students that could not be as easily captured in a survey, which is better suited for quantitative data. In order to gather enough information, our team's personal connections were utilized. We collectively gathered a list of people that we knew who attended other schools in New England. We picked schools where we could interview multiple students with varying class years and majors. This process allowed for points of comparison between WPI students in the same situation. The methods for analyzing the surveys and developing the deliverables can be seen in Appendix D.

5.3. Results and Analysis

The main takeaways and quotes deemed significant from the interviews of students at other schools are highlighted below. The amount of content we were able to collect of each student's unique experience enlightened us on particular struggles and challenges that would have otherwise been unknown. Our own areas of study being exclusively in engineering makes our group's perspective relatively narrow compared to all that is studied at New England colleges. Even though these smaller case studies do not inform us on every area of study or experience based on certain demographics, we were able to make connections and comparisons to that of the WPI experience from an outside perspective. The full interviews can be found on our website, at www.sites.google.com/view/covidst, or linked in Appendix M,

5.3.1. St. Anselm College

Three St. Anselm College students were interviewed. From the interviews, these students had similar points of view due to their majors and learning styles. They had similar reactions to when the administration chose to send everyone home and move online. They agreed they would have been more satisfied if the school did not put out an announcement and then retract it the next day, giving students only 48 hours to remove everything from their on-campus housing. A St. A's senior Elementary Education Student described the day they made the decision:

“Friday the 13th, a horrible omen... So prior to that, they were updating us throughout the week pretty much saying, ‘There's no way you're being sent home. We're still conducting classes, don't worry.’ They sent one [notification] on that Thursday. Then the

next day, they were like, 'Just kidding! You have to go home by Sunday.' So, I feel if they prepared us a little bit better, and we're more open about the possibility of it, I would feel a little different, but still, I still think it was abrupt."

When asked, "What was your initial reaction to leaving campus and switching to online?" a class of 2020 Business and Marketing Anselmian responded:

"Depressed, cried for days. Well, everyone started crying. All my roommates started crying. We started going outside with the rest of the seniors. I started crying even more. But then we made the most of our last weekend. Now we're home."

Once the students had time to reflect on the situation, they agreed they were more understanding now, and the correct decision was made. The Business and Marketing student responded:

"I mean, I think it was the right call on behalf of the leaders of St. Anselm College. But I mean, I don't want to dwell on the fact that I didn't get to finish my senior year. So just making the most of the situation now."

Overall, the students agreed that they thought St. Anselm transitioned well online, mainly due to the fact that they were given an extra week of spring break. In contrast, there was an agreement across all interviewees that the quality online was lacking compared to the quality they received in person. A St. A's senior Finance and Economics student summarized their thoughts as:

"I'd say [the quality has] probably lessened a little bit... For example, a lot of my classes, like my finance classes, are run a lot through Bloomberg terminals and stuff like that. That's something that we don't have access to here. I mean, we've adjusted to use different platforms, but you know, it's not the same as even having an in-person class, with better engagement."

When discussing learning styles, two students were more self-learners, being self-motivated, and one interviewee identified as a group learner, being motivated by others. A self-motivated student elected to complete projects by themselves, knowing that they wanted to work at their own pace instead of relying on others. Another self-motivated student had all their work done three weeks early because they would rather get it done, and then have free time after. The Elementary Education student who was motivated by others responded that being home has impeded their work: "I think one extreme lack of motivation [has impeded my work]. I think it's hard for some professors to adapt to the changes because some want to give you more work, and some will give you less work."

Whether the students are self-motivated or motivated by others, they all preferred a traditional classroom setting and interacting with their peers and professors. As for modes of success for learners in an online setting, the Finance and Economics student suggested: "It's good to have class all together at once, or at least, if we're not doing an online or video call, we do something along the lines of a discussion board, because we have that in class, and I feel like it does well, helping students participate and stay somewhat connected."

The three interviewees, all being seniors, were devastated that their last term on campus was cut short, with the Elementary Education student saying:

“I think it's because it's the last year... I feel like everyone's taken it so hard because you don't get the chance to go backwards like the younger kids or the underclassmen get to; That's the only bummer. There's not really any looking forward to going back to normal because this is the new normal, I guess... literally never gonna be normal again.”

5.3.2. Northeastern University

The two students that were interviewed from Northeastern University were a 5th year biology major and a 3rd year political science major. Both of these students were taking classes at the time of the transition to online learning and had to adapt to the changes that were made to their courses. Since Northeastern was back from spring break and had already continued their in-person classes, the move to online learning, and subsequent move to close the dorms, was sudden for the students.

The first student interviewed at Northeastern was a 5th year biology student who, after completing her three co-ops, was finishing up a capstone course for her major, when the transition to online learning occurred. Because her classes were structured remotely to begin with, the transition to online learning was fairly seamless. Some of the major pieces of her capstone course were removed, namely the presentation to the first-year students, along with many or all of the senior activities at the end of the semester. When describing how Northeastern notified students of the changes to classes she said, “Pretty much everything had short notice. Everything pretty much had an email that said ‘we’re not doing this yet’, like ‘we’re not going to do this’, and then within two days it was like, ‘never mind we’re doing that.’” Northeastern also made several decisions that the students created petitions against, one of which was to get more pass-fail options than what was originally available.

The second student interviewed was a 3rd year political science major, living off-campus and taking more traditional style classes when changes were made. While the transition for him was fairly easy living off-campus, he did say that the classes he was taking had decreased in quality since the transition. He said that the courses he takes for his major are based primarily on discussions in class with the professors and the other students. Doing these classes online has led to a major decrease in the participation of the students, leading to much less constructive and informative lectures.

Searching for internships for the summer has also been impacted. Many of the places that would be hiring, like campaigns and other political offices, are no longer doing in-person internships or internships at all. The question was posed: What would happen should classes continue online in the fall? For him, the quality of the courses online would make pursuing an internship or other alternatives more worthwhile than continuing with classes.

5.3.3. Emerson College

We spoke with a junior completing work towards a BFA in Theater Design and Technology. As for the transition and Emerson’s decision he said:

“They did the right thing by making us all leave, but also, online classes don't work as well, and they should have just clarified that no one should have the expectation that it's going to be as good or as rigorous.”

This sentiment of acceptance, but noting how the quality should be expected to be lower, is similar to that of WPI students. He identified as a self-learner, saying:

“I definitely don't like online learning. I'd like listening and taking notes and not needing a whole lot of in-person interaction. Usually during classes I didn't ask too many questions... It's not the worst, but also it would be a lot better to have that in-person connection. It's just easier to focus and understand things overall.”

Even though he wouldn't normally rely on others in his work, the impersonal nature of online learning still impacts him.

The hindrances of online learning have largely shown themselves in his desire for feedback. “The art classes that I'm taking do not work as well online because you can't get the same kind of feedback while you're working. It's just a lot easier to learn about making art in person,” he said, experiencing major changes due to his arts-centered curriculum. Paint classes online are difficult, as limited feedback is available as the work is taking place.

