

University Student Transition to Remote Learning during the COVID-19 Pandemic: The View from Taiwan

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Abstract – This study examined Taiwanese university students' transition to remote learning during the COVID-19 pandemic. Student participants completed a semi-structured questionnaire about their experience with remote learning in 2021. Questions were formulated with the goal to understand their comfort level in engaging via video conferencing, the effect of the residential environment on learners' motivation, and the unique challenges faced as they quickly learned to adapt to digital classrooms.

Keywords – Remote learning, COVID-19 pandemic, university, Taiwan.

1. Introduction

The last two years saw schools and colleges temporarily closing their doors to decrease the spread of an infectious disease known as COVID-19. The COVID-19 pandemic, caused by the coronavirus (SARS-CO-2) and starting in the spring of 2020, deeply affected the global economy; life in general moved online [7], [16], and [18]. Whether for work, school, or social contact, people connected with each other via videoconferencing apps such as Zoom and Google Meet.

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At a time of global health crisis, technology helped people communicate and work without the need of face-to-face interaction. In particular, the pandemic changed the way people impart and receive education. The physical closure of universities and the discontinuation of in-person teaching led to an overnight shift of normal classrooms to virtual classrooms. School closures were found effective in mitigating viral transmission during the outbreak [8]. This unprecedented crisis challenged the education systems across the globe and forced educators and students to whether ready or not quickly adapt to remote learning.

Taiwan managed to contain the coronavirus pandemic for most of 2020. The central government responded by ordering a partial lockdown, revamping older IT infrastructure, implementing contact tracing, and switching to remote work or rotating shifts [17]. Despite widespread lockdowns across the world, Taiwan became one of the few places to remain open. Schools and universities closed for about three weeks in March 2020 but were able to re-open classrooms afterwards, using a mix of in-person and remote learning. Around mid-May 2021, however, the number of locally transmitted cases started growing [19]. In a matter of few weeks, the bubble of normalcy burst: Taiwan was under a level 3 alert. In-person instruction at universities was suspended for the rest of the spring semester (May-June) and the first three weeks of the fall semester (September 2021).

This study aims to further explore how university students in Taiwan fared during this unprecedented crisis. In particular, a total of 178 student participants from a public university in Taiwan completed a semi-structured questionnaire about their experience with remote learning in 2021. Questions were formulated with the goal to understand their comfort level in engaging via video conferencing, the effect of the residential environment on learners' motivation, and the unique challenges faced as they quickly learned to adapt to digital classrooms.

2. Remote Learning: Panacea in a Time of Crisis

Online learning is defined as learning that takes place over the internet via different devices (e.g., mobile phone, laptop, iPad). Other terms referring to online learning include remote learning, distance learning, virtual learning, e-learning, digital learning, and web-based learning. In synchronous mode there are real-time interactions between instructors and students [2]; both can receive instant feedback through a video conferencing app. In contrast, in asynchronous mode the lectures and tutorials may be in the form of recorded videos and learning materials (handouts, readings, etc.) for self-viewing that can be made available on an online course management system. Thus, asynchronous learning allows students to access or review content any time and learn at their own pace (but within a timeframe specified by the instructor). Over the past few years many platforms provided affordable courses to students via Massive Open Online Courses (MOOC) [9].

Regardless of the purpose (e.g., for certification or continuing education), the advantages to online learning are widely acknowledged: it is easily accessible, flexible, and cheaper in terms of lower transportation cost. Learners, including those living in remote areas, can schedule or plan their time for completion of courses. There is also the third option: blended learning. In this format, students engage in remote learning at home and go to the physical campus part of the time. Some instructors have also implemented a flipped classroom, which combines face-to-face lectures with technology [10]. As tech-enabled accommodation has demonstrated its long-term usefulness, education technology (EdTech) has become a booming sector [15] and online learning has proved to be a savior at a time of crisis.

Online education has been entirely optional from the outset, usually catering to non-traditional learners seeking an alternative learning mode to accommodate a busy lifestyle or personal challenges [12]. As witnessed in the past two years, however, digitalization is no longer a choice – it is a necessity. In particular, the pandemic has completely changed higher education. When schools suddenly switched to remote instruction, there was practically no time at all for planning or training. Schools had to scramble for different options of an online pedagogical approach. Even if schools could offer the best tools, teachers need to be trained to use them. Without prior training or knowledge, many teachers found it difficult to switch to the online education mode [3]. It takes time to effectively translate their subject to an online platform.

