Student Attitudes Towards Distance Learning at a Large Urban Public College

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Abstract
Student attitudes towards distance learning can affect both the acquisition of knowledge and the motivation to learn. This study explores student attitudes towards the following four topics: (1) technological and environmental impediments towards distance learning, (2) asynchronous versus synchronous course preferences, (3) online versus in-person course preferences, and (4) attitudes towards taking online courses in the future. The findings of the study are based on two anonymous online surveys conducted in the spring and fall of 2020 among students at a large urban public college located in New York City. The study reveals that a significant number of students have unreliable internet and live in homes not conducive for online learning. By a narrow margin, students prefer an asynchronous to a synchronous approach to online learning. Along several dimensions covering different facets of the classroom experience, students prefer in-person courses to online courses. The disparities favoring in-person classes are most noticeable with respect to the ability to concentrate in class sessions, feeling motivated to learn, and developing friendship ties with classmates. Distinctive profiles exist among students who opt for these different teaching modalities. Those students who are more positively disposed towards in-person classes tend to be younger (freshmen or sophomores), those experiencing higher stress levels, and those whose physical arrangements at home are not conducive for learning. Importantly, though, a majority of students say they were inclined towards taking more online course in the future.

Keywords: distance learning, online learning, student attitudes, student perceptions, surveys, motivation, higher education, online surveys, asynchronous learning, synchronous learning, undergraduate students

The advent of the coronavirus in the spring of 2020 compelled colleges and universities throughout the United States to quickly transition from in-person classes to remote learning. This abrupt transition caused massive disruptions in the higher educational system. Students at residential colleges had to suddenly vacate their residence halls and return home. Across the country, students with little or no familiarity with online classes had to learn how to use web or video conferencing platforms such as Zoom or Blackboard Collaborate, participate in online discussion boards or chats, and submit homework assignments and take exams virtually. Perhaps even more challenging, they needed to learn how to absorb the course material in a radically different learning environment from the traditional classroom setting. Faculty, too, were confronted with unprecedented challenges. Like most of their students, the vast majority of instructors lacked any previous experience with distance learning. In addition to acquiring the necessary technical tools to teach remotely, faculty needed to transform the content of their courses to be compatible with this alternative method of instruction.

Understandably, much scholarly attention has focused on the dislocations to the higher educational system caused by the pandemic (Gillis & Krull, 2020; Hamilton, Kaufman, & Diliberti, 2020). However, since the pandemic also resulted in millions of U.S. college students being exposed for the first time to a relatively new teaching methodology, it also created an opportunity to examine the views about distance learning of a broad population of students, one which heretofore may not have considered taking online courses.

The present study investigates the attitudes towards distance learning of a significant segment of this population—students attending an economically and racially diverse school in New York City. The location of the study is important because New York City was the epicenter of the coronavirus during the early stage of the COVID19 pandemic (McKinley, 2020). Thus, this study examines students' attitudes at a time when the virus first emerged in the United States and when it was exacting a devastating toll on the citizens of New York City. The study explores student attitudes towards the following four topics: (1) technological and environmental impediments towards distance learning, (2) asynchronous versus synchronous course preferences, (3) online versus in-person course preferences, and (4) attitudes towards taking online courses in the future. The findings of the study are based on two anonymous online surveys conducted in the spring and fall of 2020 among students at a large urban public college located in New York City.

Studying student perspectives about distance learning is critically important because student perceptions can affect both the acquisition of knowledge and the motivation to learn (Salisbury et al., 2002; Tanner, Noser, & Totaro, 2009; Bali & Liu, 2018). Student attitudes also can have a significant bearing on the disposition to enroll in additional online courses.

Review of Related Literature

Prior to the onset of the pandemic, the academic literature about online learning focused principally on three topics: (1) student satisfaction with online courses, (2) effectiveness of online or distance learning, and (3) factors that impact online course outcomes (e.g., digital divides/inequality, organization and structure of online courses, and types of materials included in online courses). Literature concerning student satisfaction with online versus traditional classroom experiences produced mixed conclusions. Some studies reported no significant difference in student satisfaction between the two types of instruction (Allen et al., 2002; York, 2008). However, most studies indicated that students harbor lower levels of satisfaction with online classes compared to in-person classes (Johnson et al., 2000; McFarland & Hamilton,

2005; Salisbury et al., 2002; Summers, Waigandt, & Whittaker, 2005; Tratnik, Urh, & Jereb, 2019). Importantly, the much of the literature notes that regardless of how students may *feel* about online learning, there is little or no difference in knowledge acquisition (usually measured by grades, exam results, or self-report) (Johnson et al., 2000; Summers, Waigandt, & Whittaker, 2005). Maki & Maki's (2000) research was particularly notable for the fact that students' preference for traditional in-person lecture-based classes was pronounced even when researchers found that online options resulted in greater mastery of course content. Salisbury et al. (2002) made a further distinction between types of educational outcomes noting that even when distance education may not affect mastery of content, it may negatively impact the attainment of important pedagogical goals such as developing students' reasoning abilities or their desire to pursue further study of the academic discipline.

Previous research examining technological and economic barriers to online instruction observed that a slow connection or disruption of service may not only hinder participation in synchronous classes but may also impede a student's performance in asynchronous classes such as when taking an online examination (Gillis & Krull, 2020; Grether, MacDonald, & Higgins, 2020; Katz, Jordan, & Ognyanova, 2021). This technological barrier was usually associated with social class background with undergraduate students from lower-income households being more likely to experience problems stemming from unreliable internet service (Casey, 2020 as cited in Katz et al., 2021).

The number of published studies on attitudes of college students towards distance learning was relatively sparse prior to the onset of the pandemic (Allen et al., 2002; Bali & Liu, 2018; Boling et al., 2012; Driscoll et al., 2012; Lowenthal, Bauer, & Chen, 2015; McFarland & Hamilton, 2005; Summers, Waigandt, & Whittaker, 2005; Tichavsky et al., 2015; York, 2008). Since the advent of the coronavirus, the number of studies examining student attitudes towards distance learning has burgeoned (see Adnan & Anar, 2020; Armstrong-Mensah et al., 2020; Gillis & Krull, 2020; Grether, MacDonald, & Higgins, 2020; Katz, Jordan, & Ognyanova, 2021; Lazarevic & Bentz, 2021; Masalinmova et al., 2002; McClure et al., 2021; Means, Neisler, & Langer Research Associates, 2022; Nguyen et al., 2021; Unger & Meiran, 2020; Zhou & Zhang, 2021).