Working from home has been difficult, but his self-motivational tendencies make him believe he is producing the same quality of work he would be on campus. But many things are out of his control. Theater performances have either been left incomplete or canceled altogether, so he has been unable to see much of his work this semester come to fruition. Even with all the work he has dedicated in the paint shop and in preparation for major end of year events, such as the EVVY Awards, he acknowledges there is little that can be done to remedy these issues.

5.3.4. UMass Lowell

We spoke with a junior year student working towards BA in Exercise Physiology and, ultimately, a PhD in Physical Therapy. She finds the labs much easier, as the expectations are lower, and there are fewer mandatory tasks.

“In a lab, you have to do certain exercises and go through certain things. Online, we're just teaching ourselves. It's not the same. I've had lab practicals that we would have to study day in and day out for and now we just don't have them.”

She notes spending maybe half the time on work than what she normally would on campus, if that. She's still getting her work done, but it's a lot less challenging for her as it's been translated online. The quality of education is less, but she believes the school did the best they could in these circumstances. Even with efforts made for an easy transition, many things are out of anyone's control.

“My professors are trying their hardest. But I don't think it's the same quality... My lab is all hands-on and so trying to do that online is extremely difficult.

A large part of her course experience changing is the social component of doing work with friends on campus. It is harder to find motivation at home, and family can be distracting at times.

She prefers in-person, interactive learning, but is still trying to make it work the best she can. She describes herself as someone who prefers working in groups, so it has been more difficult to have the same work ethic and effort in completing assignments remotely.

Another student interviewed was a junior Peace and Conflict Studies major at UMass Lowell. While the change to online learning physically was not a big deal, as he was home at the time of the announcement and did not have to retrieve anything from campus, the move to online learning had been challenging for him. Finding the motivation to go to optional lectures and to get work done in a timely manner has been a strain. This is a common issue for many students, as the stress of the pandemic weighs on them as they try to create a schedule with structure. The lack of extracurricular activities that would have taken place in the spring was also a disappointment.

6. Comparing Schools and Recommendations

In comparison with other colleges in New England, WPI has both unique and similar traits in tackling this transition. All schools closed their campuses, moved to online learning, and efforts made to ensure an ease in transition. Students have responded to the changes in operation, transition to online learning, thoughts on the current quality of education, how learning styles plays a role, and judgment on how they may be impacted in the future. Comparing the schools will determine if WPI students have the same thoughts as elsewhere, and the information gathered could potentially be interpreted in a future project to improve crisis communication.

6.1. Response to Schools Changes in Operations

Every student may have had varying reasons for their reactions now, but most have had the same initial reaction. WPI students were disappointed originally, and some were shocked, but the main response was that students wished the school made the decision originally to stay online for the remaining part of the term and not continuously push off that decision. Even so, many note that the state of emergency plays a factor in how these decisions were made and that, in turn, impacts how effectively these announcements are made.

Northeastern and St. Anselm students seemed to be the most shocked, as they had already returned to campus, told operations would proceed as normal, and then saw this information be retracted the following day. Northeastern students seemed to be more upset than St. A's students, as various petitions began to pop up in their community following updates. At both schools, students were disappointed about how on-campus housing was handled because they only had 48 hours to move out. For St. Anselm students, their campus population is more local. Northeastern's population is much more global and therefore faced more challenges in finding new living arrangements overall.

Emerson was similar in the aspect that they had already returned to school after spring break. However, they were notified that the school was monitoring the situation, and there was more of a discussion of the possibility of moving online. They also had a longer time period to move out of on-campus housing. Therefore, the students were not as shocked because they were able to anticipate these decisions. Initially, some students did not completely agree with the decisions being made, but looking back, they saw the outcome was inevitable to close campus and transition to online learning. Today, most, if not all, students agree that their respective schools made the correct decision.

All students agreed, across schools and grade levels, that the announcements that were received better were ones that showed more empathy for the students. Students at WPI and elsewhere understand the complexities of the situation, but are still saddened by various losses they have experienced through the transition to online learning and closing of campuses. For instance, seniors are missing out on their last few months on campus, hanging out with their friends, and experiencing a regular graduation. Students who planned on going abroad tended to be more devastated than others due to missing out on a highly anticipated experience. Students who were originally going to be completing average lecture classes tended not to be as heartbroken as others.

6.2. Overall Transition to Online Learning

The timing of each spring break, when the announcement was made, and the resources provided all impacted each school's transition. The calendar of events played a role in how each student believed the school transitioned due to the time given to prepare for the transition. The calendar of events is attached in Appendix L, and it is further explained how this played a role in the following sections.

Students at WPI overall believed the transition to online went well, due to being given an extra week of spring break while the professors transitioned the classes online. Some thought that even though the courses are being taught differently, WPI did the best they could, and students were realistic with their expectations. WPI provided a platform and resources to help professors and students with the transition, such as Canvas and Zoom.

Northeastern and St. Anselm had a slightly different experience than WPI. Both schools had returned from spring break and began classes when the announcements came. The difference between St. Anselm and Northeastern's decisions were that St. A's gave students an extra week of spring break, while Northeastern called for online classes to begin immediately. Northeastern did not allow any extra time for professors and students to prepare for the transition. Some professors individually gave students a few days off to prepare for online instruction, and with that, those classes transitioned more smoothly.

UMass Lowell had the same spring break as WPI, with decisions made on changing operations occurring during this time. However, UMass Lowell faced a lack of resources for professors in transition, according to students. The university uses Blackboard as its main Learning Management System (LMS), but many professors chose not to use it. This caused students to believe that even with certain programs in place, the transition could have been more smooth if there was a universal use of these resources. This would allow students some consistency in their work and expectations of how work would continue.

Students at Emerson College received an extra week to transition after they had already returned to campus, similar to St. Anselm. The students concluded that even with an extra week to prepare for the transition, not everything was set in place by the time classes reconvened. They also believed that their expectations may have been a little high, so they wished the school would have been, in some way, straightforward about the limitations going forward.

Overall, schools that gave an extension to spring break, including WPI, St. Anselm, and Emerson, tended to have a perceived smoother transition to online learning. Schools that provided defined resources and platforms for their professors had a better transition than the schools where it was lacking. After comparing the student perspectives of how they believe their school transitioned to online learning, it appeared that WPI took the correct action and steps in completing the transition under these circumstances. The use of Canvas as an established LMS in the WPI community was a huge benefit in this emergency situation.

6.3. Quality of Education

At WPI and other schools of interest, the quality of education online is not viewed positively in comparison to in-person classes. Most students said that despite the limitations of remote learning, they are trying to make the most of the circumstances to get a quality education. It surfaced that the type of classes being taken and the students' learning styles played a role in their feelings of quality. Laboratory classes, capstone projects, and research faced more negativity in terms of perceived quality, as students had perhaps higher expectations and

anticipated these experiences more. Students who would be described as field-dependent learners, relying on friends to study and preferring structure to be provided to them, had a more difficult time maintaining a consistent work ethic in online learning.

Some students explicitly recognized that it was not the school's or professors' fault for this lack of quality. This type of acceptance does lead to further frustration. Like those looking for someone or something to blame for COVID-19, students are unable to reasonably place blame on their school. A WPI class of 2022 Physics and ME major wrote:

“I want to be angry, but I can't. Most of the current situation is no one's fault, and I'm not just going to pick someone to be mad at for reasons that are unfair. A disease doesn't care if you're angry.”