Parents have to assume the role of teacher and counselor for their children engaging in remote learning at home. Studies also reveal the struggles

which parents have encountered while assuming these new and unfamiliar roles [6]. The most vulnerable families, especially those from low-income working-class backgrounds, may lack access to learning tools and be dependent on basic necessities such as free lunch and childcare [14].

Though today's students are tech savvy, this does not ensure they are at ease with remote learning. While technology provided innovative solutions to help keep classes going, the disadvantages also came to light. Research shows that the pandemic greatly increased academic gaps in many countries, in particular the challenges faced by rural students due to the lack of reliable and robust high-speed internet access [20]. Schools may have very limited internet access and use outdated computer systems. A report on the unequal access to learning (“digital divide”) found that many students in the US fell behind due to lack of stable internet and high-speed Wi-Fi for video conferencing [11]. Some kids were even using their phones to log into class. The psychological burdens that remote learning imposes have also been documented. Socialization is a crucial part of growing up, and the mental health of children isolated at home for months and tied to their laptops for hours could cause suffering [13].

3. Methodology

A total of 178 students were asked to fill out a semi-structured questionnaire regarding their transition to and experience with remote learning. The demographic profile of respondents is provided in Table 1.

Table 1. Demographic profile of respondents

Gender	N (%)	College level	N (%)
Female	128 (71.9%)	Freshmen & Sophomores	98 (55%)
Male	50 (28.1%)	Upperclassmen & Postgraduates	80 (45%)

All participants were students at a public university in Taiwan. They included students from all grades (freshmen to graduate students) and various majors. As the researcher is based in the English Department on the main campus (populated by the humanities and social science disciplines), English majors predominated the sample size (46.6% of the total). The gender ratio was skewed towards female, which also reflected the student demographic of the main campus. Though the questionnaire was in English, language was not a deterrent for the non-English majors as these participants scored at least the intermediate-advanced level on the pre-entrance placement exam. None of the participants expressed difficulty in comprehending the queries. Students had

courses in their major department as well as non-major courses that fulfill their degree requirement (e.g., General Education, Physical Education, etc.).

The participants were asked to complete the questionnaire individually and they were assured of confidentiality and the responses provided were used only for research purposes. The questionnaire included both closed and open ended question, of which students could freely answer in either English or Chinese. Responses for some of the questions were categorized for organizational purposes. For instance, regarding Q3 (technical issues), response categories for students to check off were Weak Wi-Fi, Slow Internet Speed, Audio/Video Problem, and *Other (specify)*. For Q5 (location), response categories included Dorm, Off-campus Rental, Moved Back Home, and Already at Home (commuting). Responses were then collected and organized in a spreadsheet file.

4. Results and Discussion

4.1. Digital Learning Tools

Students were asked what virtual-learning tools they used in their classes. Here, Webex, Google Meet, Microsoft Team, Video, and Other (specify) were the choices they could select. The first three are especially noted here because they were the tools recommended by the university. There were synchronous activities via these platforms. The choice Video refers to the asynchronous mode of learning whereby teachers provided recorded video to watch. The choices are certainly not mutually exclusive. It is possible that a student could use three or even four different kinds of apps in an entire day of classes. Also, videos could be used in conjunction with real-time videoconferencing tools.

Of the available options, both Google Meet and Webex were cited by all students. That is, students had at least one class that used one of the two apps. Microsoft Team was mentioned by 40 (22.5%) students. Other commercial platforms specifically mentioned were Skype, Zoom, FaceTime, Butter, Jitsu, and U-meeting. Though Zoom was (and still is) the most popular video conferencing tool across industries and around the world, there was a concern over the issue of privacy and security [1]. The controversy around Zoom left university administrators in doubt and ultimately it was removed from the recommended list in 2020. Table 2 provides the names of some courses that adopted one of the university-recommended software.