A particularly noteworthy addition to the literature is Van Wart et. al., (2020) whose research takes a step beyond the Community of Inquiry (CoI) framework— the most prominent theoretical framework used in online learning. The CoI divides instruction into three interdependent elements— teaching, cognitive, and social presence. Van Wart et al. (2020) break down student perceptions of quality online instruction into seven factors labeling them: Basic Online Modality, Instructional Support, Teaching Presence, Cognitive Presence, Online Social Comfort, Online Interactive Modality, and Social Presence. They then analyze students' responses to generate a hierarchical ranking of their importance to students.

There is only one attitudinal study that we have been able to identify that was situated in New York City during the pandemic. The study conducted by McClure et al. (2021) was based on survey responses to 254 undergraduate and graduate students who attended a university anywhere within the New York City metropolitan area. A majority of the participants were graduate students (59.6%). The students were selected via a combination of convenience and snowball sampling methods. The major focus of the study was to explore online learning challenges encountered by students because of the COVID-19 pandemic. One key finding that emerged from the study was that from the vantage point of the students, new "pedagogies of engagement" needed to be developed for remote learning to be a successful mode of instruction.

Another important finding was that the pandemic laid bare inequalities in the lives of students that were obscured in traditional classroom settings. In addition, technological challenges such as poor internet access or private spaces to study were noted for several students.

The present study adds to the existing literature in a number of ways. First, the study surveys students who did not "voluntarily" choose to learn remotely. Thus, there was no "selection effect," a limitation attached to the earlier studies on student attitudes towards distance learning. As Bray, Harris, & Major (2007) pointed out, "Students engaged in distance learning tend to have demographic and professional characteristics different than their traditional classroom counterparts." Second, the study is based on two surveys with relatively large sample sizes (each numbering approximately 500 respondents). Most of the studies that have been conducted since the emergence of the pandemic rest on fairly small-sized samples, limiting the statistical precision with which inferences can be drawn from the results and precluding the carrying out of subgroup analyses. Third, the study examines attitudes of students towards distance learning both at the time of the incipient stage of the pandemic (spring 2020) and at a slightly later time (fall 2020). The surveys, therefore, were able to capture student sentiments at a formative stage and at a more mature stage as the pandemic persisted. Finally, the surveys were administered to students enrolled at a large, public, college located in New York City with an economically and racially diverse population. Thus, the findings are not limited to the perceptions of one homogeneous subset of students but pertain to a broad swath of students with differing backgrounds.

Hypotheses

Based on the existing literature and the population sampled in our study, we posit several hypotheses that largely based on economic and age characteristics of students:

H1)   Students from lower-income households would be more in favor of in-person classes than their more affluent counterparts because of problems with internet access and lack of personal space.

H2)   Students in the paid labor force would be more in favor of online classes and prefer asynchronous versus synchronous online learning than students who are not employed.

H3)   Overall, students would evaluate in-person classes more positively than online classes.

H4)   Freshmen students and, more generally, new entrants to the college environment would be more in favor of in-person classes than more senior students.

Methods

This study rests on two anonymous online surveys administered to students at a large public urban college in New York City. The first survey was carried out in the spring semester of 2020 from April 28 to May 6 (forthwith referred to as the Spring 2020 survey). The second survey was carried out in the fall semester of 2020 from December 3 to December 23 (forthwith referred to as the Fall 2020 survey). The surveys were administered to students enrolled in every undergraduate sociology course during either of those two semesters. Altogether, 531 students completed the Spring 2020 survey, and 483 students completed the Fall 2020 survey. The surveys were very similar in their content domain (see Appendix A for a copy of the Fall 2020 survey).

Students were recruited to take part in the surveys by faculty members of the Department of Sociology. Each faculty member sent their students online requests to participate in the surveys. The students were informed that survey participation was voluntary, that the surveys were anonymous, and that the time to complete the surveys ranged from 5 to 10 minutes.

During each semester students were furnished with a link to the corresponding survey. For students taking more than one sociology course in a given semester, they were instructed to take the survey only once. However, students enrolled in sociology courses in *both* spring 2020 *and* fall 2020 semesters were allowed to take both surveys since one of the aims of the study was to capture attitudes toward online learning at *different times*. The surveys were administered via a Google Form and no personal identifying information was collected that could link responses to a specific student.

The response rates for the surveys were calculated by dividing the number of respondents who completed each survey by the total number of course enrollment caps (excluding internships and Independent Studies) for the spring/fall semesters. Enrollment caps were used rather than actual enrollment numbers, which were unavailable. The response rate for the Spring 2020 survey was 19.9 percent and for the Fall 2020 survey the figure was 17.4 percent. These figures underestimate the survey response rates for two reasons. First, as just mentioned, the denominator in each rate consists of the enrollment caps imposed on courses which, in many instances, exceeded the actual number of students enrolled in these courses. Second, students were frequently enrolled in more than one sociology course in a given semester and, if so, would be allowed to complete the survey only once.

Although the sample frame consisted of all students enrolled in sociology courses, the sample is more diverse and representative than this frame might seem to imply. Students were queried about their major in the fall survey and almost half (44.3%) responded that they were majoring in an academic discipline other than sociology with an additional 10.3% reporting that they had not yet declared a major. Thus, the survey results clearly go beyond sociology majors and can be thought of as being applicable to a broader and more diverse student population than would be the case if the survey were confined only to sociology majors.