In the interview with a senior St. Anselm Elementary Education student, they showed sympathy for their professors saying, “I think it's definitely hard for some professors. I feel bad for them. Classes change everything. For us, it's easy, because we just have to take it online, but I think it's harder on the professors.”

Some students have questioned whether classes are even “worth” the money they are paying for in regards to this lower quality. A BCB class of 2022 student agreed it is not equivalent, writing, “I really want this experience to lay to rest the idea that online classes are an equivalent substitute to in-person learning.” A Northeastern University fifth year student agrees, saying, “If classes are going to go online in the fall there is no point in doing it.” Other students have had the same opinion, reevaluating their options for future semesters.

Overall, the transition for each class depended on the type of class and the individual professor teaching it. Students tend to agree that classes that involve labs, software that is not readily available, hands-on assignments, and discussions tend to lack quality more than others. For example:

- In some labs at WPI, with the week that was given for transition, professors recorded themselves performing labs to give students a better visual experience in learning remotely. Students who were in these classes reacted more positively than others who had to complete labs without these resources.
- Students at other schools with labs and software not available to them agree that the quality of that particular class has deteriorated since moving remote.
- Hands-on classes, such as Art and MQP (and equivalents at other schools) work the least well. These classes require more interaction and in-person feedback to be as meaningful as students anticipate. Students at all schools were devastated by how these classes and projects are being completed, if being completed at all.
- Classes that are more heavily based on in-person discussions face a particular set of difficulties. In using Zoom for discussion, students appear to not participate as much, causing conversations to lack productivity. Or if students are willing to participate, the barrier of remote learning may hinder them from doing so as frequently as they normally would. Students who took discussion-based courses for the reasons of being more field-dependent in their learning are now at a disadvantage as well. Their relationship with professors becomes much more impersonal if specific measures are not taken online.

6.4. Learning Styles

The learning styles of every student has had an effect on the progress of work while completing it remotely. While most all students are facing challenges due to the stress of the pandemic, many experience more difficulties due to preferred interactions with their learning environment. Students have differed in varying degrees on the following spectrums: working in an online environment or traditional classroom setting, in groups or by themselves, interaction with peers and professors, and self-motivation or motivation from others.

6.4.1. Online or Traditional Classroom

Almost every student interviewed and surveyed prefers a traditional classroom setting more than an online environment. Incorporating some aspects of the traditional classroom into the online environment is favorable. The majority of students want optional Zoom lectures in addition to pre-recorded videos, if that was to be the format for conveying information. There were some differences in opinions on making these lectures mandatory or not. Zoom classes give structure to students' schedules, which many enjoy and furthers a feeling of normalcy. Having them optional, the students who prefer not to sit in lecture, or have personal reasons to not attend during this time, such as taking care of family, being in a different time zone, etc., can find a time to learn that works better for them

There are some exceptions to the types of classes that students believe should have Zoom classes. In an art class, an Emerson student had to sit in a Zoom call and record himself painting for several hours, as the professor offered feedback. The student did not think it was practical or worthwhile to receive feedback this way, increasing the number of distractions as he worked. Other factors that play a role in students' preferred learning style have been analyzed in the online learning environment and across schools to determine how they have adapted under the circumstances.

6.4.2. Self-Learners or Group Learners

Of the students who were interviewed and enjoyed working by themselves, they tended to be more satisfied online on personal assignments, as they did not have to rely on anyone for the completion of individual work. When students who prefer to self-learn worked in groups, they tended to be more frustrated as they completed their work. They were more susceptible to having to rely on group mates who may be hard to reach online. A senior St. A's Business and Marketing student said:

“People are able to ignore text messages, calls, and hide behind their computers, whereas in person you are forced to see each other twice a week in class,” and, “With the option to pass-fail, group work is hard, as some students are trying to get good grades for Grad school, and others are slacking as they just need above a 60.”

One interviewed student even opted, when given the opportunity, to complete a group project on their own. Their reason for opting to do this was to avoid the same reasons that the student quoted above encountered. Other students who preferred to work on their own have not had to work on projects with other students, so they did not have an experience to speak upon, but most would prefer being given the option to work individually on group projects.

Other students, who prefer group learning, have tended to struggle more due to not having the set times and meeting places as they did on campus with other students. Students who prefer to work in groups often are more motivated by others to do work. Motivation style is further discussed below.

6.4.3. Self-Motivated or Motivated by Others

The most varying opinions came from students who classified themselves as self-motivated or motivated by others. Students who were self-motivated tended to maintain their current work ethic or even thrive in the online environment, much more than students who were motivated by others. Students who were more motivated by others overall believe their work ethic was lacking without a social environment to complete assignments. Overall, students who are more self-motivated say that being online has made it easier to complete work because they have more control over the pace they set for themselves. This correlates to the characteristics of a field-independent individual, imposing their own values on the present situation they are in.

A couple of the self-motivated students that were interviewed were able to finish their assignments three weeks early. Those students tended to be proactive, setting up a schedule, whether on paper or mentally, when they were going to do their work. Other self-motivated students did not have this opportunity as assignments were posted weekly or daily. Even though some students classified themselves as self-motivated, it appeared that in an online environment, it was difficult for some to set a schedule for themselves, or some students were so busy with jobs, helping family, or other reasons brought on by the pandemic, that school work was only maintained and not excelling in delivery.

Students who were motivated by others may not have had the same experience as self-motivated individuals. After completing interviews, it appeared students who were motivated by others have continued to complete their work on time; Some are completing their work in a shorter amount of time, but their work is lacking quality compared to if they were on campus being motivated by their peers. Students motivated by others lack structure in this environment and have a hard time creating their own. There were a handful of students who said they prefer to work alone, but in the company of other students, with the reason for this being they were simply motivated by others in proximity. The circumstances have caused these students to attempt adapting from being motivated by others, which takes up more time and effort on their part in comparison to people who are better equipped to learn on their own at the start of transition.

6.4.4. Interaction with Peers and Support from Professors, or Not

Students at every school appear to enjoy interactions with their peers and some level of support from their professors. Even if the student tends to prefer working by themselves, they enjoy the option to interact in-person. For some students, there is a lack of professor interaction online, and they wished this facet of their education wasn't lost as they continue to complete their coursework.

Students understand that the online environment has made it difficult for some professors to be as involved. For instance, in art classes where students want feedback on work, the circumstances make it difficult to receive the same support from their professors. Students still appreciate this effort, and any efforts made towards increased communication. As it is perceived by many students that professors are less available in an online setting, professors taking extra steps to ensure that the means for questions can occur is very favorable.

6.4.5. Overall Learning Style Takeaways

Every student has a different preferred learning style, and when the accommodations best meet everyone in the new online learning environment, students have enjoyed each class more. This involves an online learning experience that encompasses varying class activities and means for receiving information. Here are some important points from students that highlight what can make courses more preferable for all learning styles:

- Optional Zoom lectures in addition to pre-recorded videos for regular lecture-styled courses.
- When tasked with a group project, giving the student the option whether to work on it by themselves or in a group.
- Giving the option for students to receive all assignments at the beginning of the class, laying out assignments week by week to provide more structure, or both.
- Available office hour Zoom calls with professors.

