

## Synchronous Online Learning in Higher Education: Vietnamese University Students' Perspectives

Ngoc Tung Vu<sup>1</sup>

*VNU University of Languages and International Studies, Hanoi, Vietnam*

Nguyen Minh Hai Tran

*Banking University Ho Chi Minh City*

**Abstract:** This quantitative study investigated Vietnamese higher education students' engagement with synchronous online learning (SOL) during a heightened stage of the COVID-19 pandemic. Theoretically, we employed Engeström's (1987) Cultural-Historical Activity Theory (CHAT) to guide our research theoretically and pedagogically, and to construct reliable methods of data collection instruments responsible for multiple quantifiable variables informed by previous literature and personal goals that best match students' study and work objectives. Over our 6-month research, we examined 475 Vietnamese college students. Our research showed that when engaged in SOL, the higher education research participants had a positive learning experience, perceived growth, and received learning assistance, in response to our quantitative examination of exploratory factor analysis and our qualitative counterpart of theme-based analysis. In light of this study, it is our hope that, according to the quantitative data, our delivery of initial insights into Vietnamese higher education institutions can provoke institutional leadership and management boards to think more closely about how to advance teaching and learning quality.

**Keywords:** synchronous online learning, Cultural-Historical Activity Theory, Vietnamese students, higher education.

The COVID-19 pandemic has negatively impacted many different aspects of life, including education. Around the world, the pandemic facilitated a closure of many higher education institutions, and encouraged a dramatic shift from face-to-face to remote learning. As for educational quality, some may believe that the learning experiences of university students were threatened, thus lowering their sense of learning and knowing. According to the various viewpoints of teaching practitioners (such as instructors, teachers, or teaching assistants), physically face-to-face teaching and learning helps controlling pedagogical decisions in a more effective manner, including the selection of teaching materials and the employment of instructional strategies that are compelling to their target learners (Almazova et al., 2020; Sokal et al., 2020; Toquero, 2020). Therefore, the urgent shift to SOL likely put a lot of pressure on teaching practitioners and temporarily clouded their thoughts on what should be done to tackle their presenting problems and challenges. However, given intentions for educational continuity and adaptation to global calls within local contexts, teaching and learning in higher education was maintained in different forms. Any interruptions in learning may have challenged students' abilities to complete graduation examinations (Elsalen et al., 2020; Garcia-Penalvo et al., 2020; Gonzalez et al., 2020; Guangul et al., 2020) and their

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<sup>1</sup> Correspondent Author: A doctoral student at The University at Albany, SUNY. He is also a Lecturer of English at University of Languages and International Studies, as a member of Vietnam National University, Hanoi City. E-Mail: [vungoctung2006@gmail.com](mailto:vungoctung2006@gmail.com)

preparation for employment (Elfirdoussi et al., 2020; Mishra et al., 2020). Also, a pause may have impacted their psychological well-being related to employment success, because they could not have determined their professional goals without being fully immersed in essential (non)academic competencies, including attitudes, knowledge, and skills (Cicha et al., 2021).

Despite the increasing number of studies concerning Vietnamese university students' experiences during the pandemic, there is a dearth of empirical studies that explore Vietnamese university students' learning experiences in collective environments in support of their personal, academic, and professional growth. We investigate higher education students' engagement in synchronous online learning (SOL) within the context of Vietnam. This study fills the literature gap related to SOL during waves of the COVID-19 pandemic. The SOL implementations across the country due to the COVID-19 pandemic affected the involvement of teaching and learning activities among different stakeholders, such as learners, teaching practitioners, teacher educators, teaching practitioners, curriculum writers, assessment developers, and policy-makers. This presenting issue is particularly important in various underdeveloped and developing countries, including Vietnam. Incorporating distanced learning as the primary educational delivery method has been prioritized, despite the sociocultural norms of which face-to-face teaching and learning is preferred in the eyes of both learners and their parents/care-takers.

475 Vietnamese students voluntarily completed the research questionnaire, inspired by Engeström's (1987) CHAT. It was observed that the higher education students shared positive SOL learning experiences, including perceived growth and learning assistance. Multiple themes were found with the help of activity theory, which was used to construct the survey. We tried to broadly consider potential influences on SOL activities. In addition to enriching the growing literature, this study aims to develop another angle of observation for Vietnamese students who are connected with individual and cultural artifacts. Nationally, institutions' responses to COVID-19 related challenges altered approaches to teaching and learning at the expense of traditional approaches. We would be able to provide pedagogical implications at the conclusion of the manuscript.

## Literature Review

SOL, an approach to distanced learning, refers to an educational mode in which students are physically separated from their instructors and their institutions (Schlosser & Anderson, 1994). Whereas, asynchronous online learning (AOL) serves as a digitally assisted environment for learning, where multimedia lectures and student resources are shared and accessible regardless of time and location. AOL also enables students to design their own academic timetable, pertaining to their personal work and other commitments (University of Waterloo, n.d). Therefore, through either distanced learning method, it is highlighted that students can access higher education without physically attending classes. Thus, classes naturally become more diversified in terms of students' socioeconomic backgrounds and academic abilities (Dai, 2019; Kahu et al., 2013; Stone, 2017). SOL and AOL are the two most popular forms of online education. SOL allows instructors and students to verbally interact in real time through presentations, as well through written forms such as chat boxes (McBrien et al., 2009). On the other hand, AOL serves through digitized forums that support communication and allow students to post their views on topics. SOL requires teachers to play more roles to facilitate classrooms, while AOL encourages students to play more active roles in building their knowledge, allowing instructors to observe more often. Regardless of the distanced learning form, teachers and instructors should collaborate with students to promote their own community (Wenger, 1998), which results in minimal inequities and exclusions. This advantage is attributed to increasing "doing, communicating, thinking, feeling and belonging, which occurs

both online and offline” (Hrastinski, 2008, p. 1761). For this study, we primarily focus on the utilization of SOL as a means of educational delivery in the given time. We will also interchangeably utilize the term online education when referring to SOL.

SOL, in particular, involves the effective use of technology to learn via the Internet. It requires students to have some degree of self-efficacy. Self-efficacy is context-specific (Bandura, 1977, 1986, 1997), and embodies the reflections of individuals’ confidence that help them control their construction of motivations, behaviors, and environments. Theoretically, Bandura (1994) distinguished self-efficacy into four categories, including affective, cognitive, motivational, perceived, and self-regulation. An example in the case of students’ academic success, they may perceive themselves as capable of accomplishing their academic goals, which determines their motivation and aspiration to regularly develop knowledge. According to Bandura (1994), affective processes regulate individuals’ emotions and revelation of emotional reactions. Secondly, cognitive processes are concerned with acquiring, organizing, and using information. Furthermore, motivational processes refer to action, mirrored through a degree of invested effort. Following that, perceived self-efficacy is the belief of how capable one is of producing certain outcomes. Finally, self-regulation serves as the capability to impart influence to control and drive their motivational, cognitive, affective, and behavioral processes listed above.

In terms of self-efficacy as it takes place in SOL, we need to consider at least three areas, such as technology, learning, and social interaction. SOL students are assumed to have some level of confidence in their ability to undertake distanced learning courses and, given what personal circumstances allow, students who are satisfied with their online experience are likely to continue. Thus, given positive self-efficacy academic achievement is likely reached (Ergul, 2004; McGhee, 2010; Prior et al., 2016; Shen et al., 2013; Thompson & Lynch, 2003). Furthermore, SOL is very different from conventional learning to a certain extent, but it may outperform conventional learning because SOL students can utilize their comfort to express thoughts or questions (McBrien et al., 2009), leading to more rewarding discussions (Hrastinski, 2008). Students in SOL settings do not physically present themselves in a classroom, and do not have the opportunity to interact face-to-face with their instructors and classmates. Students in online courses are responsible for their own learning, as they decide when, where, and how long to access the learning materials (McMahon & Oliver, 2001; Tsang et al., 2021). Therefore, they tend to become victims of low academic successes and career readiness (Alam & Parvin, 2021). Hence, self-regulated learning behaviors are especially important when taking online courses (Wijekumar et al., 2006). Pintrich and Zusho (2002) define self-regulated learning as an active and constructive process that involves students’ goal-directed self-control of behaviors, motivation, and cognition for academic tasks (Pintrich, 1995). Self-regulated learning facilitates work-related learning and employability (Tomlinson, 2017). According to Tomlinson (2019), employability means to have developed the five forms of capital needed to demonstrate work-related competence and to hold competitive advantage in the labor markets. The five forms of capital include human capital, social capital, cultural capital, psychological capital, and identity capital.

According to Pintrich (2004), self-regulatory activities mediate the relationship between personal & contextual characteristics and actual achievement. The use of self-regulated strategies has been positively associated with students’ performance in, and satisfaction with, SOL/AOL courses (Artino, 2009; Artino & McCoach, 2008; Hettiarachchi et al., 2021; Paechter et al., 2010). In support of motivational constructs associated with learners’ experiences (Oxford & Shearin, 1994), another critical motivational construct that leads to a person’s persistence is the value he or she holds about the task at hand. Eccles and Wigfield (1995) identified *task value*, which is likely found to be a significant predictor of both student learning achievement and satisfaction with both online courses. Pintrich (1995) also proposes

that task value – whether utility, interest, or importance – encourages student engagement in tasks, which in turn fosters a deeper connection to learning.

In SOL, authenticity can be strongly gauged between learners and instructors. Based on the integration of authentic learning and multimedia, it is believed courses designed for authenticity can be applied completely online or in blended learning environments. Authentic learning activities are becoming more common, and with the availability of new learning technologies, authentic activities are frequently used as the basis of learning (Bennet et al., 2002; Challis, 2002; Marshall et al., 2001). Therefore, blended learning environments are accepted as ideal for providing courses or lessons based on authentic activities (Oliver & Herrington, 2000). Blended learning environments have a structure that provides supportive opportunities and flexibility to both learners and teachers during the learning/teaching process. It is possible to maximize technological support and the best features of face-to-face learning in order to support authentic activities (Kantor et al., 2000). However, online education is still very new to some students, and even instructors, so they are advised to become familiar with the intrinsic characteristics of academic communities (Zeng & Wang, 2021). We consider Bourdieu's (1986) theorization of game, which refers to newcomers' familiarity with communities' rules and their current competencies (including knowledge, skills, dispositions). It is Bourdieu's perspective that newcomers should be capable of filling the needs of communities through new rules and requirements, by utilizing their present competencies and developing capital pertaining to those communities' needs (Thompson, 2012).