The surveys, employing both closed-ended and open-ended questions, tapped into student attitudes on four major topics: (1) barriers to online learning, (2) comparing synchronous versus asynchronous course preferences, (3) comparing online versus face-to-face courses, and (4) disposition towards taking online courses in the future. Students were also asked a battery of questions concerning their social-demographic characteristics. The authors selected the four topical areas enumerated above, based on two criteria. First, students enrolled in a section of Introduction to Research Methods (taught by one of the authors) in the latter part of the spring semester were assigned to construct their own original survey instruments about learning online during the beginning of the pandemic. As part of the assignment, these students were instructed to imagine that their surveys would be administered to a random sample of undergraduate students at their college and their survey questions could tap any facet of students' perceptions or experiences regarding distance learning since the arrival of the pandemic. The authors of this article then analyzed the questions in the students' surveys and culled the dominant themes or those that were salient to the students who constructed the surveys. In essence, the survey questions served as a window into the thinking of the students and guided the authors in formulating their own survey questions. Second, the authors undertook a systematic review of the literature to identify repetitive themes that emerged about student attitudes towards online learning.

Results

Overall Profile of Respondents

Both the Spring 2020 and Fall 2020 surveys yielded very similar demographic profiles of the student respondents. Since the Fall 2020 survey was more detailed, the results presented in this section are confined to this second survey. Of the 472 student respondents, 83.1% (n = 392) identified themselves as female, reflecting the predominantly female composition of the college. While a majority fell into the traditional age category of undergraduate college students of 18–22 (72.3%), a sizable number were in the age bracket of 23–28 (15.4%) or older than 28 (12.3%). Students were almost uniformly distributed among four major racial-ethnic groups: Hispanics, African Americans, and Whites each comprised roughly 20 percent of the sample with Asians comprising approximately 25 percent of the sample. The remainder (14.9%) identified themselves as belonging to another racial-ethnic group. The sample was skewed towards seniors who made up 41.5 percent of the respondents. (This figure represented the only marked departure from the Spring 2020 survey in which seniors made up 34.9 percent of the respondents.) Among the other three class standings, students were distributed as follows: freshmen (14.9%), sophomores (13%), and juniors (36.7%). Significantly, the survey revealed that a considerable number of students were employed in the paid labor market. Roughly one-tenth (9.6%) were employed full-time (40 hours a week or more) and more than a third (34.8%) were employed part-time. The survey also revealed that nearly half of the students (48.2%) responded that they were "taking care of" family members such as children or older parents.

Views on Distance Learning

Technological and Environmental Impediments to Distance Learning. Several items were incorporated in the surveys to measure barriers to distance learning. These included the following: (1) ownership of a computer or other electronic device to use for distance learning, (2) whether students had to share this device, (3) access to high-speed internet connection, (4) reliability of the internet connection, and (5) private space for participating in online classes and completing homework assignments.

In both surveys, the majority of students reported having access to a computer or other device necessary for online learning and having internet connectivity. Yet, a sizable proportion stated that their internet connection was not reliable. In each survey, more than a quarter stated that their internet connection was unreliable leading to frequent slowdowns or disruptions of service. In addition to this technological barrier, many students reported that their home environment was not conducive for online learning. Roughly a third of students in the spring and fall surveys said that they lacked a private space in which to participate in synchronous class sessions or a private space in which to complete homework assignments. Highlighting the difficulties many students experienced by having an inhospitable home environment in which to learn, one female respondent in the spring survey remarked:

> Many of us do not have the benefit of a comfortable and private learning environment from which we can comfortably take exams, do homework, and take tests. I live with 7 other people in a 2 bedroom apartment and share my bedroom with my sister and mom. As my sister is also in college doing online learning through Zoom, it is quite difficult to concentrate …

Another student in the spring survey pointed to the inequalities that remote learning can lay bare:

> … our socio-economic backgrounds and situations have been forced into our learning environment. [In] physical classroom sessions, those barriers disappear as we are all able

to learn in the same classroom and benefit from the same available resources … [With distance learning] some of us don't have our own rooms, WiFi, personal laptops, etc.

The sentiments expressed above can help to explain why a large portion of students are ambivalent about leaving their cameras on during live online sessions. Although faculty are generally in favor of being able to view their students when teaching remotely because of the visual feedback they receive (Castelli & Sarvary, 2021; Terada, 2021), many students are reluctant to be visually exposed. In the fall survey, almost half of the students (46%) reported that they were either "somewhat unwilling" or "very unwilling" to leave their cameras on. Noteworthy is that this percentage jumps among those students who lack a personal space to study at home (62.1%). One student in the spring survey explained why she was resistant to leaving her camera on this way:

> During live video conferencing classes, I do prefer to have the camera off. I prefer this only because I do have to share my room and so it becomes disruptive to have my camera on, and then for someone to walk in. I would be interrupted because my siblings do come and go.

These results support Hypothesis I that students from lower income households face greater obstacles to distance learning. In general, they are handicapped by having less reliable internet access and home environments that are not as conducive to online learning.

Asynchronous versus Synchronous Course Preference. Students were asked in general whether they preferred synchronous or asynchronous courses and the underlying reasons for their preference. A larger segment of the students said they preferred asynchronous courses (i.e., no pre-specified time to access lectures and course materials) to synchronous courses (i.e., specific time to attend "live" lectures and class meetings) as a method of instruction. Overall, two-fifths of the students (40.4%) preferred asynchronous, slightly more than a third (34.8%) preferred synchronous, and the remainder (24.8%) did not indicate a preference.

One reason students prefer an asynchronous approach is that they can learn the material at times that are convenient for them. This is particularly the case so that they can schedule learning to avoid intrusions in home. As one student put it:

> It is more convenient. My brother is [in] high school and often, we are taking are classes at the same time in the same room due to the timing conflicts and little space. It is just more convenient if I have classes that do not require we meet at specific times, so I can choose to watch the lectures after my brother's classes so we are both not distracted.

Not surprisingly, students with unreliable internet service favored asynchronous courses. Those having internet connectivity problems preferred this approach by a margin of twenty-five percent. One student commented as follows:

> …When I have the time and space to review a course and do the associated assignments on my own time I feel as though I become far better equipped with my learning and I can work around my internet connection.

In addition, employment status and self-reported stress levels correlate with a preferred mode of online instruction. Confirming Hypothesis 2, students in the paid labor force display a preference for the asynchronous mode of instruction. Figure 1 shows that among students working forty hours or more a week, almost three-quarters of participants stated a preference for this approach versus the synchronous approach (71.4% versus 28.6%). Among students working

part-time, the margin favoring the asynchronous approach was also sizable (59.1% versus 40.9%). Only among those not employed did the preference for the asynchronous format dip below that of the synchronous format and by a relatively narrow margin (46.6% vs. 53.4%). The cross-tabulation between employment status and mode of online instruction is statistically significant $\chi^2(2, n = 363) = 9.922$, $p = .007$.