Table 2. Sample courses and preferred digital hub

Platform	Sample courses
Google Meet	Art History, Calculus, English Literature, E-Commerce, World History, Contemporary Drama, Educational Psychology, Chinese Phonetics
Webex	Game Design, English Etymology, Economic Geography, Computer Programming, Urban Development
Microsoft Team	Taiwan History, Career Planning & Counseling, Moral Reasoning

Between Google Meet and Webex, the former was the “preferred” video conferencing tool (60.7% for GM vs. 12.9% Webex). About a quarter (26.4%) expressed no preference, did not answer, or noted a different app such as Zoom or Skype. Reasons cited were “easier to use,” “no registration,” “doesn’t need to download,” “nothing required,” “quick to join,” and “user-friendly.” For fans of Webex, they thought it had a “clear screen,” “better video quality,” “easy to share screen,” and “has breakout session.” The breakout session feature allows instructors to place students into groups for class discussion. Overall, 167 (93.8%) said they had no problem registering and downloading the app. A minority (11 respondents) admitted needing assistance with getting started with the software. They were not worried, however, as they could “ask classmates to help.”

The primary tool is additionally complemented by the course management system Moodle. All students reported having to use it in their courses. Through Moodle, students could download the course materials, view announcements, submit assignments, and participate on the “discussion board.” An advantage of Moodle for instructors is that submissions are time-stamped, making it clear who submitted homework and when. Finally, as noted by 73 (41.0%) respondents, video was the preferred mode of delivery in at least one of their courses. Specifically, teachers recorded videos and uploaded them on Moodle or their own course page. Though there was no real-time interaction with the instructor, some students found it a welcome relief as they could then re-watch the videos at their own pace, pausing as needed.

“I like the fact that professors record their online teaching and upload them on Moodle so we can review.”

“I can re-watch the parts I don’t understand.”

With respect to the digital device chosen for online learning, 144 (80.9%) of the total checked off “personal computer only”, while 29 (16.3%) said they used both a PC and mobile phone, sometimes simultaneously. Only 4 (2.3%) students relied solely

on the phone. Preferring a PC over a cell phone, students pointed out the obvious: the phone screen is “too small” and it was “hard to share screen.” Reasons given for sometimes using a mobile phone include “it’s portable,” “can hold it while sitting on the bed or sofa,” “camera on PC broken,” and simply because “it’s convenient.” One respondent preferred having the app on both PC and phone simultaneously “in case the other device fails”, while another completely ditched both devices; an iPad was used instead as the size of the screen was “just right”.

Though all respondents possessed at least one functional device to get wired, technical issues were still encountered during the online class sessions. Some answer choices were given, although students could also provide their own. The results are presented in Table 3.

Table 3. Technical issues encountered

Check all that apply	N (%)
Weak Wi-Fi	75 (42.1%)
Slow Internet Speed	93 (52.2%)
Audio/Video Problem	68 (38.2%)
No Problem	15 (8.4%)
Other Problem (specify)	

Almost half of the students felt that internet speed was too slow and many experienced iffy Wi-Fi connections. The Google server was rarely down, but one respondent reported this problem. Another complaint was that several devices were also in use (“other family members also online”), which may be the reason for the weak Wi-Fi. Indeed, two-way interactions can be challenging without a stable connection. Furthermore, the audio and/or video component may unexpectedly fail, which is why students were advised to test the mic and camera beforehand.

Responses for the other category reveal the problem may not be entirely technical. For instance, one class used the basic Webex plan, which automatically ends the e-meeting after 40 minutes. Students were suddenly disconnected and had to log in again. Other problems were “waiting in the lobby” and “getting into meeting” because the host did not promptly hit ‘allow’. Finally, one respondent said the professor forgot to turn the mic on while lecturing.

4.2. Video Conferencing Anxiety?

The effects of video cameras on daily virtual meeting fatigue of home-based employees are well documented [5]. With the current widespread selfie obsession seen among young people, one would think they would be more at ease in front of a camera. However, as the study uncovers, this is not

entirely the case. Here, participants were asked if they felt comfortable having the camera on. If the answer was ‘no’ they were asked to provide a reason. Table 4 presents the numerical results.