Blended learning, which is an approach mixed with frequent online learning and infrequent face-to-face learning, also plays an important role in motivating students and teachers. Blended learning encourages students' participation in learning, as well as dealing with presenting problems. However, studying on computers can be an unpleasant experience for the majority of students, and it can cause inefficiency. At this point, it is difficult for students to acquire the opportunity work only at their own pace, or only at the pace of the teacher. Both online learning and blended learning approaches can provide authentic learning environments, however, each approach supports different preferred learning styles. Li (2021) and Varenin et al. (2021) showed that students become more critical and analytical when they participate in blended learning courses. This can be explained by blended learning's incorporation of both face-to-face and remote communication and support. Therefore, blended learning has a much more efficient structure compared to completely online learning.

Researchers have examined the relationships between students' characteristics, motivation, and technology self-efficacy, and have reported mixed findings. According to several studies (Chang et al., 2014; Chen & Tsai, 2007; Yukselturk & Bulut, 2009), it has been found that there are no gender differences between college students in their perceived self-efficacy in using computers. Particularly, Yukselturk and Bulut (2009) reported no gender differences in self-efficacy, self-regulated learning, or achievement. Conversely, Brown et al. (2003) found that males reported higher levels of technology self-efficacy than females, but females reported more academic self-efficacy than males. As for previous online learning experiences, Lim et al. (2006) reported that students with previous SOL experience demonstrated higher levels of learning motivation and self-efficacy. In addition, Bates and Khasawneh (2007) indicated that the training provided by instructors, and students' previous experiences with online learning technology, reduced the anxiety for online learning technology and increased online learning self-efficacy. Furthermore, online learning technology self-efficacy is positively related to students' motivation to use online learning technology.

## Related Studies

In Vietnam, efforts to overcome the long-lasting effects of the pandemic have been well documented with respect and honor around the world. In order to achieve the best employable workforce possible, under the multiple considerations of the Ministry of Education and Training (MOET), education has been remarkably prioritized to ensure the highest educational quality. Therefore, while facing escalating effects as a result of the global health crisis—COVID-19—it is essential for a growing line of research to focus attention on different levels of education and their use of SOL, including higher education (Ho et al., 2020; Le et al., 2021; Nguyen, 2021; Nguyen et al., 2020; Pham & Ho, 2020; Que, 2021; Vu, et al., 2020; Vu et al., 2022). Then, more educational and society-level policies can be designed to better fit the needs of diverse local contexts across the country, where learners hold a wide range of academic backgrounds, learning needs, and technological literacies (Pham & Ho, 2020). According to research, despite a wide range of struggles to accommodate the first generation of SOL students and teachers, far-reaching notes show that SOL has been found to largely promote autonomy, flexibility, and critical thinking. However, it needs to be acknowledged that SOL can remove students from their comfort zone due to their sense of inequality (Nguyen, 2021). A number of students were unable to make academic progress through online learning, suggesting that their lack of confidence resulted in their limited voices and in turn their sense of disconnection.

Besides the scientific evidence above, there is limited research to show how Vietnamese students have experienced SOL, especially in relation to many other individuals and collective artifacts. In contrast to students being expected to work as active learners and agents of change, it comes to our surprise that students appeared to be overwhelmed by many sociocultural changes, which then affected their learning. The research needs to be further explored with specific attention towards Vietnamese student populations at Vietnamese universities, where they are assumed to follow many deeply-rooted traditions of learning and, as a result, face struggles of employability due to improper changes and educational interventions. However, in order to better understand what support is needed, it is important for us to consider their perspectives.

## Research Questions

This research aims to explore the outcomes related to higher education students' learning experiences of SOL in the collective way, or said differently, assisted by online learning platforms. Therefore, the research questions are:

1. How did the higher education students majoring in different disciplines at a Vietnamese college participate in learning assisted by SOL?
2. How differently did they perceive their participation, according to demographics?

## Theoretical Framework

In this study, we explore how students at a Vietnamese higher education institution engaged with online learning in the context of the escalating COVID-19 pandemic. We refer to SOL, as part of online education, as an educational activity that supports students' academic achievements. To explore the experience of SOL, we carefully employed the Cultural-Historical Activity Theory (CHAT) as our theoretical framework, thus helping us to contextualize Vietnam within the various higher-education problems as a direct impact of the COVID-19 pandemic.

CHAT was developed by numerous scholars, including Lev Vygotsky, Alexei Leontyev, and Engeström. Lev Vygotsky first introduced the triad model after a period of research (1896-

1934), but was limited to demonstrating the relationship between three components (*subjects*, *objects*, and *tools*). According to Vygotsky (1978), the model shows that *subjects* are individuals who participate in activities, *objects* describe the goals of the activities, and *tools* (such as artifacts by means of *subjects*' prior competence or experience) serve to help *subjects* achieve *objects*. However, the first constructed model was challenged due to its limitations on participants' consciousness to model and remodel the formation of activities. Alternatively, this stance can be understood that *subjects* may be able to create meaning from their world by interacting with *tools*. Consequently, there was very little attention paid to the collective nature of activity within the theory, which was then addressed by Leontyev (1981) and Engeström (1987, 2001, 2003) in response to Vygotsky's significant efforts.

While the perspective of Leontyev (1981) was appreciated on the grounds of it "articulat[ing] the developmental transformation of social activity to individually internalized cognitive structures" (Greenhow & Belbas, 2007, p. 366), Engeström (1987) was further taken into account. According to Engeström (1987), *rules*, *community*, and *division of labor* were considered in addition to *subjects*, *tools*, and *objects*. These elements act as mediators of the activity system, in which the relationships between them are shaped and reshaped in a consistent manner. These elements are extremely meaningful for individuals to construct and understand activities. In later adaptations of the model, which were shaped in a holistic fashion, it was considered that activities occur in varying sociocultural contexts (Lim, 2002). In the case of higher education students primarily participating in SOL during the COVID-19 pandemic, in the multi-disciplinary Vietnamese college of Ho Chi Minh City, we consider such relevant elements. Before discussing our findings in more detail, we summarize how we framed the activity system using the six elements of online learning, as follows:

1. **Subjects** were the students who participated in online learning during the time affected by the COVID-19 pandemic.
2. **Objects** encouraged them to engage with SOL with the same effort as traditional face-to-face classes. *Outcomes* included further advancement of their course-related knowledge and skills upon completing the required courses for their degree.
3. **Tools** involved digital learning platforms (Zoom, Skype, Google Classroom) in both synchronous and asynchronous modes, which encouraged them to work individually and collaboratively. To improve the learning quality, the instructors were given high flexibility in deciding how to design the course syllabus and assessment activities. The students were provided with equal opportunities to raise their voices regarding learning content and how learning activities would be organized inside and outside classrooms.
4. **Rules** consisted of how student learning was qualitatively and quantitatively assessed. By delivering an orientation session before the start of the course, the students were able to maximize their learning experiences and their chances of academic success. Moreover, for the purpose of collaborative work, the students were required to meet virtually on a frequent basis in order to allocate responsibilities and review their work.
5. **Communities** were the virtual in-class and out-of-class settings. Their participation was completely online, including 50% of synchronously and 50% of asynchronously. The former asked of students to attend required lectures, but the latter enabled them to talk with their classmates and meet with their instructors for course-related details, course assignments, and final projects.
6. **Divisions of responsibility** referred to the students' personal commitments and shared responsibilities. Personal commitment was their efforts to complete the course satisfactorily, which assisted them to achieve their degrees. Whereas, responsibilities were their team's agreements on how they would meet the course's requirements.

CHAT has informed many empirical studies related to teaching and learning in higher education globally. Specifically, CHAT has been observed to provide a wide range of grounded theoretical, methodological, and empirical implications for later research (Batiibwe, 2019; Cliff et al., 2020; Ell & Major, 2019; Mentz & Beer, 2017; Pham, 2016; Nguyen, 2020; Sonalo-Campos et al., 2018; Trust, 2017). Besides the very limited number of studies examined under CHAT, and the rare quantitative studies constructed by CHAT perspectives, we are interested in examining Vietnamese higher education students' engagement with online learning in regards to course completion and degree seeking. We investigated students' learning process in light of the COVID-19 pandemic, leading us to expect online learning to impact their academic experiences and personal satisfaction, thus influencing the students' employability capital (Tomlinson, 2017). Secondly, in place of traditionally face-to-face interactions, we approached our research study holistically, which involved a specific social setting in which all classes were taught under the same instructor and were organized at the same time in hope to help students develop social networks and exchange interdisciplinary knowledge. As previously stated, online learning has the potential to benefit students to strengthen their social networks, thus helping them to develop necessary skills to successfully position themselves in larger communities of practice (Baran & Cagiltay, 2010; Wenger, 1998). In this regard, the use of CHAT is of significant importance because we can utilize it to examine our participants' engagement with online learning in a more comprehensive and meaningful manner. Thirdly, in line with our data, reflective of the sociocultural settings, we closely considered a wide range of *tools* that were simultaneously used in learning contexts, *rules* that were applied to maintain a high level of academic quality, the *communities* that created the classroom dynamics, and the *divisions of labor* that indicated the extent to which responsibilities were met.

## Research Methodology

In this explanatory sequence study, we aim to explore the collective experience of Vietnamese university students participating in SOL during the COVID-19 pandemic (Creswell, 2003), using the grounds of CHAT. Considering this study's contribution, we seek to deepen our understanding of SOL within Vietnamese higher education, specifically in association with collective environments and pedagogical approaches that enhance teaching and learning for a variety of academic disciplines and diverse student populations.