Figure 1
Preference for Asynchronous/Synchronous Instruction by Employment Status
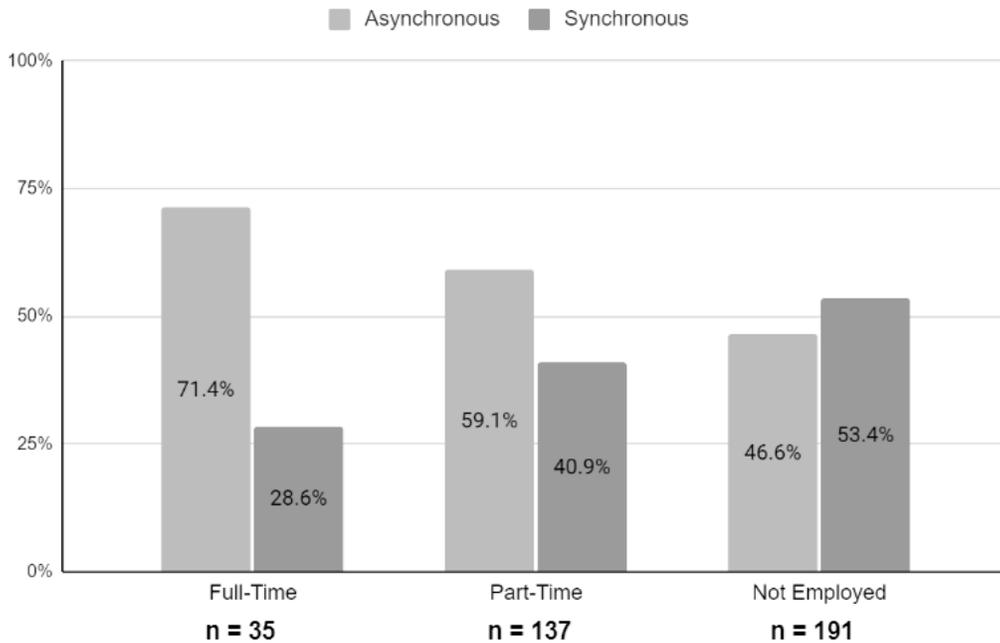
Students' self-reported stress level was another important characteristic that differentiated attitudes between these two approaches. Students were asked to rate their "overall level of stress" on a scale ranging from 1 ("very low stress") to 5 ("very high stress"). More than a third (36.7%) assigned to themselves the value of 5 to describe their overall level of stress. Yet among students who stated a preference for asynchronous learning, this figure rises to 62.1 percent.

While, in general, a greater number of students preferred an asynchronous format (n = 195, 40.4%), a third of the students expressed preference for a synchronous approach (n = 168, 34.8%). A recurring theme in the qualitative data was that the synchronous approach more closely approximated the in-person learning experience. One student in the fall survey remarked:

> I prefer a synchronous approach because it makes me feel like I'm getting my money's worth. In most asynchronous classes professors just post readings for us and we write a response or paper about them. That makes me feel like I'm just paying for someone to tell me what to read. Majority of students just end up skimming the readings to find an answer to the question and don't actually learn anything. At least in a synchronous class we can see and hear the professor and ask any questions about the material during class as opposed to asking through e-mail and waiting days for a response.

This same sentiment was echoed by another student in the fall survey who wrote:

> I find it so important to be able to interact with professors in an engaging learning environment. That face-to-face contact is crucial, especially now when we're all isolated. I don't find watching a simple video to be productive at all as I feel it hinders analytical and

critical thinking skills that would be enhanced in synchronous learning with that connection between teacher/student, similar to the in-person learning.

Regardless of the approach students endorsed more, they were uniformly in favor of having their instructors record their lectures. Among students who preferred the synchronous approach, more than four-fifths (86.3%) wanted their instructors to record their lectures and a similar proportion (81%) of students who preferred the asynchronous approach wanted their professors to do so. The importance of having professors record their lectures was a theme that echoed throughout the responses to the open-ended questions about both teaching approaches. One student stated:

> I prefer rewatching lectures on my own so I can go back and listen to things my Professor said and understand them better. Some of my professors do not record the synchronous lectures and it can be difficult for me to get everything they said perfectly into my notes.

And another student commented:

> For the classes that do not host class sessions and just operate through written "blog posts" and submitting assignments by following along on the syllabus, learning is substantially hindered.

Further attesting to the importance of these videos was the number of students who accessed the recordings when they were provided. Fully 84.7% reported reviewing the video lectures. Even students enrolled in synchronous courses noted that by being able to access a recording they could make up for a class that they had missed.

Online Learning versus In-person Learning Preference. To gauge student attitudes towards their preferences for online learning versus in-person learning, students in the fall survey were presented with a list of nine items covering different facets of the classroom experience. These items were culled from a review of the literature that identified them as being salient criteria upon which students evaluate the classroom experience. The nine items consisted of the following: (1) ability to concentrate during class sessions, (2) amount of knowledge gained, (3) quality of instruction, (4) motivation to learn, (5) participation in class discussions/discussion forums, (6) interaction with professors, (7) collaboration with other students, (8) development of friendship ties with other students, and (9) overall level of enjoyment of the class. For each item, students were asked to indicate whether online classes were "better than," "the same as," or "worse than" in-person classes. A Cronbach alpha statistic was calculated on these nine items and yielded a value of 0.869, indicating a high degree of internal reliability. Table 1 displays the results of this analysis.

The data in the table show that for each of the nine items, the percentage of students who indicated online classes were "worse than" in-person classes surpassed the percentage of students who indicated online classes were "better than" in-person classes. The disparities were most noticeable with respect to the ability to concentrate in class sessions, feeling motivated to learn, and developing friendship ties with classmates. The data in the table lends strong support to Hypothesis 3.