Table 4. Camera anxiety and virtual speaking

Comfort level		N (%)
Comfortable with the camera on	Yes	70 (39.3%)
	No	108 (60.7%)
Comfortable with expressing virtually	Yes	137 (77%)
	No	41 (23%)

Though young people are tech savvy, self-consciousness can still get the best of them. About 40% said they felt comfortable turning the camera on (“don’t care how I look”), but 60% said they did not. For individuals preferring the camera to be off, their reluctance could be attributed to one of the following: (1) appearance, (2) personality, (3) location, or (4) other reason. Appearance-related reasons included “face doesn’t look great,” “look stressed,” “look scruffy,” “no make-up on,” “messy hair,” “dressed casually,” and “just got up” (i.e., unkempt). Users also noticed how they looked from different angles and were concerned that the “camera distorts face” or that the “camera makes me look weird.” These responses reveal that young people are just as conscious of their appearance online as those professionals video conferencing at their workplace.

In terms of personality, “shyness” was the main holdback. Some felt the weight of being in the spotlight, whether imagined or real (“feel awkward,” “feel unconfident,” “feel exposed,” “not wanting to be the center of attention,” “don’t like being stared at”). Two respondents subscribed to the herd mentality; that is, they would turn on the camera “only if others do, too.” Reasons related to the physical location were “roommate/someone also in the room,” “messy room,” and “shrine in the background.” Finally, other reasons given included not wanting to be seen multi-tasking during the class session (“eating breakfast,” “others can see what I’m doing”) or being inappropriately dressed (“wearing only underwear”). In their study on virtual meeting etiquette [6], Karl, Peluchette, and Aghakhani noted the following rules for meeting effectiveness: keep laptop camera on, dress properly, and stay seated for the lesson. Apparently, these etiquettes were not followed by most students here. With the camera off, students were safe to literally doze off (“falling asleep in front of screen,” “sleepy if the camera is not on”). Of note, in the free response section some students actually expressed the wish that instructors ask everyone to turn the camera on so as to keep the class lively.

“Ask all participants to turn on the camera. Everyone takes turn to respond.”

“Turn on the video, ask the students many questions to keep them engaged.”

“Maybe force the students to turn the camera on, and design some activities such as Kahoot.”

Concerning turning on the mic and speaking up (usually with the camera off), the majority (77%) expressed much more confidence. Since the questionnaire was conducted in 2021, by then students already “had some experience before” with remote learning. More blasé comments were “no different than in person,” “like having a normal conversation,” and “I’m not the only one who has to talk.” Conversely, for some, the new mode of learning was a refreshing change (“different experience,” “feels cool”) and actually “easier than presenting in class” since they would “not have to see others’ faces.” Coincidentally, virtual learning seems to benefit introverts, who may find social distancing to be a relief and the pandemic an unexpected blessing (“less social pressure,” “felt less stressed”).

The reasons for feeling uncomfortable expressing oneself are similar to those for not wanting to turn on the camera: “I’m shy” “feels uncomfortable,” “feels weird,” “feels like everyone is focusing on me.” Thus, depending on the individual’s disposition, the inability to read another’s body’s language (“lack of eye contact,” “can’t see people’s reactions”) can either be a deterrent or a blessing.

4.3. Living room ⇔ Classroom

In response to the inevitable outbreak, students had to decide whether to move out of the dorms, stay in their off-campus apartment or go back home (if they were not already at home and commuting to school). Except for one person who did not answer (left blank), all specified from where they conducted distance learning. Table 5 provides the numerical results for the various given choices. As shown, more than 70% were at home, where they were “taking classes” with family members nearby.

Table 5. Location for remote learning

Check one of the following	N (%)
Dorm	28 (15.7%)
Apartment	19 (10.7%)
Home (went back home)	65 (36.5%)
Home (already at home)	65 (36.5%)

Attending classes at home certainly has benefits. Students appreciated the newfound extra time (“save commuting time,” “more sleep,” “less time preparing outfit,” “save makeup time,” “more time to eat and rest,” “time for other stuff”), the freedom of

movement (“can share anywhere,” “can go to bathroom or drink water any time,” “flexible”), and surprising conveniences (“no need to go out when it rains,” “no need to bring books...heavy stuff”).