7. Conclusion and Impacts of the Pandemic (Present and Future)

Students recognize that challenges due to COVID-19 are likely to follow them in their career. The internship and job search has been completely uprooted, devastating a lot of students and the opportunities they have lost. Some students have had start dates pushed back to a later date, or indefinitely. Others have had their internship or job canceled all together and are searching once again.

A few seniors who were looking for jobs, not having any luck in securing one, are now considering graduate school. The students who discussed going to grad school planned on going online, so this transition would be smooth for them. As the future is still undecided, this opportunity may be the best for them.

Undergraduate students feel that they would be missing out on valuable experiences if online learning continues in the fall. Some have been thinking of taking a gap term or semester, or looking for a job. If a remote job still provides a worthwhile experience, and is available, it may be better to work and wait to get a better quality education in-person.

Though certain upperclassmen may not be directly affected, they are still questioning the futures of their respective schools, worrying about incoming freshmen and beyond. Some schools are wondering if incoming freshmen will defer for a year. This then begs questions of acceptance rates and class sizes in the years following COVID-19. Students at Northeastern had a specific worry. At Northeastern, students are guaranteed housing for all five years. Around one-third of the freshmen travel in the fall, and in the spring, many students go on co-op, so students cycle in and out of housing. If abroad travel is not available in the fall, the students are questioning if there will be enough housing, and if not, what should they expect as a living situation?

Many students do not know what their future holds or how it will be further transformed as the pandemic progresses. What is certain is that the current work of WPI students investigating COVID-19, the faculty who have transitioned courses, and the school administrations who made decisions to reduce the spread of disease, will not have gone to waste. This work has further prepared universities to tackle the challenges a transition back to “normal” will bring. Students and faculty continuing to make their work as meaningful as possible, even in these circumstances, has shed a light on the resilience of those in times of crisis.

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Appendix A: Kolb's Model for Learning Style

I. Kolb's Learning Style Inventory

The learning style inventory identifies four unique types of learners: assimilator, converger, diverger, and accommodator. The traits of each are based on Kolb's own model, which illustrates the learning process as a four-stage cycle (Mestre, 2006). The cycle begins with reflection and observation; Learning, observing non-judgmentally, and looking for meaning all encompass this stage. Abstract conceptualization follows, which involves logic and concepts. Active experimentation is the process in which people learn by trying things, completing tasks, taking risks, and persuading people with the actions taken. Concrete experience is the final stage, which solidifies this process and real situations as significant, making them relevant to the individual.

As for the learning styles themselves, an assimilator is apt at understanding a wide range of knowledge and transferring it into a concise, logical form. This style emphasizes reflection and theoretical processing when it comes to learning. Convergers are individuals who take concepts and transform them into a concrete situation. They are the "doers" and use active experimentation as their primary means for conceptualization. Divergers view ideas and situations from a variety of perspectives, using reflective observation in processing information and learning from it. Accommodators learn best with concrete, practical information presented on the basis of peer and instructor interaction (Mestre, 2006). Their preferred way of processing information is when they can actively apply it to a situation and are generally the best out of the four types in adaptation and flexibility.

II. Applied to Online Learning Environment

The main means of processing and learning for accommodators make them more at-risk in online learning than the other styles. However, accommodators tend to be the most dominant learning style in nontraditional environments, and have been shown to have a more agreeable attitude when it comes to online experience overall. The needs of accommodators can be met in an online setting with the emphasis on personalized learning and real-world experiences.

The current student generation has been exposed to the digital environment since they were very young. This has made them attune to multitasking. They also tend to be visual learners and are motivated by interactivity, mobile tools, and social networking. Instructors can use this knowledge by providing an online environment that includes interactive multimedia and tools that engage them in self-selected tasks (Mestre, 2006). Overall, to accommodate Kolb's four styles in an online setting, instructors should foster personal connections through pages with photos of people where appropriate, diagrams, photographs, and other supplements to text for visual learners. Animations, hands-on simulations, videos, interactive charts, and audio files benefit learners in a comprehensive way in the online world (Mestre, 2006). Information being presented in a multitude of text and visual forms allows for connections to be made for each unique learning style, facilitating an understanding of concepts.

Appendix B: Personality and Motivation for Academic Success

I. Personality and Motivation for Academic Success

Instructors have ample considerations to make in catering an online learning environment to their students. Even when unique learning styles are considered, and various forms of multimedia are used in helping students process information, personality and academic motivation play perhaps an even more significant role in indicating the success students will achieve in an online setting.

II. Big Five Personality Model

The Big Five Personality model asserts that there are five dimensions of personality: extraversion, agreeableness, conscientiousness, neuroticism, and openness. Each dimension provides insight into other traits a person may exude. For example, agreeable people will likely be good-natured, cooperative, and trustful, while neurotic people tend to be worried, insecure, and anxious (Alkış & Temizel, 2018). They also provide insight into the personality of students, which in turn informs their motivation in an online setting. Conscientiousness, linked with organization, discipline, and responsibility, has been the most linked to academic performance and success. Other relations between personality traits and academic performance vary. Because there is such a strong connection between motivation and success, many studies have been conducted on how exactly the motivation of students can be measured, and with what values.

III. Motivated Strategies for Learning Questionnaire (MSLQ)

The Motivated Strategies for Learning Questionnaire takes a comprehensive look at the wide range of theories on motivational factors. One study measured college students' motivation and self-regulation in regards to a specific course, with six motivational factors identified under three constructs (Pintrich, 1991). The value construct identifies whether one's motivation to succeed is for themselves (intrinsic goal orientation) or for rewards, good grades, or other external factors (extrinsic goal orientation). This construct also identifies a task value, in which a student perceives the task to be important and useful to a certain degree. The expectancy construct involves how much a student believes their efforts will result in positive learning outcomes (Control of Learning Beliefs), and in the expectations of their ability to accomplish a task (Self-Efficacy). The affect construct relates test anxiety to negative thoughts surrounding performance (Pintrich, 1991). There has been a consistent and significant relation made between intrinsic goal orientation and academic performance.

IV. Personality Impacts in Online and Blended Learning Environments

In a 2018 study, the impact of motivation and personality was measured in an online and blended environment. Online refers to an exclusively digital interface for students to learn, while blended incorporates both digital and in-person instruction. Three hundred sixteen undergraduate students, in which 189 attended the online class and 127 attended the blended class, were examined. The Big Five Inventory (BFI) was used to measure personality traits. Items were rated on a five-point Likert scale from one (strongly disagree) to five (strongly agree). Pintrich's MSLQ was used to rate 29 items on motivation on a seven-point scale, from one (not all true to me) to seven (very true of me). Based on the results, there was a significant positive relation found between the conscientious trait and course grades in both settings. This trait also showed a

positive relation with the Learning Management System (LMS) used in the online course setting. An LMS is used in online collaboration in accessing course materials. Canvas is an open-source LMS, for example. These findings show that because an online environment is limited in its capabilities to engage students unless they are self-motivated and active learners (Alkış & Temizel, 2018). This relation was not observed in a blended course setting, likely due to the fact that an LMS does not directly show how active a particular student is in face-to-face instruction.