Table 1

Views on Taking Online Classes vs. In-person Classes: Fall, 2020 Survey

Attribute	Online classes **better** (%)	Online classes the **same** (%)	Online classes **worse** (%)
1. Ability to concentrate during class sessions	10.5	22.2	67.3
2. Amount of knowledge that I am gaining	9.7	41.5	48.8
3. Quality of instruction	10.4	47.6	42
4. Feeling motivated to learn	6.6	29	64.5
5. Participating in class discussions (either in live sessions or online discussion boards)	23	32.5	44.5
6. Interacting with my professors	14.2	40.5	45.3
7. Working with other students in my classes on course assignments	14.2	29.2	56.7
8. Developing friendship ties with other students in my classes	9.5	17.5	73.0
9. Overall level of enjoyment of my classes	14.3	37.6	48.1

Note. Valid responses varied between 449 and 473 depending upon the specific question.

Though students, in general, were more positively disposed towards face-to-face classes than online classes, there were sizable numbers who rated the two approaches as being the same along several different facets of the classroom experience. A large share of students, for example, stated that the amount of knowledge gained, the quality of instruction, and interactions with faculty were the same, whatever the particular teaching methodology.

A principal components analysis was conducted on these nine items to reduce these items to a smaller number of dimensions or latent factors. This analysis produced two factors with eigenvalues greater than 1 (see Table 2).

Table 2

Results of Principal Components Factor Analysis Comparing Views on Taking Online Classes versus In-person Classes, Fall 2020 Survey

Rotated Component Matrix

	Component 1	Component 2
1. Amount of knowledge that I am gaining	0.814	0.109
2. Ability to concentrate during class sessions	0.777	0.146
3. Overall level of enjoyment of my classes	0.766	0.339
4. Feeling motivated to learn	0.755	0.233
5. Quality of instruction	0.724	0.077
6. Participating in class discussions (either in live sessions or online discussion boards)	0.571	0.363
7. Interacting with my professors	0.539	0.466
8. Developing friendship ties with other students in my classes	0.137	0.863
9. Working with other students in my classes on course assignments	0.177	0.838

Note. Rotation Method: Varimax with Kaiser Normalization

We labeled Component 1, which accounted for 40% of the variance explained, "knowledge acquisition and class enjoyment." The variables that loaded highest on this factor were: (1) amount of knowledge gained, (2) ability to concentrate, (3) overall level of enjoyment, (4) motivation to learn, and (5) quality of instruction. We labeled Component 2, which accounted for an additional 22 percent of the variance, "student collaboration and friendship ties." Two variables loaded high on this second factor: (1) developing friendship ties with other students and (2) working with other students on course assignments.

We next divided each of these factors into three equal-sized groups based on their factor scores— the lowest third, the middle third, and the highest third. The highest tercile comprised students who were more positively oriented towards in-person learning on each factor. Conversely, the lowest tercile consisted of students who were more positively oriented towards online learning on each factor. Finally, we cross-tabulated this three-group classification scheme on both factors with a number of demographic variables. On the "knowledge acquisition and class enjoyment" factor, students who harbored more positive attitudes towards in-person classes tended to be younger, freshmen or sophomores, those enrolled in more than four courses, those experiencing higher stress levels, students without a private space to study at home, and students with unreliable internet. On the "student collaboration and friendship ties" factor, freshmen and sophomore students were also disproportionately found among the highest third category. These results buttress Hypothesis 1 and Hypothesis 4.

Attitudes towards Online Learning: Now and in the Future. While many students compared online learning unfavorably with in-person learning, on the whole, they registered a higher degree of satisfaction than dissatisfaction with their online courses. In the fall survey, over half (55.3%) said they were either "very satisfied" or "somewhat satisfied" with remote learning at the college. An additional 27 percent responded that they were "neutral" and the remainder (19.7%) reported that they were either "somewhat dissatisfied" or "very dissatisfied" with online courses. Among the reasons articulated by students for liking online courses was the flexibility remote learning offered. As one student commented, "I like that students work at their own pace and not have to worry about getting to class on time." Another reason given by students for liking online courses was that they provided a comfortable environment for shy students. Typifying this attitude, another student remarked, "As a student who is usually anxious about participating in person, I feel very comfortable speaking through audio and messaging during class."

Students in the fall survey registered similar sentiments about taking more online courses in the future. A majority (55.3%) were favorably inclined towards learning virtually in the future. One-fifth (20.7%) indicated that they were "somewhat opposed" and 14.9 percent indicated that they were "strongly opposed." Slightly less than a tenth (9.1%) offered "no opinion."

Just as employment status was closely linked to attitudes towards asynchronous versus synchronous teaching approaches, employment status is strongly related to attitudes towards taking more online classes (Figure 2). The cross-tabulation between employment status and taking more online classes in the future is statistically significant $\chi^2(4, \text{n} = 480) = 15.842, p = .003$.

Figure 2
Taking More Online Classes in the Future by Employment Status
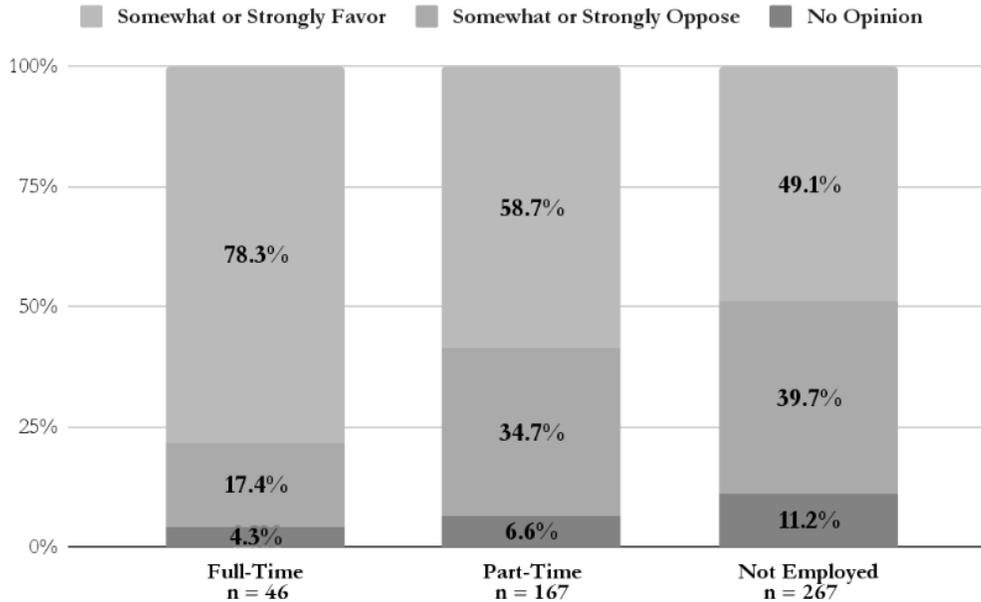
As students' participation in the workforce increases, there is a monotonic increase in those who favor taking more online courses in the future. Among students who are not employed, about one-half stated they would be favorably disposed towards taking more online courses. This figure rises to 58.7 percent among those who work part-time and jumps even further to 78.3 percent among those who work full-time. These data provide strong support for Hypothesis 2 that students with greater work responsibilities would favor online learning more so than students not as burdened with work responsibilities.