Collecting both quantitative and qualitative data significantly helps us answer our research questions and to remove the limitations of past studies. Quantitative data will help us to understand our research participants more deeply, with quantitative data allowing us to generalize our participants' observed stances in order to serve future studies' continued exploration (Creswell, 2003). For this research, we use quantitative data to measure students' personal satisfaction regarding the learning accessibility of SOL, technology-assisted learning environments, and personalized growth connected to SOL. Whereas, the qualitative data will consist of stories that reflect on students' critical reflections on the aforementioned aspects of learning satisfaction and academic growth. In addition to quantitative and qualitative examination, CHAT will encourage us to consider collective environments by including individual and cultural artifacts, seeing as the learning experiences of our participants are believed to be closely connected to social and cultural dimensions.

## Research Settings

As discussed, SOL, or online education in general, has not yet been fully developed in Vietnam, and the deployment of online learning when universities shutdown and schools closed was unprecedented. Familiarity with SOL is very limited in Vietnam's education system in

general, and Vietnam's higher education in particular. The novelty of SOL was caused by outdated infrastructure and many socio-cultural challenges. Although, there is a body of literature indicating a pedagogical weakness concerning SOL. According to Hodges et al. (2020), online education is stigmatized to be less effective than traditional face-to-face instruction. Similarly, Le et al. (2013) found that among the SOL programs offered by Vietnamese higher education institutions, the practice of employing digital platforms as a supplementary source is dominant. More specifically, the so-called SOL teaching and learning "mainly stops at the level of using technology" and "no pedagogical strategy has been made specifically for Vietnam's higher education context yet" (Le et al., 2013, p. 240). The fact that online learning is not as widely utilized as face-to-face learning does not mean that it may not be useful and effective. The flexibility needed for SOL has been proven to be essential for developing graduates' employability skills (Singh & Singh, 2017). In Vietnam, many educators also emphasize the essence of this form of education in training students and future workforces.

There are contested opinions concerning the nationwide deployment of SOL due to the COVID-19 pandemic. On the one hand, many educators and students were highly appreciative of their first-hand experiences it was even reported that plans for further employment of synchronous online education in formal training were already on the way (Zeng & Wang, 2021). On the other hand, others expressed concerns over the quality of online teaching and learning due to its alienation of both teachers and students in Vietnam (Trinh, 2020). For final-year students, not only were their internships and practicums interrupted, but their scheduled transition into the workforce was also delayed. Needless to say, it was a very critical time for them to polish their discipline-specific knowledge and work-related skills needed for their future employment, which online learning likely could not make up for.

### **Data Collection and Analysis**

In light of this explanatory sequential mixed-method, we sought to recruit a group of students from a Vietnamese university with a wide range of certificate, undergraduate, and post-graduate programs. The university has a primary focus on many disciplines, namely Finance, Banking, Business Administration, Law, and Business English. Since we had a good relationship with the school, we wanted to conduct this study for the purpose of offering the latest insights into SOL and to propose pedagogical suggestions in support of students' academic experiences and in preparation for their career prospects. We published this research's profile on the School's, Department's, and Student Union's forums. Our profile includes the researchers, research purposes, responsibilities and benefits, publication timelines, and contact details. Also, we asked for support from our colleagues to share our research profile with their students. If students were interested in participating, they could decide to sign the consent form, complete the online questionnaire, and agree to participate in open-ended interviews.

Our study targeted reliability and validity values in our presentations and interpretations of data. Considering our data collection process and analysis, we transparently relied on theoretical grounds and empirical findings to inform variable constructs and continuous tests, by way to not only gather the most obvious and context-relevant findings. However, we understood some of the limits to maximizing our data authenticity, in support of reflective and replicable insights in other similar or shared settings. Despite the students' primarily self-reported perspectives, our variables were constructed and supplemented between quantitative and qualitative data, so we expected to achieve a good level of reliability and validity. We attempted to see if there were any similarities or differences between the two sources of data, close-ended questionnaires and open-ended interviews.

While working on data collection and analysis, we were separate coders of quantitative and qualitative data. Both of us were mainly responsible for ensuring to follow standardization



of these works, with consultation of the affiliated schools' senior researchers and experts of the field. We were in need of providing a research summary to the Council Members of Research who approved this project at a host university and presented our stages on a monthly basis before, during, and after the research completion. In order to meet the timeline of reporting and publishing, we needed to work collaboratively on finding summaries, preliminary codes, tested and confirmed variables, and periodic reports.

## Participants

A total of 516 responses were submitted via the online survey, but 41 of them were incomplete. Thus, 475 responses were analyzed in this study. The following table offers information related to our study's participants. They were descriptively analyzed based on gender and education programs. A majority of our study's respondents were studying at the university where the second author was working. They were invited to complete the questions on a voluntary basis following their online learning experience, in wake of the COVID-19 pandemic. According to Table 1, we can see that more than 400 out of 475 students were females, accounting for 84.2% of the total sample size. Importantly, nearly half of them were final-year students and a little more than half were third-year. It is also noted that nearly three out four students were enrolled in regular programs, administered on a traditional basis. More than 20% of them were enrolled in the advanced programs, which are differentiated by more English language use in instruction and better exposure to technological facilities. A very small number of students were in programs that allowed them to work at the same time, and they devoted extra time to enhance their knowledge in relation to the field they were working in.

**Table 1**  
*Demographics*

		<i>No.</i>	<i>%</i>
<b>Gender</b>	Female	400	84.2%
	Male	75	15.8%
<b>Year of study</b>	Year 1-2	41	8.6%
	Year 3	240	50.5%
	Year 4 or later	194	40.9%
<b>Type of education</b>	Regular	350	73.7%
	Advanced program	109	22.9%
	Work-study & post-graduate programs	16	3.4%

## Qualitative Instruments

We began data collection by distributing the qualitative open-ended questionnaires that asked students about their learning experiences, self-growth, and perspectives related to the varied forms of technology to which they were exposed to between the Spring semester of 2019-2020 and the Fall semester of 2020-2021. The qualitative questionnaires were sent to students of different academic disciplines and programs. The distribution was greatly supported by the second author's colleagues within the school, and her students who actively passed on the questionnaire to others via university student forums and Facebook groups. However, before the questionnaire went live, we piloted the items and translated them to Vietnamese for the students' convenience. The pilot was conducted with a small group of students, which consisted of 10 students from each of the programs (e.g., regular, advanced, and work-study/post-graduate). Their responses were primarily grounded on the items' understandability

and accessibility. The qualitative questionnaire enabled us to develop the quantitative survey in a comprehensive and analytical manner. Specifically, what we mean by comprehensive is that, as the authors, we could specify attention towards the particular aspects closely relevant to the research context. Depending on the similarities and differences between a school's educational policies and resource allocation, surveys should target the general features and exclusive features, so that the findings can be made more meaningful and engaging. Also, they may provide beneficial implications for the university's policy-making and culturally-responsive decision-making strategies. Furthermore, we consider our survey analytical, as it shows that online learning, in light of being visibly prominent, should be fully understood in a sense that students' perspectives and voices may be promoted. Students are the critical stakeholders of the university, and their experiences can help spread the university's positive reputation and their programs compared to competing universities.

The questionnaire applied in this study (referred to Appendix A) is comprised of two primary sections as a result of consolidating the 52 students' (P1 to P52) critical responses in accordance with the qualitative surveys. The qualitative analysis was conducted in several steps. In the first step, we read the students' responses very carefully and conducted the data analysis separately after we had the first meeting to standardize the process and agree upon approaches. Each of us examined the small proportion of the selected data within two weeks, then discussed the similarities and discrepancies. Therefore, in the second meeting we learned that we similarly coded the data into three primary themes. We searched for key words (formed as single words or the multi-worded phrases) that pertained to the predetermined themes. We continued our coding analysis before we committed ourselves to finalize the primary items in the second stage of our data collection. After the qualitative data analysis, we realized that we did not have any further items beyond the three predetermined themes, which were associated with *learning experiences*, *perceived growth*, and *learning-related assistance*. Similarly, the quantitative survey was developed and piloted to make sure that the survey could appropriately capture the target sample following the process of snowball sampling.

## **Quantitative Instrument**

Our first draft of the quantitative survey was constructed based on the qualitative responses and the growing literature on the topic. We had the first draft read by many people, including a field expert, colleagues, and students. Their comments greatly helped us complete rounds of revision to standardize the English version. After we had the final English version of the quantitative survey, we applied the translations back between our two non-native English-speaking colleagues who taught both English as a Foreign Language and English as a Second Language. The translations tremendously proved the necessity for different voices of people of different backgrounds in order to make the survey easily understandable. After we finished revising the quantitative survey with the help of our target students, we corrected many areas of the survey. This will be reported in-depth below. The second author was mainly responsible for the distribution of the survey, while the first author co-dealt with the issues that emerged during the process and was mainly responsible for the data analysis.

In terms of our final quantitative survey, it had two main sections. The first section aimed to collect respondents' personal information, and the second gathered their reflections (including learning experiences, personally perceived growth, and learning-related assistance/support) on their engagement in SOL (e.g., Zoom, Skype, Google Classroom, Canvas, and other available tools of technology), ranging from the Spring of the academic year 2019-2020 to the Fall of the academic year 2020-2021. As previously noted, our quantitative survey was constructed and revised many times based on our continuous review of empirical studies and the target students' qualitative responses. Due to the limited scope of this study, it

lacks validity, including face and content validity. However, it leaves a path for inspiring future large-scaled projects. We also considered the instructional context where the second author directly taught during an academic year following Vietnamese government regulations that replaced face-to-face learning with online education. Therefore, we carefully drafted the questionnaire given our understanding and knowledge regarding students' perceptions concerning their engagement in learning via online platforms. The first version of the questionnaire was reviewed and checked by a group of university lecturers who provided valuable comments on our questionnaire items. With the second version, we worked with a group of 10 students to improve the clarity and conciseness of the items. Then, with the third version, we piloted the questionnaire with another group of 20 students. We finalized the questionnaire after the third version, which was then ready to be distributed. As a case study, we aimed to investigate the students that were currently studying at the second author's university, with a goal to enhance future online teaching and learning quality within the campus.