As for the MSLQ, self-efficacy was found to be significantly related to both LMS use and course grades in an online learning environment. This correlates to the nature of online learning, which requires students to learn by themselves and practice self-discipline. The task value construct also indicated how students are more likely to use an LMS in a blended course setting if they find the material useful and important. Overall, LMS usage positively impacted course grades in both environments (Alkış & Temizel, 2018).

In an online course setting, students who are conscientious and have higher self-efficacy are more likely to succeed, while others may need instructor support. LMS use can indicate how a student will perform at the end of the course in both environments. This study was of interest as a blended and online environment coincides with WPI, in that most (if not all) WPI classes prior to COVID-19 were blended. Now, all learning is completed solely online. The prior use of Canvas as an LMS may be an indicator of a smoother transition to sole online learning, as opposed to schools that do not already use such a platform.

Appendix C: Information on Data Visualization

1. Implications of Data Visualization in Learning Environments

It is no surprise, based on the various ways that students engage with and process information, that participation is essential in motivating students to learn in online environments. Participation can be defined as the process of learning by relating to others (Jin, 2017). Online participation can include many activities, talking, writing, responding, watching, and thinking, to name a few. Participation, on the whole, being crucial for student success while learning online correlates with how engaging with others forces information to be processed and observed in a variety of ways.

There are various visualization tools to encourage individual or group participation, fostering learning, collaborative activities, and performance in an online setting. There are such things as static and dynamic visualization tools. Static visualization refers to those which do not change over time, such as printed text or infographics. Dynamic visualization is characterized by animation, interaction, and real-time, in that the information can change representation over time based on the user's interactions with it. Dynamic visualization effectively increases the learner's participation and awareness of the online learning community, including dynamic peer to peer file-sharing networks. Awareness is the means by which designing a visualization tool for online participation can be considered. Defined as "understanding of the activities of others, which provides a context for your own activity," it has been suggested there are two forms of awareness, namely group awareness and objective self-awareness (Jin, 2017). Awareness can allow a student to see discrepancies in expectations set and their own behavior, promoting a positive growing experience in an online community.

A 2017 study conducted by Jin confirmed that visualization tools can enhance online participation, based on various design implications and types of awareness. Online participation can be broken down into many parts, and when students' can visually see their own participation, they become more motivated to receive comments or feedback on what they have done.

a. Data Visualization for Information Management

Data, both quantitative and qualitative, will be collected to document the student transition to online learning during the COVID-19 pandemic. In a similar sense to creating visuals to foster learning online, as mentioned above, the information gathered from this research will be presented in a format that is accurate, clear, and engaging to a specific audience through a booklet. In considering information design, that being developing documentation that works for its users, we will create a resource for future students and the current administration in order to understand the student perspective in these unique circumstances.

Appendix D: In-Depth Methodology

I. WPI Survey

In order to collect WPI college students' responses about their perspectives, reactions, and transition leading up to, during, and after their college's change in operations, a survey was conducted and analyzed. After the survey was performed, interviews were conducted in order to collect information for the same purpose, except they were to a smaller audience of WPI students. Almost every student in the WPI community was sent the survey. There may be some bias due to limited connections available with solely online communications, but we hoped that by gaining a large and diverse enough sample to alleviate some of the bias. The survey is further discussed in the subsequent sections with survey best practices in Appendix E. The following subsections will discuss the survey content, structure, and distribution of the survey.

A. Survey Content

The survey has questions that fall under a few different categories: Notifications and overall reaction, transitional phase, learning style, and impacts (current and future). Questions were asked to determine how students responded to the changes, why they had those responses, and how they have specifically been affected. The survey begins with first asking the respondent what two adjectives best described how they originally reacted when the transition was first announced and then now that they have had time to reflect on the situation. There are a few questions in order to determine how the transition was for the students, if they were provided any assistance by the school, and if so, in which ways. We asked for their preference in their learning style, in order to see if this plays a role in the student's transition to both online learning and isolation. The analysis that was performed for the learning style portion will be further discussed in objective 2, below. The specific impacts that this time has had on the student was acquired to see not only how they are currently affected, but how they believe they will be impacted in the future.

The transition to online learning is a major part of what schools have done to continue with classes and other pieces of education. This has affected students differently based on what was previously going to occur during this term. Students could have either been completing a major project, like the MQP and IQP, regular classes, or laboratory courses. The feelings of students on the transition to online classes could be affected by these different situations, and the survey will be able to be separated into different categories based on these situations to see the effect they might have. The survey concludes by asking more general information, but information that does not identify the students. The general questions that were asked include questions such as what year and major(s) the students are. Further information that students would like to share about their transition was acquired if they so chose in the free-response section. The specific questions that were asked can be seen in Appendix F.

1. Further Contacted/Interviews

The final question that was asked on the survey is if the participants would be comfortable being further contacted for more questions and an elaboration on their story as well as potentially win a Dunkin Donuts gift certificate. We reached these individuals through email

to set up and perform semi-structured interviews. The specific methods used for interviewing are discussed more in the subsequent section II. Interviews.

B. Survey Structure

There are multiple forms of questions that were asked in the survey in order to gain as much information as possible in the most effective way. The first question was put in place in order to ask for the consent of the respondent. The consent form is in Appendix H, and the survey security is discussed below in a subsequent section. If the responder consents and agrees to the question, the display logic built into the online survey leads the responder to all the remaining questions. If the responder did not agree to give consent, the display logic terminated the survey, so the survey will end without displaying any of the other questions.

The survey consists of varying styles of questions. There are some multiple-choice questions to gather answers to some of the general questions, so we can categorize the student by class year, degree, etc. There are two text entries at the beginning of the survey to acquire how the students reacted to the change in operation, and there is one at the end to gather general information the individual wishes to share about the school's decision and their personal responses and transition. Some of the questions allow for multiple answers; therefore, the responder can choose all that apply to them. One section of the survey allows the responder to answer on a scale from agree to disagree with five levels, including a neutral position, on their opinion of a series of several statements. There is another section that includes a scale that they can choose their preferred learning style. For example, the scale for this survey is from 0-10 with 5 being the neutral position.

C. Survey Distribution

The target for the survey consisted of students who attend WPI. In order to gather enough information, we attempted to send the survey to the entire student body in some form. We originally were looking to have our external survey receive a 2-3% response rate from WPI students. WPI has recorded there is a student body of just over 4,600 undergraduates (WPI: Office of Institutional Research, 2019). Therefore, we expected to have around 90-140 undergraduate student responses to the survey from WPI. The number of students who responded to the survey totaled to 298 students, which far exceeded our expected number of respondents.

Throughout the survey, we asked sets of questions to determine how students at WPI reacted and perceived the notifications sent out by the school. We determined how they have handled the transition phase and how WPI has been helping them in the process. We analyzed the individual student's learning styles to see if that plays a role in their reaction. Information was gathered about how students at WPI are specifically impacted currently and in the future.