Another factor associated with attitudes towards distance learning is age. Students who were 29 and older were more disposed to taking additional online courses in the future than their younger counterparts (70.4% versus 59.4%). The more positive orientation towards distance learning among those who are employed or older is consistent with previous research findings (Bray et al., 2007; Harris & Martin, 2012; Stack, 2015).

Two additional factors that were related to attitudes towards distance learning were class standing and degree to which students were worried about paying tuition. As might be expected, seniors and students who were either "very worried" or "somewhat worried" about paying tuition were more supportive of taking online courses in the future than their counterparts. The more favorable attitudes towards distance learning by seniors and those worried about tuition could be explained, in part, by their age and employment status.

Limitations

Several limitations of this study should be pointed out. First, the students who completed the fall and spring surveys upon which our analysis rests were not randomly selected. The students voluntarily completed the surveys and thus their opinions may diverge from those students who chose not to participate in the surveys. As we have noted, though, we believe that this limitation may not be a serious one for the following reasons: (1) the surveys collected no personally identifiable information, (2) students were repeatedly encouraged to participate in the surveys by their professors, and (3) the surveys generated response rates close to 20 percent that

probably underestimate the actual completion rates. We believe these factors served to mitigate any bias which may have intruded in the sample due to self-selection. A second limitation of the study was that the sample of participants was confined to students who were enrolled in courses offered in the sociology department and thus sociology students were disproportionately represented in the sample. We queried students about their majors in the spring survey and sociology majors made up approximately the same portion as other majors (44%) with the remaining 10% percent undeclared. Therefore, while sociology majors were overrepresented in the sample, a sizable share of sampled members came from other disciplines as well. A third limitation pertains to the type of online instruction students were exposed to in the spring of 2020. As Hodges et al. (2020) noted, "Well-planned learning experiences are meaningfully different from courses offered online in response to a crisis or disaster" or what they termed, "Emergency Remote Teaching (ERT)." The type of online instruction offered in both the spring and fall semesters of 2020 due to the COVID-19 pandemic was clearly an archetypal example of ERT. Almost universally, faculty were not prepared to teach online courses and students encountered multiple challenges transitioning to remote learning. In this new instructional environment, students' attitudes towards remote learning understandably may have been negatively affected.

It is certainly reasonable to argue that had the students in this study been enrolled in established online courses taught by professors both proficient in online teaching technology and possessing long-term experience with this medium, the attitudes of the students would have been different. For this reason, we need to exercise caution in generalizing the findings of this study to online courses t would be taught under a different set of circumstances than a pandemic or other crisis situation. With this caveat in mind, though, we believe there are a number of findings in this study which would be applicable to established online courses taught under a "normal" set of circumstances. We have documented in this study that students from lower-income households are more positively disposed towards in-person classes than their wealthier counterparts due to internet connectivity problems and lack of personal space. Similarly, freshman students and other new entrants to the college environment are more favorably disposed toward in-person classes. Secondly, this study has also demonstrated that students in the paid labor force are more favorable to online classes and particularly asynchronous courses. Finally, this study has provided ample data that students, regardless of whether they are enrolled in synchronous or asynchronous courses, want professors to provide recordings of their lectures. These findings are important to consider when designing online courses that are being taught under extraordinary or ordinary circumstances.

Discussion

Several significant findings have emerged from this study. First, as a backdrop, it is important to keep in mind the socio-demographic characteristics of the survey respondents. They were predominantly female, racially-ethnically diverse (more than half identified themselves as African American or Hispanic), and many were older than the traditional college-aged students (27.7 percent over 22 years of age). Noteworthy is that more than two-fifths (44.4%) were employed in the paid labor market and a similarly large portion (48.2%) were "taking care" of other family members. It is not surprising, therefore, that a large number reported experiencing high levels of stress, having to balance their academic workload with family and work obligations. Without doubt the coronavirus exacerbated their stress level, but even without this added source of anxiety, many were burdened with non-academic responsibilities.

As noted previously, anecdotal evidence has reported that undergraduate students from lower-income households are more likely to experience problems stemming from unreliable internet service (Casey, 2020; Katz, Jordan, & Ognyanova, 2021). This study provides systematic data concerning the magnitude of this problem among college students, many of whom are from lower-income households. More than a quarter of the respondents in each of the surveys carried out in this study reported that they lacked reliable internet connectivity.

A second factor that may impede online instruction is a home environment not conducive for learning. Students without a dedicated place to study or to participate in class discussions suffer an academic disadvantage. This study found that approximately a third of the students did not have a private place to complete homework assignments or participate in classroom discussions. In open-ended remarks students called attention to the economic class inequalities which are exposed when learning shifts from the campus classroom to the home. In campus classrooms differences in the economic background of students may be obscured whereas these differences are unmasked or even magnified in the home. This inequality helps to explain why students from lower-income families are often reluctant to leave their cameras on during live online class sessions. These sentiments, although not providing a direct confirmation, tend to support Hypothesis 1 that students from lower income households would favor in-person more than online classes.