The second section of the questionnaire featured 20 items related to student experiences with online learning in a collective culture of learning. Responses were processed via Statistical Package for Social Sciences (SPSS – V.20). With regards to student experiences with online learning (Carroll, 2002; Deci & Ryan, 1985; Dornye, 2003), our analyses highlighted how and to what extent, students perceived their participation in online learning, which could help inform patterns for online teaching and learning at a given higher education university. Descriptive statistics were calculated for the means (*M*) and standard deviations (*SD*). The means were interpreted with the help of the following framework: 1.0 – 1.8 (very weakly), 1.8 – 2.6 (weakly), 2.6 – 3.4 (moderately), 3.4 – 4.2 (strongly), and 4.2 – 5.0 (very strongly).

In our study, the Kaiser-Meyer-Olkin (KMO) was 0.943 (greater than 0.5) (Kaiser, 1974), which could imply 'marvelous' sampling adequacy. Barlett's Test of Sphericity underlined sufficient correlations among the variables, at  $X^2 = 4279.381$ ,  $df = 136$ ,  $p < 0.001$  (Hair et al., 2014). We decided to employ principal component analysis with Varimax rotation because Field (2009) considers it a psychometrically effective procedure and it yields a lower level of conceptual sophistication. In this regard, we suppressed loadings less than 0.3 to achieve interpretative goals. Also, attention was paid to deciding how many factors were generated with assistance of the total variance explained values, the screen plot, and the eigenvalues higher than 1.0 (Hair et al., 2014).

We performed several factor analyses. The first analysis revealed a three-factor solution with an eigenvalue value greater than 1.0, which explained 59.87% of the total variance. There were no factors that failed to have at least three items, thus becoming sustainable factors as recommended by Norusis (2008). Also, all items had at least 1 factor loading greater than 30%. However, there were three items (Q7, Q15, Q20) loaded on more than one factor, and the cross-loadings valued greater than 75%, which resulted in unqualified components to be analyzed (Tsai & Liu, 2005; Tuan et al., 2000). Therefore, we removed one item before re-running the analysis to check for any subsequent changes to other items. The method by which we removed items was by the highest loading value first, but the lowest loading was compared with the other items and potentially removed. A second analysis after the removal of item Q7 revealed that there was also a three-factor solution, explaining 60.818% of the total variance. However, items Q15 and Q20 still had cross-loadings greater than 75%. A third analysis, with an eigenvalue value greater than 1.0, and the removal of item Q15, revealed the cross-loadings of item Q20, explaining 61.754% of the total variance. We ran a fourth analysis with an eigenvalue value greater than 1.0, after Q20 being removed, it showed that it was a satisfactory solution, and it included 3 factors and had no item factors lower than 0.3. This final analysis explained 62.178% of the total variance, which is presented as follows.

**Table 2***KMO and Bartlett's Test*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.943
Bartlett's Test of Sphericity	Approx. Chi-Square	4279.381
	df	136
	Sig.	.000

The descriptive and reliability statistics for the 17 items are shown in Table 2. Our results showed that the factors were effective with high reliability, as we followed numerous researcher recommendations (Field, 2009; Fraenkel & Wallen, 2006). While the second and third factors had Cronbach's, alphas valued higher than 0.8 (0.92 and 0.84, respectively), the first yielded a slightly lower value (0.74).

**Table 3***Descriptive analysis*

Items/Factors	Item loadings	M	SD	Cronbach's Alpha
<b>Factor 1: Learning experience</b>				
1. SOL enabled my insights into how to manage my and colleagues' academic progress in a mutually reciprocal way)	0.82	4.24	0.72	<b>0.74</b>
2. SOL supplied many forms of learning within and beyond the classrooms	0.83	4.27	0.70	
3. SOL allowed me to manage my academic performances from the various perspectives of an instructor, faculty members, and school leaders	0.66	4.17	0.81	
<b>Factor 2: Perceived growth</b>				
1. SOL enabled me to realize how to develop my learning productivity	0.78	3.69	0.84	<b>0.92</b>
2. SOL facilitated my sense of necessary collaboration with my instructor and classmates	0.75	3.67	0.81	
3. SOL offered me a feeling of belongingness to the learning environments within and beyond the classrooms	0.63	3.98	0.75	
4. SOL allowed me to develop my sense of familiarity in light of the current situations	0.68	3.78	0.82	
5. SOL developed my sense of responsibility and commitment to learning in support of my future career prospects	0.71	3.68	0.80	
6. SOL enabled our increased analytical and critical thinking in light of the many forms of learning within and beyond the classrooms	0.61	3.96	0.77	
7. SOL enabled me to increase my sources of academically content-related knowledge, non-academically soft skills, and other crucial competences in relation to its practicality in my future endeavors	0.72	3.84	0.78	
8. SOL promoted my sense of interest, enthusiasm, and curiosity towards the subject in general and the course in particular due to its potential benefits and positive influences	0.62	3.86	0.79	

9. SOL allowed me to engage myself in the academic sessions (with instructors, tutors, and peers) and non-academic sessions (such as extracurricular activities) in a satisfactory manner	0.66	3.93	0.83	
<b>Factor 3: Learning-related assistance</b>		<b>3.91</b>	<b>0.63</b>	<b>0.84</b>
1. SOL helped me stay in touch with the instructors who provided necessary instruction and academic support	0.63	4.16	0.77	
2. SOL could develop my technological knowledge in support of my contacts with those relevant and responsible	0.66	3.90	0.81	
3. SOL enabled my self-management towards the different characteristics of online learning within and beyond the classrooms	0.72	3.89	0.79	
4. SOL facilitated my engagement in many forms of learning environments (such as Google Classroom, Canvas, and some others) regardless of possibilities and constraints	0.74	0.83	0.79	
5. SOL helped familiarize myself with the changing landscapes of learning environment within and beyond the classrooms, so I could consider those landscapes positively dynamic and open	0.72	3.77	0.88	

## Data Findings and Discussion

By employing CHAT to theoretically frame our study, it is clear that we saw SOL in a more comprehensive manner. It allowed us to address our traditional perspectives on learning not as a context-free activity, but as a culturally relevant one. In the sections that follow, we would like to report on the qualitative responses in the first phase of our data collection, in addition to the summary of quantitative findings. This incorporation of the qualitative data is very helpful to unfold the distinctive educational perspectives of the impacts of SOL on the university students' academic progress in light of global landscapes and local settings. These combined findings serve as the full picture of one Vietnamese institution in regards to how they managed to deliver excellent educational services and sustained development of students' progress.

### Research Question 1

**Factor 1 (Learning experiences).** Factor 1 included three items, which covered different aspects in relation to student experience. We found that this emergent theme described how student experience was accumulated through their participation in SOL, which enabled them to effectively manage their own academic work and their collaboration with others, including their instructors and peers. In this regard, the students seemed positive about their learning experience, which is evident that they had room to maintain their communication with the relevant stakeholders without any challenges, which is shared by Vu et al. (2022). Similar to conclusions drawn by Vu et al. (2022), our findings suggested that it is very important in all aspects of learning for different groups of learners to choose different channels to help them transition well beyond the classrooms. This is different from Bangladeshi higher education students who passively sought to develop their academic success and job-readiness as a result of undesired COVID-19 impacts (Alam & Parvin, 2021). The Vietnamese students' sense of

learning was aligned with the model of Tomlinson (2017), especially given social capital. In terms of this, three of our students shared that:

*I strongly believe the needs of communication with other people, especially my instructors and my peers. I considered that I did not work alone, but needed to connect myself inter-personally and cross-culturally. I think this is a good outcome of the online learning, which could provide greater benefits when compared with our traditional forms of learning (P.4);*

*I had a hard time keeping in contact with my peers for the assignments. I think SOL did not give me a chance to stay passively, but asked me to enhance my sense of activeness and collaboration. In whatever forms of learning, especially including the online learning, I was glad that I could virtually see my friends as the only way to see my closer relationships with my friends (P. 17);*

*My instructor showed her sympathy with us because she said we are the most threatened groups of to-be graduates. I asked myself that I should not be the victim as I could change myself to be a better learner. I think that being a better learner was always needed (P.2);*

In response to the three excerpts above, it was ultimately clear that our students soon got to know more about a wide range of learning as a result of their self-reflection and self-discovery in their own space and speed (Vu et al., 2022). As the second item of this section showed, our research participants seemed to succeed in identifying and recognizing what was suitable for them, depending on their prior experiences, computer literacy, and technology availability, as requirements found by Elsalen et al. (2020). If they were enthusiastic team-members, actively engaged learners, and meaningful creators of knowledge, there were no questions of why SOL could benefit not only their virtual class participations but also their virtual community engagement, as also observed in other studies (Le et al., 2021; Nguyen et al., 2020; Que, 2021). For example, their knowledge of how to think about and make questions, following their multiple processes of thinking, appeared to become more reachable. As one student claimed “it was not challenging for me to ask questions in the virtual classrooms.” Another student added that “SOL was full of opportunities for me to learn from other people in my school community, where the instructors became much more open to let me join their regular discussions on my preparation of the job application.”