While some students were well-settled in a homey ambiance (“it’s comfortable at home,” “feel relaxed,” “can lie on bed during break,” “it’s my usual study area”), there were also those who found it *too* relaxed to take the class seriously or be able to concentrate (“feel too relaxed, not paying full attention,” “lose attention,” “too sleepy in bedroom,” “lose attention,” “feel like eating”). In the free response section, specific sources of distraction were noted, chief among the culprits being the ubiquitous cell phone.

“Being distracted by roommates who sometimes ask me questions.”

“Focus on the class instead of being distracted by other stuff in my home.”

“Because teachers can’t see what I’m doing, I may use my cell phone all the time.”

“I play with my smartphone sometimes.”

There were also complaints about the limitations of the physical space (“too small,” “dark,” “noisy outside”). Regardless of home space, a downside commonly echoed among students was the lack of privacy (“no privacy,” “family member would enter my room”). To delve further into this, students were asked how they felt about other people (e.g., family members, roommates) being nearby during an online session. The results are presented in Table 6.

Table 6. Sensing the presence of others

Check all that apply	N (%)
I’m afraid I might be bothering them so I try not to talk to loud.	68 (38%)
I feel distracted (hard to concentrate/focus).	79 (44%)
I feel stressed (e.g., my parents are checking up on me).	44 (25%)
Their presence doesn’t bother me.	40 (22%)
Other (specify)	

Some respondents felt “embarrassed when others are on camera” or when “other people’s voice can be heard.” One student sounded resigned (“no choice”), but another took a more proactive step to remedy the problem by “taking PC to another room.” Finally, one respondent aptly summed up the frustration: “No boundary between workplace and home.”

To note, during the isolation period, parents may be working at home and younger siblings learning remotely under the same roof. As the results demonstrate, though students generally agreed they felt comfortable at home, whether the environment was actually conducive to their learning was another story.

4.4. Final Thoughts

Though the study primarily focused on students' experiences, it can be seen that the teaching staff put considerable effort into their e-courses. Indeed, not only were students developing important adaptability skills and digital competence, so were teachers. They tried to present the curriculum in various formats, using a combination of audio, video, and text to engage students. Technical difficulties were solved by pre-recording video lectures, testing the content, and having contingency plans ready. Asked if they felt they had the necessary resources and teachers' support needed to study from home, most (92.7%) responded affirmatively. Still, some hoped there could be more interaction, as the following reflect their sentiment:

“More interaction with students, or they may fall asleep behind the screen.”

“Asking students to share their experiences can increase interaction.”

“Giving students more chances to talk.”

“Group discussion; more interaction.”

In consideration of the aforementioned, the majority (114 respondents) replied they still “prefer a physical classroom.” Humans are strongly attuned to social feedback [4], but the pandemic helped remove social context from education. Those who are comfortable with remote learning say that it is not comparable to in-person instruction. After a period of isolation with strict restrictions to stay apart, there is the natural yearning for some kind of interaction. Students replied that they want to “chat with classmates,” “make eye contact with others,” “discuss in class,” and “get instant feedback.” One respondent reminded that “teamwork is crucial.”

Moreover, students experienced firsthand the health risks of having successive online sessions (“hard to focus on the computer screen the whole day”). Complaints include feeling “tired easily,” “eye sore,” and “exhausted (eye and back).” Long term exposure to light can indeed put a heavy burden on the eyes. Even if there were no physical ailments, simply sitting for a long time can cause lethargy (“over-sitting and not feeling motivated”). Finally, one respondent prefers both on the condition that:

“I just don't prefer online lessons, but if I don't like the specific lesson, I would like to take it online ☺.”

5. Conclusion

Overall, students have developed deeper digital literacy and enhanced adaptability. As this preliminary study shows, the COVID-19 pandemic has forced them to adapt quickly in a crisis and to utilize all sorts of digital technology so that learning can continue. The study also found that though young people are generally adept with technology, self-consciousness can still get the best of them. The majority were not comfortable with the camera on. The study further reveals that studying at home, with all of its comforts, requires much more self-motivation and discipline amid various distractions. Finally, while the majority extolled the virtues of online education, face-to-face instruction is still their preferred mode of learning.

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