In line with other research, this study found that more students prefer asynchronous to synchronous courses (Beyth-Marom, Saporta, & Caspi, 2005; Lew & Nordquist, 2016; Marmon, Gordesky, & Vanscoder, 2013; Simonds & Brock, 2014). Students who favor the asynchronous method of instruction are more likely to be employed either full-time or part-time because of the inherent flexibility in scheduling class time offered by this approach. Other categories of students who favored the asynchronous teaching method were those with unreliable Internet and those who reported experiencing high levels of stress. In short, an asynchronous approach was favored largely for the sake of convenience to accommodate students' busy schedules and responsibilities and to alleviate problems associated with lack of private space or resources.

It's important to note that a common refrain amongst many students was that they do not want faculty who use an asynchronous teaching technique to just post readings or videos and have students respond with written papers or even discussion posts. Many students reported feeling that such methods made them feel as if they were being told to learn the materials on their own. Instead, they want instructors to adopt methods that include greater feedback so that students can ensure that they are interpreting and comprehending material correctly. Ideally, students preferred that faculty would be more available to have discussions and answer questions. If faculty were not accessible, students noted the importance of having recorded lectures available to them. Even students who participated in synchronous classes remarked that it was often difficult to take notes on all important information during online meetings. Thus, recorded lectures were invaluable, allowing students to easily access and review important information and course content.

In addition to surveying student preferences concerning asynchronous versus synchronous teaching modalities, this study examined student attitudes comparing online learning to face-to-face learning. These attitudes were measured on a broad array of different facets of the classroom experience encompassing the acquisition of knowledge, the quality of instruction, the motivation to learn, participation in class discussions, student-teacher interactions, the development of ties among fellow students, and the overall level of enjoyment

of the course. A higher percentage of students rated traditional face-to-face learning as being superior to remote learning on each of the different attributes.

Of note is that a similar percentage of students rated in-person and online classes as being comparable in terms of the acquisition of knowledge. Evaluations of the two modes of delivery, however, are starkly different when based on other dimensions of the learning experience such as the motivation to learn or developing ties with other students. Regarding these "fuzzier" dimensions of the learning experience, students evaluate face-to-face instruction far more positively than online instruction. It appears that what differentiates these two teaching methods the most during moments of crisis such as the pandemic is that in-person instruction was more likely to motivate students and imbue them with a sense of belonging than online instruction.

As was the case comparing asynchronous to synchronous instructional methods, distinctive profiles emerge of students who prefer in-person classes versus students who prefer online classes. Students who are more attracted to in-person classes tend to be traditional college aged (18–22) and freshmen or sophomores. Students more disposed to in-person classes are also those with more onerous course loads (i.e., taking 5 courses or more), and those who report high stress levels. On the other hand, students who find online courses more appealing tend to be employed part-time or full-time. Seniors, older students, and those who are more worried about paying tuition also find online courses comparatively attractive.

Teaching in the Post-Pandemic Era: A New Paradigm

A dominant trend today is the blurring of traditional boundaries separating different spheres of activity or the boundaries separating different social identities. The educational arena is not exempt from this overarching trend. Up to now, many colleges and universities in the United States have offered only face-to-face instruction. As a result of the coronavirus, these institutions of higher learning have transitioned on a temporary basis to online classes. Yet the findings produced in this study support the conclusion that colleges and universities should not revert to the status quo ante. A large segment of the students interviewed in this study did not view learning in a traditional classroom setting as being pedagogically superior to distance learning, at least in terms of knowledge acquisition. Also, many students, particularly those gainfully employed in the labor market or adult students, were favorably disposed towards taking more online courses in the future. Institutions of higher education, therefore, should consider offering both traditional and online courses. Moreover, course delivery methods should not be confined to just in-person versus online modes of instruction. Rather, a variety of platforms and techniques could be implemented such as offering hybrid or blended courses combining elements of both in-person and distance learning. Educators could pay more attention to one of weaknesses in online learning articulated by students in this study which is to foster interactions amongst students and motivate them to pursue further study. Providing this multi-modal approach to students at many colleges and universities would recognize the diverse needs of an increasingly heterogeneous student population and go a long way to addressing those needs.

Declarations

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Appendix A
Survey Form Used in Fall 2020

1. What device do you primarily use to access your online courses?
    - ☐ Computer
    - ☐ Tablet
    - ☐ Smartphone (skip to #3)

2. Do you share the computer or tablet you use for online learning with others?
    - ☐ Yes
    - ☐ No

3. Please tell us whether you currently have any of the following:

	Yes	No	No Opinion
Internet access			
Private space where you can participate in live online class sessions			
Private space to work on homework			

4. How would you describe your Internet access?
    - ☐ I have reliable Internet access.
    - ☐ I have Internet access, but it is not reliable.
    - ☐ Not applicable (I do not have Internet access).

5. Before the Fall semester, did you attend any in-person classes at [the college] or at some other college or university?
    - ☐ I attended in-person classes at [the college] before the Fall semester.
    - ☐ I attended in-person classes at some other college or university before this Fall semester.
    - ☐ I did not attend any in-person classes at [the college] or at some other college or university before this Fall semester.

6. How many online classes are you taking this semester?
    - ☐ 1
    - ☐ 2
    - ☐ 3
    - ☐ 4
    - ☐ 5
    - ☐ 6+

7. In the current semester, how many of your courses use the following teaching approaches?

	All	More than half	Half or fewer	None
Internet access				
Private space where you can participate in live online class sessions				
Private space to work on homework				

8. In general, which teaching approach do you prefer?
    - ☐ Synchronous (live online course in which you must be present at the time the class is scheduled to meet) *Skip to question 9*
    - ☐ Asynchronous (online course which do not require you to login at a specified time) *Skip to questions 10*
    - ☐ I do not have a preference *Skip to question 11*
9. What would you say is the main reason that you say you generally prefer a synchronous approach?
10. What would you say is the main reason that you say you generally prefer an asynchronous approach?
11. In general, how often do you attend the live online sessions of your courses?
    - ☐ Always
    - ☐ Almost always
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never *Skip to question 16*
    - ☐ Not applicable (I had no live online class sessions) *Skip to question 16*
12. What web conferencing tool(s) are your professor(s) using now for teaching live online class sessions: (check all that apply)
    - ☐ Blackboard Collaborate
    - ☐ Zoom
    - ☐ Other _____
13. Does your device have a camera for your live online classes?
    - ☐ Yes
    - ☐ No *Skip to question 16*
    - ☐ I am not sure *Skip to question 16*
14. How often do you have your video camera on during live online class sessions?
    - ☐ Always
    - ☐ Sometimes
    - ☐ Never
15. How willing are you to have your camera on during live online class sessions?
    - ☐ Very willing
    - ☐ Somewhat willing
    - ☐ Somewhat unwilling
    - ☐ Very unwilling
16. How many of your professors who are teaching asynchronously (not live sessions) provide recordings of their lectures?
    - ☐ All of them
    - ☐ More than half
    - ☐ Half or fewer
    - ☐ None of them *Skip to question 20*
    - ☐ I don't know
17. How many of your professors who are teaching synchronously (live sessions) record their live online sessions?
    - ☐ All of them
    - ☐ More than half
    - ☐ Half or fewer
    - ☐ None of them *Skip to question 20*
    - ☐ I don't know