Although SOL was a viable form of learning, our students still had to attend the examinations and tests. In line with their increasing awareness of what the tests looked like pertaining to the critical situations, our students seemed positive that they were able to keep themselves open to academic difficulties and contextual constraints. As one student suggested that “*I paid more attention to exam questions that could not simply be answered as true or false,*” he deeply understood how necessary it was and what he needed to do in order to accommodate such changes as opposed to their prior experiences in the program. Another student argued that “*these tests of open-ended questions were such impressive choices, when he realized his chances of pushing himself out of his own limits and changed his mindsets of learning that was very popular in other Western countries.*” Therefore, parallel with recommendations from past studies (namely Elsalen et al., 2020; Gonzalez et al., 2020; Garcia-Penalvo et al., 2020; Guangul et al., 2020), it was undeniable that SOL strongly urged instructors to develop exam questions in an open-ended fashion and develop the students’

analytical and synergetic competence (Bandura, 1995), which can be flexibly managed and adapted from many useful resources. However, it was debatable that the instructors worked well with their faculty members, as one student argued that

*there was not consistent standardization between my class and her colleagues in another class. I think the faculty should consider setting up a guideline that could allow their instructors to follow and thus they could minimize their chances of widening gaps regarding what to test and how to test the students in the similar programs. (P. 32)*

Referring to the second authors' reflection, we acknowledge that the university in general, and the faculty in particular, started to see a new lens of what is considered "the normal." Therefore, we were sympathetic with the faculty's sustained efforts and prompt changes to their equality of teaching and learning (Nguyen, 2021). To illustrate this, due to the differing starts of the instructors, the qualitative data showed that the young instructors managed to develop better online learning environments as they were used to them in their experiences and familiar with what was considered acceptable to assist their learners' progress, which was also shared by Almazova et al. (2020). Therefore, from the students' experiences, it was obvious that SOL was a boost to getting students more confidently involved in complex academic and professional issues. When compared to the young instructors, their senior counterparts faced many problems of how to be flexible in using technology, so they limited themselves to using wordy slides and did not interact as much with the class, thus lessening the potential of reciprocal learning among the students, which was also clarified in a study by Almazova et al. (2020) and implicitly shown in Tsang et al. (2021). Especially given the accelerating COVID-19 pandemic, it is essential that higher education students discover how to overcome tension and depression regarding skill development and post-graduate employment (Pham & Ho, 2020). Therefore, this was a chance to greatly benefit students' abilities to actively seek developmental opportunities prior to graduation, individually and with the help of others, but the university should comprehensively attend to the training needs of the instructors to be able to organize their instruction effectively (Pham & Ho, 2020).

**Factor 2 (Perceived growth).** In this section, we would like to highlight a few important areas that showed our target students perceived SOL very positively because it enabled them to develop personally and academically. Factor 2 consisted of various student satisfaction facets associated with their participation in SOL. Our quantitative data showed that student satisfaction was best achieved as a result of self-efficacy growth, hence strengthening the belief of their ability to meet their learning goals (Bandura, 1986, 1994). Tied to our literature review, as was stated above, Bandura (1994) coined four forms of self-efficacy, including affective, cognitive, motivational, perceived, and self-regulated. Closely aligned with Eccles and Wigfield's (1995) task value, which combines interest, importance, and utility, it is important to recognize student satisfaction with learning over online platforms compared to traditional classroom environments. With this form of online education, students are more likely to self-regulate and become fully responsible for their learning (McMahon & Oliver, 2001). This self-regulated learning is crucial for online students' success (Artino, 2009; Hettiarachchi et al., 2021; Tomlinson, 2017; Wijekumar et al., 2006).

Despite that the perceived growth's mean value was slightly lower than 4.0, but strongly rated, we acknowledge that students shared significantly positive reflections on the courses. It was generally observed that our target students rated their satisfaction with SOL in terms of academic sessions (with instructors, tutors, and peers) and non-academic sessions (such as extracurricular activities) in a highly satisfactory manner ( $M = 3.93$ ), in close association with the students' self-regulated learning (Hettiarachchi et al., 2021). In response to the first theme,

we would like to pay considerable attention to two areas of academic and non-academic attention since we see that these two blocks should be parallel, especially with regards to the former's focus on their disciplinary knowledge and that of the latter on their social skills towards their employability capital – human capital (Tomlinson, 2017). According to Tomlinson, they represent human capital of any graduates or to-be graduates in an attempt to develop their knowledge, skills, and competence, which are taken into consideration for their short-term employment opportunities and long-term professional success. Therefore, aligned with Tomlinson (2017), it was unsurprising that our target students were seen to have a wide range of multi-dimensional enablers for the purposes of allowing the students' understanding of the courses in relation to the practicality in the future endeavors. To demonstrate, some students expressed in the qualitative data, suggesting that:

*When it comes to learning, our knowledge about the subject is very important. Without it, I did not seem to consider the roles of higher education. For me, I found similar impacts of SOL on my evolving knowledge about Finance, which was my long-term career. My recognition implied that my instructor still succeeded in delivering the key knowledge, which was left with many rooms for us to learn from other sources. I think self-independent learning was an additional gain, in the course of SOL, importantly given my major-related subjects. (P.1);*

*I was immensely interested in joining many English-speaking activities with my club members. As a club leader, I observed many challenges of my peers in terms of staying in touch with their classmates, so wanted to create a virtual, but engaging, environment for us to come, share, and develop our communication. Despite our physical isolation, we were not mentally disconnected. (P. 35);*

*I appreciate that my faculty developed many SOL and asynchronous ones to help us develop our knowledge with no costs. I believe they care about us as those to graduate in the next few months, so they determined not only content knowledge but also other competences, such as public speaking and negotiation, should be their educational priority. We think that we learn to seek jobs, and upgrade our standards of living. (P. 9);*

In addition to the cognitive developments, which we discussed increased sources of academically content-related knowledge, non-academically soft skills, and other crucial competencies ( $M = 3.840$ ), our students also reported self-assessed learning productivity ( $M = 3.69$ ), in spite of being relatively lower valued in comparison with the aforementioned possible reasons. Definitively, two students gave us some views that “our learning was suitable for my own pace and speech, which SOL fully provided me. I wanted to establish my own ways of learning which could make me happy without any competitive advantages.” Quite differently seen, another student shared that “SOL contributed to my own self-understanding, recommending that I look over other colleagues and find how to compete with them. I considered the points that I wanted to achieve as a means of continuously challenging myself.” Through these definitions, I think that they are the perfect examples of Tomlinson's (2017) attitudes on identity capital, which we interpreted that there is no the most suitable way of learning because everyone can know who they are, what they want to do, and how they can



themselves in relation to others, as previously mentioned in Peters et al. (2020), Raaper and Brown (2020), and Zhi et al. (2020). These views help us to conceptualize how Tomlinson's identity capital reinforces our conceptualization of our target students' perceptions and perspectives.

Alternatively, besides Tomlinson's (2017) conceptualization, our target students' academic accomplishments, in light of SOL, are aligned with previous student self-efficacy research (Prior et al., 2016; Shen et al., 2013), which have shown a connection between self-efficacy and academic success using online platforms (Hettiarachchi et al., 2021). Quantitatively, our students perceived the ultimate outcome of SOL for their developmental collaboration and spirits ( $M = 3.670$ ). They considered this to be a benefit, as one student argued that "I never felt alone as I had people around me virtually. All of the people in my class are my source of helpful information," which is likely to have facilitated their gradual transition to the new forms of learning – including SOL and AOL ( $M = 3.780$ ). Another student stated that "I didn't take a lot of time to be familiar with new things as everyone has to – I think the one way to seek help is grow our self-awareness of where they are and how they benefit from what they have in order to achieve their desired results" (P. 37). Moreover, their sense of responsibility and commitment to learning effectiveness cannot be neglected ( $M = 3.680$ ), from which we learned from one student showing that "if I am sufficiently responsible for SOL, I believe it is a good step for me to develop my problem-solving skills and commit myself to the much harder situations in life" (P. 22). Most importantly, our findings concretely allowed us to reach the insights that the students' developed familiarity with the contextual patterns and collaborative spirits with others, coupled with responsibilities and commitments, paved a path to their full extents of analytical and critical thinking ( $M = 3.960$ ). These educational benefits proved true in a digital educational environment (Li, 2021; Varenin et al., 2021). In this sense, it is evidence of their potential success within classes and beyond, extending into their local and broader communities. These findings are well embodied by different studies regarding the relationship between learning achievement and satisfaction, given embedded learning via online platforms (Artino, 2009; Chiu & Wang, 2008; Thurmond et al., 2002; Tsang et al., 2021; Yukselturk & Bulut, 2009).

**Factor 3 (Learning-related assistance).** In this section, we would like to discuss a wide variety of academic and non-academic support that our target students received during their engagement into SOL. We believe that this theme is of importance because it can help make the school leaders and faculty members aware of the extent to which the students perceived SOL either advantageously or disadvantageously, from which the responsible professional can make a better and more proper plan to assist their students, pedagogically, academically, and professionally. Specifically, we seemed to focus on three major areas, which our students noted very clearly and frequently in their qualitative responses. They include the students' awareness of SOL itself, the students' managerial skills to facilitate their learning in relation to their instructors and other school members, and the students' competencies with computer literacy and technology skills.

Aligned with Tsang et al. (2021), in terms of their learning effectiveness built on their relationships with faculty and administrative members, our target students claimed utmost confidence in their instructors ( $M = 4.16$ ), who they were unable to meet physically, but they endlessly supported them to complete the courses. In line with what has been previously discussed by Almazova et al. (2020), the gaps of competence between the young and experienced instructors were a cause of the students' wide-ranging experiences with SOL. For instance, one student used to discuss that "my instructor with an overseas experience in the US education helped us feel she was trying to bring the US classroom to ours like how she experienced a similar SOL in her degree's course." In stark contrast to it, another student blamed her teachers' unwillingness to integrate many newer technological functions to innovate

her classroom atmospheres, defined as gaps of senior and young educators in their own classroom communities (Almazova et al., 2020; Sokal et al., 2020). These differences, again, confirmed the necessity of school leaders and administrators to take control of how the instructors would be always ready for the changes of situational needs, in addition to asking the students to be accustomed to the contextual changes (Cicha et al., 2021; Pham & Ho, 2020). Although it happened with some undesired effects from the qualitative findings, we seemed to be optimistic about the students' active participation in the construction of technological knowledge to support their learning ( $M = 3.90$ ) (Ho et al., 2020). Overall, it was observed that authentic and constructivist learning environments, with particular regards to virtual learning classrooms, were a great contribution (Bennet et al., 2002; Challis, 2002; Marshall et al., 2001; Pintrich, 1995). Justifiably, the virtual classrooms had great differences when compared with the traditional ones. Specifically, when it comes to the instructors and students being capable of appropriately raising voices in direct or indirect ways to please their senses of autonomous learning (Toquero, 2020).