An avenue used to reach the majority of the student body at WPI was through Facebook. Every class at WPI has a student page for notifications and to share information. We posted our survey with a message to every class page, asking students to fill out the survey. Appendix J includes an example of the message we posted. The Class of 2020, 2021, 2022, and 2023 have 1,742, 1,939 members, 1,873, and 1,319 respectively on their Facebook pages (Facebook, 2020). The number of people on Facebook is 149% percent of the undergraduate student body. Although not every student has a Facebook, and some people have joined multiple groups, based on the percentage, we were likely to reach the majority of the student body

Another way that we sent out our survey to students at WPI was through our personal connections. We forwarded the link to people we personally know at WPI, and by doing this, we were more likely to have a higher percentage in completion rate. We then asked our personal connections to forward our survey along to their connections and so forth. Our hopes were that through this organic networking, our survey would spread more rapidly because of the personal connections involved.

Not only did we use our personal connections, but we reached out to WPI clubs and other organizations for their help through social media. We asked clubs to forward our survey to their members in order to reach more students and increase our total completion percentage for the survey.

D. Survey Analysis

Once all of the survey data was collected for WPI students, it was analyzed to determine if there were any trends that presented themselves. Our goals were to determine if there was any difference in the responses based on a few different variables. Specifically, we looked at the trends that formed in different grade levels, majors, and styles of learning. We hoped to find correlations between the way that WPI relayed information about the changes and the students' responses. We also hoped to find a similar correlation between how students prefer to learn and their responses as well.

To understand the reactions of the students at WPI and their views on the decisions that were made, the survey was analyzed. There were three main categories that were analyzed but were also compared to other factors. The three categories included the students' reactions, transitions, and learning styles. The transitional period to online learning was analyzed for its success as well as its quality. This survey asked students how they felt about specific issues and actions that have been taken by the school. Different parameter questions were also asked to get a better understanding of why students that are either in different grade levels or in different situations feel the way that they do about these issues.

The survey was analyzed through the use of Qualtrics analytics. The main features that were analyzed through Qualtrics were individual questions. The question that was most utilized during the period of time the survey was open, was the class year. This was to ensure that there was an equal proportion of responses for every class. This was also to ensure there was no bias by targeting an individual class. Qualtrics was used to analyze the survey responses more quickly. The analysis used graphs and a visual display of information to see the proportions of the responses of each question being answered.

The survey was also analyzed through the use of Excel. The reason Excel is utilized is to compare how if a respondent answered in a certain way to one question how that compares to others. This allowed us to see if there were correlations between different variables, for instance, how each student from different classes answered questions and also learning styles.

II. Interviews

We performed semi-structured interviews with students at WPI, and also at other colleges in New England. The interviews with WPI students were performed to further the conversation and collect information that the survey may not have fully captured. Three other colleges were chosen, in which we interviewed multiple people, in order to compare responses from students to those from WPI. The other colleges that were targeted are: Saint Anselm College, Northeastern University, Emerson College, and The University of Massachusetts Lowell. The questions that

were asked during the interview are similar to the survey that was asked to WPI students, except they were left more open-ended. After gathering some responses and doing a quick analysis of the WPI survey, some of the interview questions were readjusted in order to maximize the quality of questions that were being asked in the interview. Throughout the interview, we asked questions to determine how students reacted and perceived the notifications sent out by their school. We determined how they have handled the transitional phase and how their college has been helping them in the process. We were able to determine the individual students' learning styles to see if that plays a role in their reaction. Information was gathered about how students are specifically impacted currently and in the future. The interview questions are listed in Appendix G. The open-ended questions allowed for more in-depth answers because we were able to ask follow-up questions to further the conversation. By including an interview process, we were able to gain stories and real experiences from students, which we can not capture as easily in a survey. In order to gather enough information, our team's personal connections were utilized. We were able to gather information that helped us determine what changes and communications from colleges other than WPI have been the most positively received. The interview security can be seen in Appendix I, and the interview best practices are outlined in Appendix E.

A. Analyzing Interviews

Every interview was looked at and analyzed to see how each student reacted, transitioned to online learning, and how factors such as a student's graduation year or learning style may or may not have played a role in their reaction and transition. Each interviewer relistened to the recordings of the interviews, summarized the findings, and extracted quotes that either may relate to the other finding or that goes against the grain. Due to interviews being more qualitative instead of quantitative, the quotes were used in order to analyze the information. The students who attended the same college were analyzed together to see if there are similarities. The timeline of each schools' decisions were also analyzed along with the students' responses to see if it played a factor.

B. Comparing Colleges

Each college that was interviewed and analyzed was also compared against each other and to WPI. The third objective was to compare other college student reactions to WPI, see if they were similar or different. We are able to see what decisions had the most popular feedback from the students, which schools were more successful, and determine what made that possible. For instance, the time of spring break, when the decisions were made, how they were announced, and the amount of advisory notifications are compared across schools to see how students react. Students have responses to school changes in operation, perceptions on the transition to online learning, thoughts on the quality of education they are now receiving, how learning styles plays a role, and judgment on how they may be impacted in the future. Comparing the schools will determine if WPI students have the same thoughts as elsewhere, and the information gathered could potentially be interpreted in a future project to improve crisis communication.

III. Developing Deliverables

The deliverables that were developed include a booklet made of infographics and a web page for a virtual format to display the information. The booklet is a condensed version of the

report, but includes more information than the presentation and poster, as it includes more quotes. The webpage includes the links to the full voice recordings of each individual interviewee as well as a link to the booklet, report, presentation, survey data, etc. Due to the circumstances we are in with everyone working remotely, a webpage was a good way to spread the information that we gathered from the project process.

Appendix E: Survey and Interview Best Practices

I. Interviews & Surveys

Surveys and interviews are performed in order to collect data on a specific topic. These two formats are some of the methods we used in order to collect information on student transitions and their responses. Surveys are used in order to gather responses from a larger audience with less in-depth questions. Interviews are used on an audience of a smaller size, which involves a more in-depth conversation. Both methods were used in the project to reach different audiences.

A. Survey Best Practices

In order to gather information from a large number of people, a survey is a good option to be used. There are some best practices that can be used in order to develop the most effective survey possible. In order to develop a survey, a clearly defined goal and outcome should be developed (SurveyMonkey, n.d.). All the questions in the survey will help identify and accomplish the goal. Survey length is a factor that should be considered when developing a survey. The survey should be as short as possible while still meeting the goal in order to improve the response rate. The shorter the survey, the more likely it will be to receive quality and thoughtful answers from the respondents (SurveyMonkey, n.d.). It is recommended to structure the majority, if not all, of the questions to be multiple choice or check all that apply questions due to these questions being faster to answer, and the survey will receive a higher response rate. When asking questions, the answer choices should be balanced without leading the survey taker in any direction. For instance, when asking, “How likely are you to...,” it is suggested to have either 1-5 or 1-7 answers with a neutral position in the middle of the scale (SurveyMonkey, n.d.). Most importantly, before sending out the survey, a best practice is to check over the questions, and if completing it online that everything operates as it should (SurveyMonkey, n.d.). Once the survey is sent out and there is an error, it will be difficult to collect responses and valuable data may be lost.