18. Do you favor or oppose having instructors record live online sessions?
- ☐ Favor having instructors record live online sessions.
- ☐ Oppose having instructors record live online sessions.
- ☐ No opinion

19.

	Yes	No	Not Applicable (instructor did not supply a recording)
I have accessed one or more recordings of a synchronous (live) session.			
I have accessed one or more recordings of an asynchronous lecture (not live session).			

20. In general, compared to in-person classes, do you feel that communication with your professors has
- ☐ Increased
- ☐ Stayed the same
- ☐ Decreased
- ☐ No opinion

21. In general, compared to in-person classes, do you feel that the amount of homework assignments has
- ☐ Increased
- ☐ Stayed the same
- ☐ Decreased
- ☐ No opinion

22. In general, compared to in-person classes, would you say that your class sizes have gotten bigger, smaller, or stayed about the same?
- ☐ Class sizes have gotten bigger
- ☐ Class sizes have gotten smaller
- ☐ Class sizes have stayed about the same

23. Below is a list of items. For each item, please indicate whether you think your experience taking online classes is better, the same, or worse compared to taking traditional, in-person classes

	Online classes BETTER than in-person classes	Online classes the SAME as in-person classes	Online classes WORSE than in-person classes	No Opinion	Not Applicable
Ability to concentrate during class sessions					
Amount of knowledge that I am gaining					
Quality of instruction					
Feeling motivated to learn					

Participating in class discussions (either in live sessions or Online discussion boards)					
Interacting with my professor(s)					
Working with other students in my classes on course assignment					
Developing friendship ties with other students in my classes					
Overall level of enjoyment of my classes					

24. Compared to when [the college] first moved to online learning (March 2020), in general, how would you describe the change in your attitudes towards online classes?
   - ☐ I did not take any online classes before this current semester at [the college] or other college
   - ☐ Like online classes more
   - ☐ Like online classes less
   - ☐ My attitudes towards online classes have stayed the same since [the college] transitioned to online classes

25. In online courses, how common do you think cheating on exams is among students at colleges and universities in the United States?
   - ☐ Very common
   - ☐ Common
   - ☐ Not that common
   - ☐ No opinion

26. When in-person classes resume, to what extent would you favor or oppose taking more of your courses online?
   - ☐ Strongly favor
   - ☐ Somewhat favor
   - ☐ Somewhat oppose
   - ☐ Strongly oppose
   - ☐ No opinion

27. When in-person classes resume, to what extent would you favor or oppose taking more of your courses online?

28. Please tell us any particular things that you dislike about online learning.

29. Please tell us any suggestions that might help improve your online learning experience.

30. Overall, how satisfied are you with the online courses you are taking at the college?
   - ☐ Very satisfied
   - ☐ Somewhat satisfied
   - ☐ Neutral
   - ☐ Somewhat dissatisfied
   - ☐ Very dissatisfied

31. Are you majoring in sociology, majoring in a discipline other than sociology, or have you not yet declared a major?
   - ☐ I am a sociology major (including if you also have another major)
   - ☐ I am majoring in some other discipline.
   - ☐ I have not yet declared a major.

32. Are you taking any Sociology courses this semester?
- ☐ Yes
- ☐ No
- ☐ Not sure

33. What is your student status?
- ☐ Freshman
- ☐ Sophomore
- ☐ Junior
- ☐ Senior
- ☐ Non-degree seeking
- ☐ Not sure
- ☐ Other _____

34. Overall, how worried are you about not being able to pay for tuition and other school expenses?
- ☐ Very worried
- ☐ Somewhat worried
- ☐ Not that worried
- ☐ Not at all worried
- ☐ No opinion

35. Looking to the future, how likely are you to

	Very likely	Some-what likely	Some-what unlikely	Very unlikely	No opinion
take off the next spring semester from college					
drop out of college altogether					
transfer from [the college] to another college					

36. On a scale of 1-5 (where 1 means very low and 5 means very high), how would you rate your overall stress level?

	1	2	3	4	5	
Very low						Very high

37. Please indicate your employment status
- ● Employed part-time (less than 40hrs/week)
- ● Employed full-time (40 hrs. our more/week)
- ● Not employed in the paid labor force

38. Please indicate if you are responsible for helping to take care of any of the following family members:

	Yes	No
Children under 18		
Children over 18		
Parents		
Other relatives		

39. Which of the following best describes your race/ethnicity? Please choose only one of the following:
- ☐ African/African American
- ☐ Afro-Caribbean or Afro-Latinx
- ☐ Central or South American Latinx
- ☐ North American or Caribbean Latinx
- ☐ Native American/Alaskan Native
- ☐ Middle Eastern
- ☐ Indian/other nation in Indian subcontinent
- ☐ Pacific Islander
- ☐ East Asian (e.g. Chinese, Japanese, Korean)
- ☐ White
- ☐ Two or more races/ethnicities

40. With what gender do you identify? Please choose only one of the following
- ☐ Male
- ☐ Female
- ☐ Non-binary
- ☐ Other _____

41. What is your age?
- ☐ 18–22
- ☐ 23–28
- ☐ 29–34
- ☐ 35–44
- ☐ 45–64
- ☐ 65+

42. What is your 5-digit Zip code?

43. Please feel free in the space below to add anything you would like about the effects of the coronavirus outbreak on you as a student.