Very surprisingly, in this theme, we recognized that our target students thought of themselves in a critical way because without them in this new so-called game of SOL, they did not achieve the expected types of education that they had hoped to generate and yield. This finding is coincided with the studies of Li (2021) and Varenin et al. (2021). In light of the SOL-integrated activities organized in the inclusive and equitable virtual classes were an example to encourage the learners' greater sense of physical and mental strengths, which can be subsumed into self-management, which can be referred to what we attended to in the second theme (e.g., willingness and curiosity) ( $M = 3.89$ ). This is suggestive of Tomlinson's (2017) recommendations on psychological capital when it is needed for the students' acquaintance with attitudinal and emotional aspects in their future employment status. It was followed by their positively increasing standpoints about how well online-assisted classes went ( $M = 3.83$ ) by virtue of the availability of technological tools (e.g., Google Classroom, Canvas, and so on), and the dynamics existing in the learning environment itself ( $M = 3.77$ ). For the former, it is argued by a student that "it is such a fact that if you want to get into a community, you need to understand the rules within it and you need to learn from others in that community to stay sufficiently engaged" (P. 31). As such, it can be somewhat interpreted that the target students could become more aware of what is needed to succeed in the technologically-driven classrooms (Batiibwe, 2019), so they can move themselves in a way that was required. This is a very good point in this theme. Also, understanding how things work in the community is not sufficient, but it requires the learners to know they should be able to contribute to that community by adding what is considered academically sensible and culturally appropriate (Batiibwe, 2019; Bourdieu, 1986). In this regard, it unfolded the very fresh outlooks into the needs of new members' eligibility in that community.

These two new points have been clearly discussed in Thompson's (2012) sequential theorization of *game* (Thompson, 2012) grounded on Bourdieu's (1986) stances on *capital* and *habitus*. More important, this contributes to a line of insights related to the impacts of learning environments on learners' performances (Liang & Tsai, 2008; Nguyen et al., 2014; Wang et al., 2013). Coincidentally, the factor loadings of the environment-based facets were dominant, which confirms that classes which were digitally assisted were still favored by participants (Bennet et al., 2002; Bernard et al., 2004; Prior et al., 2016; Shen et al., 2013).

## Research Question 2

According to the unmet requirements for data normality, Mann-Whitney U tests were run to see if male and female students responded to the three factors either similarly or differently. No differences between sexes were found in studies such as Chang et al. (2014),

Chen and Tsai (2007), and Yukselturk & Bulut (2009). Whereas, differences between sexes were found in the two studies Aristovnik (2020) and Brown et al. (2003). Knowing that male and female students faced learning difficulties during COVID-19 very differently, our findings suggested that male and female students' learning participation, perceived growth, and assistance-related learning were not statistically different ( $p = 0.628$ ,  $p = 0.592$ ,  $p = 0.644$  for Factor 1, 2, and 3 respectively).

In addition, we analyzed differences between the three factors and student type of education, consisting of regular, advanced, and work-study & post-graduate studies, with the help of Kruskal-Wallis  $H$  tests. Except for Factor 1 ( $\chi^2(3) = 10.473$ ;  $p < 0.05$ ), we saw that Factor 2 ( $p > 0.05$ ) and Factor 3 ( $p > 0.05$ ) revealed no statistically significant differences. Therefore, according to Dunn's (1964) procedure, a Bonferroni correction for multiple comparisons was made with statistical significance accepted at the  $p < 0.0083$  level. The post-hoc analysis revealed statistically significant differences between students in Regular and Advanced programs. Student success was better achieved by students in Regular Programs ( $M = 4.29$ ) than those in Advanced Programs ( $M = 4.08$ ) ( $p = 0.033$ ). This result is relevant to that of Yukselturk and Bulut (2009). The reasons behind this finding are still unknown, leaving room for further research. Future studies should follow student motivation as "a built-in unconscious striving towards more complex and differentiated development of the individual's mental structures" (Oxford & Shearin, 1994, p. 23), underpinned by their learning experiences in different programs (Carroll, 2002; Dornye, 2003) and their prior experiences with learning via online platforms (Lim et al., 2006).

## Conclusion and Implications

This study investigated Vietnamese higher education students' collective experiences in terms of their engagement with SOL during the worsening effects of the COVID-19 pandemic. Examining 475 Vietnamese college students, we borrowed the perspectives of Engeström's (1987) Activity Theory in order to guide our research and develop a questionnaire which accounted for various facets. Using this theoretical framework allowed us to reconsider the collective experiences of Vietnamese higher education students as well as address rare literature examining Vietnamese students' learning in relation to others individual and cultural artifacts. By this way, this study is not only a significant contribution to widening the picture of students' quantitatively self-ranked perspectives and qualitatively critical reflections, but also a delivery of potential directions for future studies which are supposed to involve a collective lens to better understand and conceptualize educational practices in support of educational equality, equity, and inclusiveness.

Examining Vietnamese higher education students' SOL interactions with other individuals and cultural artifacts (technological assistance, syllabus and curriculum, and testing/assessment), our research showed that while engaged in SOL, students had a positive learning experience, perceived growth, and received learning assistance, via quantitative measurements from students' self-ranked perspectives and optimistic insights from students' voices. While their learning experience was rated the highest compared to the two others, it was followed by their received learning assistance and perceived growth. All of them received optimistic attention from the students. Particularly, in terms of learning experience, it was observed that the students' sense of autonomy and agency was promoted with the help of technological tools and instructors, meaning that they were able to perform academically with less guidance and had more privileges to explain their choices of learning, which is also supported by Pham and Ho (2020). For example, they built knowledge, discussed with their peers/instructors, and raised questions. It can be seen that distance learning served as a viable platform to strengthen democracy and equality among the learners (Nguyen, 2021), while many

students preferred different types of instruction (Le et al., 2021). It is short to say that learning experience appeared to be optimistically perceived despite many unforeseeable challenges. This challenges the notion that online learning generally lacks learners' connectedness in their academic community.

Secondly, perceived growth was also a noticeable aspect, suggesting that the students further developed their knowledge, attitudes, and behaviors in response to the available resources on the distant learning platforms (Tomlinson, 2017). Our findings were reflective of the students' strong confidence and sense of regulated learning placed into the learning process (Hettiarachchi et al., 2021). The students gained disciplinary knowledge in a number of ways, had appropriate attitudes towards learning, and actively engaged in e-learning, as benefiting from an educationally-digital learning environment (Li, 2021; Varenin et al., 2021). These dimensions were believed to interact and support one and another. Without one of them, the other two might be unable to grossly progress (Le et al., 2021; Nguyen, 2020). To summarize, students' perceived growth is an alternative insight into the literature which previously showed online learning was observed as a challenge to students' preparedness to their future prospects and employability.

Thirdly, the role of academic assistance in learning was recognized. Student learning success could not be achieved without instructor's advice and guidance on how to learn remotely. The instructors' teaching methods and organized activities seemed to be helpful in a way that the students could feel safe and taken good care of, which was considered very important in a past study (Almazova et al., 2020; Sokal et al., 2020). Thus, students felt confident to speak up and raise questions in class. Importantly, our consideration of democracy in learning environments was highlighted. According to the findings, it was positively viewed by our students, so it can be assumed that the learning context was effective and invited students' full participation and contributed to their learning satisfaction (Li, 2021; Varenin et al., 2021). Moving forward, this aspect should be of focus when it comes to distance learning. It is evidenced that helping students feel comfortable or fully involved in learning, compared to face-to-face learning (Batiibwe, 2019; Pham & Ho, 2020), can enable instructors to better monitor their students and ensure they interact with the instructor and other students (Le et al., 2021; Nguyen, 2020). This study newly proved that online learning is productive to heightening students' sense of equality, equity, and democracy within learning communities. Online learning does not necessarily lead to students' feeling like they lost their advantages to raise their voices and opportunities of academic success.

It is our hope that, according to the quantitative data, our delivery of initial insights into Vietnamese higher education institutions can provoke institutional leadership and management boards to think more closely about how to advance their teaching and learning quality, as highlighted by Pham and Ho (2020). Even though the findings on which we touched in various related aspects of the Activity Theory were very optimistically observed, we urge that more action is needed to support teaching practitioners, including educators and teaching practitioners, in developing their instructional approaches in response to the higher demands of distance learning (Pham & Ho, 2020). This encompasses not only what to teach, but also how to teach, hence maximizing learners' participation and sense of learning so as to succeed in their intended personal and professional goals (Almazova et al., 2020; Sokal et al., 2020; Toquero, 2020).

It is expected that learning is not understood as contextually-free, but higher education institutions generally should be involved in building more educational processes, strategies, and practical implementations in an endeavor to grow learning environments to foster democracy (Nguyen, 2021; Oliver & Herrington, 2000). With this achieved sense, it is of paramount importance that distance learning can be equally, or even better, chosen as the primary means of instructional delivery to meet a growing population of students of disciplinary backgrounds,

academic/professional needs, and personal convenience (Baran & Cagiltay, 2010; Wenger, 1998). Students necessarily know that they are unique contributors in their learning communities, thus shape their learner identity as critical thinkers and develop others (Li, 2021; Varenin et al., 2021). Accompanied with this, if more and more institutions are willing to take part in this effortful plan, higher education institutions can better position themselves in the world of education as the university of choice among local and international students (Pham & Ho, 2020). In this regard, higher education institutions that partake will further the MOET's long-term aspirations to expand Vietnamese higher education's reputation beyond its domestic borders, and to culturally diversify the body of higher educational services in the country in the global context (Pham & Ho, 2020).