B. Online Interview Best Practices

Due to the nature of the situation with the current COVID-19 pandemic, the interviews were completed online through a video chat or over the telephone. There are some best practices and methods for completing an online interview effectively. One of the key factors for completing an interview is to test the technology ahead of time (Salmons, 2011). When conducting an interview, the interviewer should be more focused on the respondent instead of the technology. The technology that is the chosen method of communication should be chosen in the special interest to make it easier for the respondent to use, so they are not distracted either. If appropriate, the questions can be sent to the respondent ahead of time, so they are more comfortable during the survey and to improve the quality of the answers (Salmons, 2011). Most importantly, it is recommended to practice asking the questions ahead of time, doing mock-interviews, for example, in order to be most prepared for conducting the interview when the time comes.

Appendix F: WPI Qualtrics Survey

Consent Agreement Form [See below, Appendix H]

1. What are two adjectives to describe your initial reaction to WPI changes in operation?
2. What are two adjectives to describe how you feel about the news now that you've had time to reflect on the situation?

PAGE BREAK

3. Do you Agree or Disagree with the following statements in regards to WPI change in operations? (5 choices & N/AorIDK)
 - a. Overall, WPI made the right decision to close the campus and move to online teaching in response to the COVID-19 pandemic.
 - b. I was given effective/timely advisory notifications that WPI was considering changing to online operations.
 - c. I was given enough time to move out of my dorm or apartment from when the notice of online operations was sent out.
4. Do you Agree or Disagree with the following statements in regards to online learning? (5 choices & N/AorIDK)
 - a. Overall, WPI has adapted well to online learning.
 - b. WPI has provided students with resources for a successful online learning experience
 - c. I believe I am getting the same quality of education online as in person
 - d. My academic work is not impeded by my current living situation
5. Do you Agree or Disagree with the following statements in regards to how it impacts you? (5 choices & N/AorIDK)
 - a. The changes in school operation have affected myself/my family financially.
 - b. My internship and/or job search is impacted by the COVID-19 pandemic.
 - c. My future internship/job offers are impacted by the COVID-19 pandemic
 - d. My preparation/search for grad school is impacted by the COVID-19 pandemic.
6. What is your preferred learning style?... (Rank yourself on scale from one thing to another on a slider from 0 to 10- neutral/both being at 5 with some range)
 - a. Online learning - Traditional classroom learning
 - b. By yourself - In groups
 - c. Self-motivated in accomplishing goals/tasks - Motivated by others in accomplishing goals/tasks

PAGE BREAK

7. What is your graduation year?
8. What is/are your major(s)?
9. How were you completing your degree prior to the COVID-19 Pandemic? (On campus w/ on campus housing, on campus w/ nearby apartment, Commuter, online, other)
10. Where are you completing your degree now, post COVID-19 outbreak? (At home, in apartment, in dorm, etc./Town, State, Country)

11. What would you be doing for academics/extracurriculars if there wasn't this pandemic?
(Check all that apply to you)(Regular course load, global project (IQP), MQP, co-op,etc.)
- a. IF IQP: How has your IQP been affected?
 - b. IF MQP: How has your MQP been affected?

PAGE BREAK

12. Please share any additional information or story that you wish about your experience with the changes WPI has made:
13. Are you willing to be contacted to answer a few more questions and potentially win a Dunkin Donuts Gift Card? Please leave an email...

****We would be grateful if you would forward this to your peers****

Appendix G: Interview Questions

Semi-structured interview

****Consent agreement** [See Below, Appendix H]**

1. What school do you attend?
2. What is your graduation year?
3. What level of degree are you currently trying to achieve? (Bachelors, Masters, etc.)
4. What is/are your major(s)?
5. How were you completing your degree prior to the COVID19 Pandemic? (On campus w/ on campus housing, on campus w/ nearby apartment, Commuter, online, other) Were you living on or off campus?
6. What was the approximate date of when you were first notified about the school's changes in operation?
7. What is your school's final decision? (Closing, new methodology for classes, etc.)
8. Where are you completing your degree now, post COVID-19 outbreak? (At home, in apartment, in dorm, etc./Town, State, Country)
9. Did your university change the grading structure (or give you the option) in response to the crisis? If yes, what is it?
10. What would you be doing for academics/extracurriculars if there wasn't this pandemic?
11. Overall, what was your first initial reaction to the news? Can you provide a few adjectives to sum up that experience?
12. How do you feel about the news now that you've had time to reflect on the situation?
13. In general, tell us your story...
 - a. How do you feel about the amount of time you were given forewarning the potential changes in operation?
 - b. Did you have to move out of a dorm/apartment, and did you feel you had enough time to do so from the deadline set by your university?
 - c. How has your university adapted to online learning?
 - d. Did your university set you up with the resources to have a successful online learning experience?
 - e. Are you taking any labs? How has that been working online?
 - f. Do you feel your work is impeded in any way by your current living situation?
 - g. Do you or your family have any stress over the financials of changing your learning experience?
 - h. Has your internship or job search been impacted by COVID-19?
 - i. Have any future job offers been impacted by COVID-19?
 - j. Has your preparation for further schooling (undergrad or graduate) been impacted by COVID-19?

14. What is your preferred learning style?

- a. Online learning - Traditional classroom learning
- b. By yourself - In groups
- c. Self-motivated in accomplishing goals/tasks - Motivated by other
- d. Having support/interactions from peers/professor, or not
- e. Classes that focus on student participation or classes that focus on instructor's strategies?
- f. Receive feedback on your work as you do it or not?

15. How do you feel yourself as a learner functions in an online setting overall?

Anything else you'd like to share about your experience?

Appendix H: Consent Form

I. Consent Form

We are a group of students from Worcester Polytechnic Institute (WPI) located in Worcester, Massachusetts USA. We are working on a project focused on collecting responses from students about the COVID-19 pandemic. By conducting this survey/interview, we will be able to gain invaluable data on how COVID-19 has impacted students in higher education. We believe that the information we gain will help document this unique period in our nation's history.

Your participation in this survey is completely voluntary and you may withdraw at any time. Please remember that your answers will remain anonymous. No names or identifying information will appear on the questionnaires or in any of the project reports or publications.

This is a collaborative project, and your participation is greatly appreciated. If interested, a copy of our results can be provided at the conclusion of the study.

If you have any questions or wish to find out the results of the survey, you can contact the COVID Student Transition project team by email at gr-D20-CovidST@wpi.edu.

Appendix I: Survey and Interview Security

The survey and interview data that is collected will be protected. For both the interviews and surveys, a consent form will be utilized in order to ensure that the interviewees and survey takers understand that their participation is voluntary, and they may stop at any time. The consent form can be seen in Appendix H. Each respondent is not required to participate and does not need to fill out any information they are not comfortable with sharing. The information that is collected for the surveys will be anonymous and no identifiable information will be asked of participants. The surveys will be conducted electronically through WPI Qualtrics. The names of the interviewees will not be recorded during the interview process. The interviews may also be recorded if the interviewee gives their consent to do so.

Appendix J: Facebook Post Message

Hello Everyone!

WIN A Dunkins Gift Card!

My group and I, CovidST Project Team, are completing a survey as part of our IQP project, and we were hoping you could take part. We would greatly appreciate it :) !!