Our study is not without limitations. Although we give rise to more research and attention to higher education teaching and learning activities amidst COVID-19, we wish to see more research in different higher education institutions. More research contexts to be considered in future research can provide a sufficient background for us to deeply understand the educational phenomenon in terms of integrating distance and online learning in a collective manner, so that we can cover additional interesting topics and themes. Also, our study was limited to quantitative data, thus sharing the voices of higher education students via interviews (including open-ended and close-ended) can be a roadway to stretch out the well-grounded landscape of higher education's efforts to accommodate education services in this critical time period.

## References

- Alam, G. M., & Parvin, M. (2021). Can online higher education be an active agent for change? Comparison of academic success and job-readiness before and during COVID-19. *Technological Forecasting and Social Change*, 172, 1-10. <http://doi.org/10.1016/j.techfore.2021.121008>
- Almazova, N., Krylova, E., Rubtsova, A., & Odinkaya, M. (2020). Challenges and opportunities for Russian higher education amid COVID-19: Teachers' perspectives. *Education Sciences*, 10(368), 1-11. <http://doi.org/10.3390/educsci10120368>
- Aristovnik, A., Kerzic, D., Ravselj, D. Tomazeviv, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability*, 12, 1-34. <http://doi.org/10.3390/su12208438>
- Artino, A. R. (2009). Think, feel, act: Motivational and emotional influences on military students' online academic success. *Journal of Computing in Higher Education*, 21, 146–166. <http://doi.org/10.1007/s12528-009-9020-9>
- Artino, A. R., & McCoach, D. B. (2008). Development and initial validation of the online learning value and self-efficacy scale. *Journal of Educational Computing Research*, 38, 279–303. <http://doi.org/10.1177/1359105312439732>
- Bahar, B., & Kursat, C. (2010). The dynamics of online communities in the activity theory framework. *Educational Technology & Society*, 13(4), 155-166.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachandran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). Academic Press. Reprinted in H. Friedman [Eds.], *Encyclopedia of mental health*. Academic Press, 1998.
- Bandura, A. (1997). *Self-Efficacy: The exercise of control*. W. H. Freeman.
- Baran, B., & Cagiltay, K. (2010). The dynamics of online communities in the activity theory

- framework. *Journal of Educational Technology & Society*, 13(4), 155-166.
- Bates, R., & Khasawneh, S. (2007). Self-efficacy and college students' perceptions and use of online learning systems. *Computers in Human Behavior*, 23, 175–191. <http://doi.org/10.1016/j.chb.2004.04.004>
- Batiibwe, M. S. K. (2019). Using cultural historical activity theory to understand how emerging technologies can mediate teaching and learning in a mathematics classroom: A review of literature. *Research and Practice in Technology Enhanced Learning*, 14(12), 1-20. <http://doi.org/10.1186/s41039-019-0110-7>
- Bennet, S., Harper, B., & Hedberg, J. (2002). Designing real life cases to support authentic design activities. *Australian Journal of Educational Technology*, 18(1), 1–12.
- Bernard, R., Abrami, P., Lou, Y., Borokhovski, E., et al. (2004). How does distance education compare with classroom instruction? A meta-analysis of the empirical literature. *Review of Educational Research*, 74(3), 379–439.
- Bourdieu, P. (1986). Forms of capital. In J. G. Richardson (Ed.), *Handbook of theory as research for the sociology of education* (pp. 241-258). Greenwood Press.
- Brown, S. W., Boyer, M. A., Mayall, H. J., Johnson, P. R., Meng, L., & Butler, M. J., Weir, K., Florea, N., Hernandez, M., & Reis, S. (2003). The global ed project: Gender differences in a problem-based learning environment of international negotiations. *Instructional Science*, 31, 255–276. <http://doi.org/10.1023/A:1024677708501>.
- Carroll, J. M. (2002). Human–computer interaction in the new millennium. ACM Press.
- Challis, D. (2002). Integrating the conceptual and practice worlds: a case study from architecture. In: HERDSA 2002: Quality conversations: Annual international conference of the higher education research and development society of Australasia, pp. 106–113.
- Chang, C-S., Liu, E, Z-F., Sung, H-Y., Lin, C-H., Chen, N-S., & Cheng, S-S. (2014). Effects of online college student's Internet self-efficacy on learning motivation and performance. *Innovations in Education and Teaching International*, 51(4), 366-377, <http://doi.org/10.1080/14703297.2013.771429>
- Chen, R. S., & Tsai, C. C. (2007). Gender differences in Taiwan university students' attitudes toward web-based learning. *CyberPsychology & Behavior*, 10, 645–654.
- Chiu, C. M., & Wang, E. T. (2008). Understanding web-based learning continuance intention: The role of subjective task value. *Information & Management*, 45, 194–201. <http://doi.org/10.1016/j.im.2008.02.003>
- Cicha, K., Rizun, M, Rutecka, P., & Strzelecki, A. (2021). COVID-19 and higher education: First-year students' expectations toward distance learning. *Sustainability*, 13(4), 1-19. <http://doi.org/10.3390/su13041889>
- Cliff, A., Walji, S., Mogliacci, R. J., Morris, N. & Ivancheva, M. (2020). Unbundling and higher education curriculum: A Cultural-Historical Activity Theory view of process, *Teaching in Higher Education*. <http://doi.org/10.1080/13562517.2019.1711050>
- Creswell, J. W. (2003) *Research Design: Qualitative, Quantitative & Mixed Method Approaches* (2<sup>nd</sup> Ed.). Sage.
- Dai, Y. (2019). Situating videoconferencing in a connected class toward intercultural knowledge development: A comparative reflection approach. *The Internet and Higher Education*, 41, 1-10. <https://doi.org/10.1016/j.iheduc.2018.11.001>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.
- Dornye, Z. (2003). Attitudes, orientations, and motivations in language learning: Advances in theory, research and applications. *Language Learning*, 53(1), 3–32.

- Eccles, J., & Wigfield, A. (1995). In the mind of the actor: The structure of adolescents' achievement task values and expectancy-related beliefs. *Personality and Social Psychology Bulletin*, *21*, 215–225. <http://doi.org/10.1177/0146167295213003>
- Elfirdoussi, S. Lachgar, M., Kabaili, H., Rochdi, A., Goujdami, D., & Firdoussi, L. E. (2020). Assessing distance learning in higher education during the COVID-19 pandemic. *Education Research International*, 1-13. <http://doi.org/10.1155/2020/8890633>.
- Ell, F., & Major, K. (2019). Using activity theory to understand professional learning in a networked professional learning community. *Teaching and Teacher Education* *84*, 106-117. <http://doi.org/10.1016/j.tate.2019.05.010>
- Elsalen, L., Al-Azzam, N., Jum'ah, A. A., Obeidat, N., Sindiani, A. M., & Kheirallah, K. A. (2020). Stress and behavioral changes with remote E-exams during the COVID-19 pandemic: A cross-sectional study among undergraduates of medial sciences. *Annals of Medicine and Surgery*, *60*, 271-279. <http://doi.org/10.1016/j.amsu.2020.10.058>
- Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit <http://lhc.ucsd.edu/MCA/Paper/Engestrom/expanding/toc.htm>. Accessed 4 June 2018.
- Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, *14*(1), 133–156. <https://doi.org/10.1080/13639080020028747>.
- Engeström, Y. (2007). Enriching the theory of expansive learning: Lessons from journeys toward configuration. *Mind, Culture, and Activity*, *14*(2), 23–39. <https://doi.org/10.1080/10749030701307689>.
- Ergul, H. (2004). Relationship between student characteristics and academic achievement in distance education and application on students of Anadolu University. *Turkish Online Journal of Distance Education*, *5*(2). <http://tojde.anadolu.edu.tr/tojde14/articles/ergul.htm>
- Field, A. (2009). *Discovering statistics using SPSS*. SAGE Publications.
- Fraenkel, J. R., & Wallen, N.E. (2006). *How to design and evaluate research in education*. McGraw-Hill.
- Garcia-Penalvo, F. J., Corell, A., Abella-Garcia, V., & Grande-de-Prado, M. (2020). Recommendations for mandatory online assessment in higher education during the COVID-19 pandemic. In D. Burgos, A. Tlili, & A. Tabacco (Eds.), *Radical solutions for education in a crisis context. Lecture notes in educational technology* (pp. 85-98). Springer. [http://doi.org/10.1007/978-981-15-7869-4\\_6](http://doi.org/10.1007/978-981-15-7869-4_6)
- Gonzalez, T., de la Rubia, M. A., Hincz, K. P., Comas-Lopez, M., Subirats, L., Fort, S., & Sacha, G. M. (2020). Influence of COVID-19 confinement on students' performance in higher education. *PloS ONE*, *15*(10), 1-23. <http://doi.org/10.1371/journal.pone.0239490>
- Guangul, F. M., Suhail, A. H., Khalit, M. I., & Khidhir, B. A. (2020). Challenges of remote assessment in higher education in the context of COVID-19: A case study of Middle East college. *Educational Assessment, Evaluation, and Accountability*, *32*, 519-535. <http://doi.org/10.1007/s11092-020-09340-w>
- Hair, J. F., W. C. Black, B. J. Babin, & R. E. Anderson. (2014). *Multivariate data analysis* (7th ed). Pearson.
- Hettiarachchi, S., Damayanthi, B. W.R., Heenkenda, S., Dissanayake, D. M. S. L. B., Ranagalage, M., & Ananda, L. (2021). Student satisfaction with online learning during the COVID-19 pandemic: A study at state universities in Sri Lanka. *Sustainability*, *13*, 1-24. <http://doi.org/10.3390/su132111749>
- Ho, N. T. T., Sivapalan, S., Pham, H H., Nguyen, L. T. M., Pham, A. T. V, & Dinh, H. V. (2020). Students' adoption of e-learning in emergency situation: The case of a