The survey collects data on your reactions, perceptions, and transition during this pandemic. The results can potentially improve the experience of students in the future.

Here is the link: http://wpi.qualtrics.com/jfe/form/SV_3eGkWM1pTWi6peJ

Appendix K: Survey Responses (Sample)

Graduation year and number of each answer	Overall, WPI made the right decision to close the campus and move to online teaching in response to the COVID-19 pandemic.	I was given effective/timely advisory notifications that WPI was considering changing to online operations.	I was given enough time to move out of my dorm or apartment from when the notice of online operations was sent out.	Overall, WPI has adapted well to online learning.	WPI has provided students with resources for a successful online learning experience.	I am getting the same quality of education online as in person.	My academic work is not impeded by my current living situation.	The changes in school operation have affected myself/my family financially.	My School is providing compensation relief for some/all of my expenses planned for the remaining of the year.	My internship and/or job search is impacted by the COVID-19 pandemic.	My future internship/job offers are impacted by the COVID-19 pandemic.	My preparation/search for grad school is impacted by the COVID-19 pandemic.
Total												
Disagree	8	22	99	11	8	136	80	51	53	13	9	21
Disagree	4	55	52	37	36	95	92	45	44	8	12	12
Disagree	6	28	30	50	49	15	31	68	21	26	19	53
Disagree	36	103	43	138	120	26	46	82	78	50	52	15
Disagree	230	73	12	43	65	6	32	31	32	144	121	26
Disagree	0	2	45	4	6	4	2	7	56	42	71	155
2020												
Disagree	0	8	10	4	1	21	15	7	13	5	4	4
Disagree	0	4	7	8	6	9	13	7	10	2	3	4
Disagree	0	4	6	5	5	1	1	4	1	4	5	5
Disagree	9	15	4	14	16	4	3	10	2	3	6	4
Disagree	30	8	1	7	10	3	5	8	3	13	12	4
Disagree	0	0	11	1	1	1	1	3	10	12	9	18
2021												
Disagree	3	7	20	5	2	42	28	13	21	4	2	5
Disagree	0	23	14	10	16	23	24	11	19	2	4	2
Disagree	2	9	10	14	13	3	6	15	7	5	2	10
Disagree	11	24	9	32	32	7	11	24	16	12	8	6
Disagree	60	13	3	13	11	0	7	13	2	46	43	13
Disagree	0	0	20	2	2	1	0	0	11	6	17	40
2022												
Disagree	4	2	23	1	4	31	23	12	13	3	1	3
Disagree	1	15	15	12	4	34	18	14	7	3	2	2
Disagree	1	5	5	16	16	4	5	19	7	5	4	16
Disagree	7	29	17	35	30	2	17	22	21	15	15	4
Disagree	62	23	6	10	21	2	12	6	8	42	36	5
Disagree	0	1	8	0	0	1	0	2	19	7	17	45
2023												
Disagree	1	5	44	1	1	41	14	17	4	1	2	9
Disagree	3	12	15	6	8	27	35	13	8	1	3	4
Disagree	2	9	8	14	14	6	18	27	6	11	7	19
Disagree	8	33	12	55	39	12	13	25	37	18	20	1
Disagree	73	27	2	11	23	0	7	3	19	40	27	3
Disagree	0	0	5	0	2	0	0	2	13	16	28	50

Figure 29: Sample Data Results

Appendix L: Calendar of School Timelines

March 2020						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 Northeastern Spring Break Begins	2	3	4	5	6	7
8 St. A's Spring Break ends. Emerson spring break ends Northeastern Spring Break Ends UMass Lowell Spring Break Begins	9	10 Emerson Classes will be moved to on-line learning starting the 23rd	11 Northeastern Classes Moved to on-line learning effective immediately UMass Lowell Online Classes announced till April 3rd	12 St. A's Announced classes will continue as normal	13 St. A's Classes moved online and students needed to leave by the 15th Emerson announced students must leave if they can safely by the 20th	14 Northeastern Residence Halls Closing by the 17th UMass Lowell online classes extended till rest of the year and closed residence halls given a sign up for a 2 hour slot to move out
15 St. A's Residence Halls closed	16 UMass Lowell spring Break Ends	17 Northeastern Residence Halls closed	18	19	20 Emerson Residence Halls closed	21

Figure 30: Calendar timelines of the different Schools responses to the pandemic

Appendix M: Project Deliverable Links

Website: <https://sites.google.com/view/covidst/>

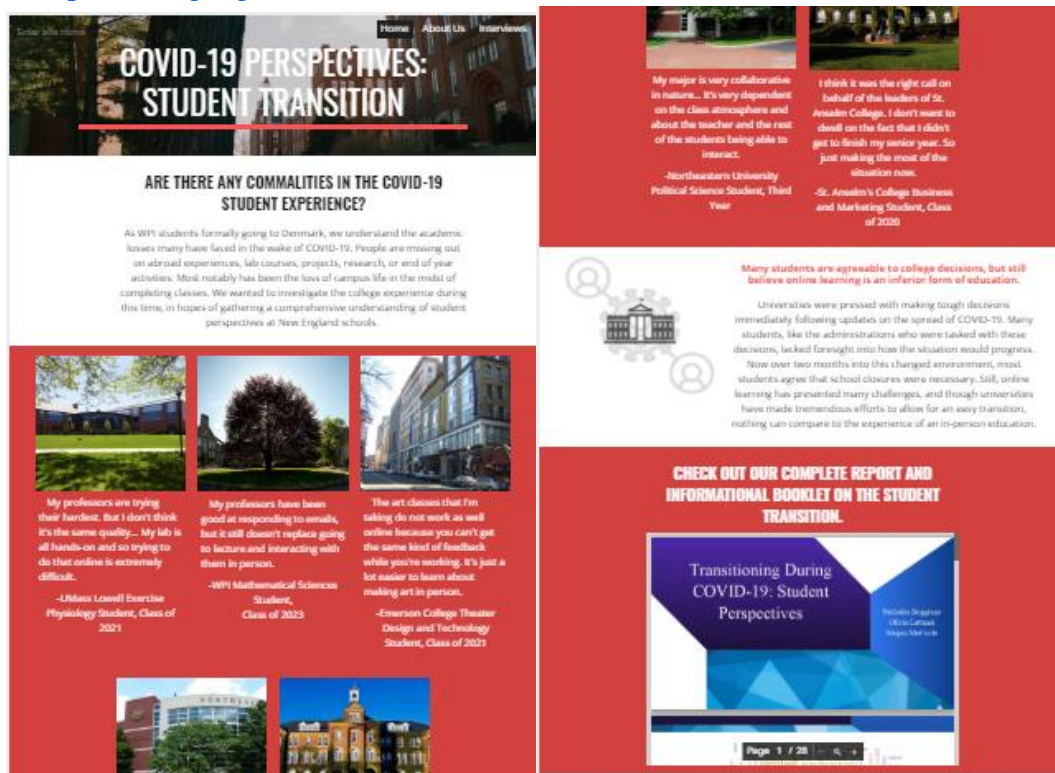


Figure 31: Front Page of the COVID-19 Student Transitions Website

Booklet: On website

Full Interviews: On website



Figure 32: Top Part of the Website Interviews Page