- Vietnamese university during COVID-19. *Interactive Technology and Smart Education*, 18(2), 246-269.
- Hodges, C., Moore, S., Lockee, B., Trust, T. & Bond, A. (2020). *The Difference Between Emergency Remote Teaching and Online Learning*. Academic Press.
- Hrastinski, S. (2008). What is online learner participation? A literature review. *Computers & Education*, 51(4), 1755-1765. <https://doi.org/10.1016/j.compedu.2008.05.005>
- Kahu, E., Stephens, C., Leach, L., & Zepke, N. (2013). The engagement of mature distance students. *Higher Education Research and Developments*, 32(5), 791-804. <https://doi.org/10.1080/07294360.2013.777036>
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.
- Kantor, R.J., Waddington, T., Osgood, R. E. (2020). Fostering the suspension of disbelief: the role of authenticity in goal-based scenarios. *Interactive Learning Environment*, 8(3), 211–227.
- Le, L., Tran, H., & Hunger, A. (2013). Developing active collaborative e-learning framework for Vietnam’s higher education context. In S. Antipolis. (Ed.), *The 12<sup>th</sup> European Conference on e-Learning (ECEL 2013)* (pp. 240-249). Academic Press.
- Leontyev, A. (1981). Problems of the development of the mind. Moscow, Russia: Progress.
- Li, Z. (2021). Critical thinking cultivation in Chinese learning classé for international students during the COVID-10 pandemic. *Thinking Skills and Creativity*, 40, 1-8. <http://doi.org/10.1016/j.tsc.2021.100845>
- Liang, T. C., & Tsai, C. C. (2008). Internet self-efficacy and preferences toward constructivist Internet-based learning environments: A study of pre-school teachers in Taiwan. *Journal of Educational Technology & Society*, 11(1), 226-237.
- Lim, D. H., Yoon, W., & Morris, M. L. (2006). *Instructional and learner factors influencing learning outcomes with online learning environment*. Academy of Human Resource Development International Conference (AHRD) (pp. 972–979). <http://www.eric.ed.gov/PDFS/ED492786.pdf>
- Marshall, L., Northcote, M., & Lenoy, M. (2001). *Design influences in the creation of an online mathematics unit for indigenous adults*. In Meeting at the crossroads. Short paper proceedings of the 18th annual conference of the Australian society for computers in learning in tertiary education, pp. 113–116.
- McBrien, J. L., Jones, P. T., & Cheng, R. (2009). Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning. *International Review of Research in Open and Distance Learning*, 10(3). <https://doi.org/10.19173/irrodl.v10i3.605>
- McGhee, R. M. H. (2010). *Asynchronous interaction, online technologies self-efficacy and self-regulated learning as predictors of academic achievement in an online class* [Doctoral dissertation, Southern University and Agricultural and Mechanical College]. <https://www.proquest.com/openview/1d7bb98a23bf4f3f520155b77bf6107a/1?pq-origsite=gscholar&cbl=18750&diss=y>
- McMahon, M., & Oliver, R. (2001). *Promoting self-regulated learning in an online environment*. Ed-Media 2001 World Conference on Educational Multimedia, Hypermedia & Telecommunications (pp. 1299–1305). Association for the Advancement of Computing in Education (AACE).
- Mentz, E., & Beer, J. D. (2017). The affordances of cultural-historical activity theory as a research lens in studying education from a socio-economic perspective, Proceedings of teaching and Education Conferences 4907704, International Institute of Social and Economic Sciences.



- Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open, 1*. <http://doi.org/10.1016/j.ijedro.2020.100012>
- Nguyen, H. T. T. (2020). Learning to teach across the boundary: A cultural historical activity theory perspective on a university-school partnership in Vietnam. *Teaching and Teacher Education, 96*, 1-8. <http://doi.org/10.1016/j.tate.2020.103183>
- Nguyen, H. T., Warren, W., & Fehring, H. (2014). Factors affecting English language teaching and learning in higher education. *English Language Teaching, 7*(8), 94-105. <http://doi.org/10.5539/elt.v7n8p94>
- Nguyen, Q. D. (2021). Potential consequences of COVID-19 pandemic on higher education system in Vietnam. *International Journal of Innovation and Research in Educational Sciences, 8*(4), 198-201.
- Nguyen, X. A., Pho, D. H., Luong, D. H., & Cao, X. T. A. (2020). Vietnamese students' acceptance of using video conferencing tools in distance learning in COVID-19 pandemic. *Turkish Online Journal of Distance Education, 22*(3), 139-162.
- Norusis, M. J. (2008). *SPSS 16.0 guide to data analysis*. Prentice Hall.
- Oliver, R., & Herrington, J. (2000). Using situated learning as a design strategy for Web-based learning. In B. Abbey (Ed.), *Instructional and cognitive impacts of web-based education* (pp. 178–191). Idea Group Publishing.
- Oxford, R., & Shearin, J. (1994). Language learning motivation: Expanding the theoretical framework. *The Modern Language Journal, 78*(1), 12–28.
- Paechter, M., Maier, M., & Macher, D. (2010). Students' expectations of, and experiences in e-learning: Their relation to learning achievements and course satisfaction. *Computers & Education, 54*, 222–229. <http://doi.org/10.1016/j.compedu.2009.08.005>
- Peters, M.A., Wang, H., Ogunniran, M.O., Huang, Y., Green, B., Chunga, J. O., Quainoo, E. A., Ren, Z., Hollings, S., Mou, C., Khomera, S. W., Zhang, M., Zhou, S., Laimeche, A., Zheng, W., Xu, R., Jackson, L., & Hayes, S. (2020). China's internationalized higher education during Covid-19: Collective student autoethnography. *Postdigital Science and Education, 2*, 968–988. <https://doi.org/10.1007/s42438-020-00128-1>
- Pham, H. H., & Ho, T. T. H. (2020). Vietnamese higher education during the post COVID-19 pandemic. *Higher Education Research and Development, 39*(7), 1327-1331. <http://doi.org/10.1080/07294360.2020.1823945>
- Pham, T. (2016). Student-centeredness: Exploring the culturally appropriate pedagogical space in Vietnamese higher education classrooms using activity theory. *Australian Journal of Teacher Education, 41*(1), 1-21. <http://ro.ecu.edu.au/ajte/vol41/iss1/1>
- Pintrich, P. R. (1995). Understanding self-regulated learning. *New Directions for Teaching and Learning, 63*, 3–12. <http://doi.org/10.1002/tl.37219956304>
- Pintrich, P. R. (2004). A Conceptual Framework for Assessing Motivation and Self-Regulated Learning in College Students. *Educational Psychology Review, 16*, 385-407. <http://dx.doi.org/10.1007/s10648-004-0006-x>
- Pintrich, P. R., & Zusho, A. (2002). The development of academic self-regulation: The role of cognitive and motivational factors. In A. Wigfield & J. S. Eccle (Eds.), *Development of achievement motivation* (pp. 249–284). Academic Press.
- Prior, D. P., Mazanov, J., Meacheam, D., Heaslip, G., & Hanson, J. (2016). Attitude, digital literacy and self-efficacy: Flow-on effects for online learning behavior. *Internet and Higher Education, 29*, 91-97. <http://doi.org/10.1016/j.iheduc.2016.01.001>
- Que, L. T. M. (2021). Online teaching and learning in higher education during COVID-19 pandemic: Vietnamese students' perspectives. *IUP Journal of Information Technology, 17*(3)), 23-48.

- Raaper, R., & Brown, C. (2020). The COVID-19 pandemic and the dissolution of the university campus: Implications for student support practice. *Journal of Professional Capital and Community*, 5(3/4), 343-349. <http://doi.org/10.1108/JPCC-06-2020-0032>
- Schlosser, C. A., & Anderson, M. L. (1994). *Distance education: Review of the literature*. Association for Educational Communications and Technology.
- Shen, D., Cho, M-H., Tsai, C-L., Marra, R. (2013). Unpacking online learning experiences: Online learning self-efficacy and learning satisfaction. *Internet and Higher Education*, 19, 10-17. <http://doi.org/10.1016/j.iheduc.2013.04.001>.
- Singh, A., & Singh, L. B. (2017). E-Learning for employability skills: Students perspective. *Procedia Computer Science*, 12(2), 400–406. <http://doi.org/10.1016/j.procs.2017.11.386>
- Sokal, L., Trudel, L. E., & Babb, J. (2020). Canadian teachers' attitudes toward change, efficacy, and burnout during the COVID-19 pandemic. *International Journal of Educational Research*, 1. <http://doi.org/10.1016/j.ijedro.2020.100016>
- Solano-Campos, A., Hopkins, M., & Quaynor, L. (2018). Linguistically responsive teaching in preservice teacher education: A review of the literature through the lens of cultural-historical activity theory. *Journal of Teacher Education*, 71(2), 203-217. <http://doi.org/10.1177/0022487118808785>
- Stone, C. (2017). *Opportunity through online learning: Improving student access, participation and success in higher education*. <https://www.ncsehe.edu.au/publications/opportunity-online-learning-improving-student-access-participation-success-higher-education/>
- Thompson, L. F., & Lynch, B. L. (2003). Web-based instruction: Who is inclined to resist it and why? *Journal of Educational Computing Research*, 29, 375–385.
- Thompson, P. (2012). *Field*. In M. Grenfell (Ed.), *Pierre Bourdieu: Key concepts* (2nd ed., pp. 65–82). Routledge.
- Thurmond, V. A., Wambach, K., Connors, H. R., & Frey, B. B. (2002). Evaluation of student satisfaction: Determining the impact of a Web-based environment by controlling for student characteristics. *The American Journal of Distance Education*, 16, 169–189. <http://www.tandfonline.com/loi/hajd20>
- Tomlinson, M. (2017). Forms of graduate capital and their relationship to graduate. *Education+ Training*, 59(4), 338–352.
- Toquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: The Philippine context. *Pedagogical Research*, 5(4), 1-5. <http://doi.org/10.29333/pr/7947>.
- Trust, T. (2017). Using cultural historical activity theory to examine how teachers seek and share knowledge in a peer-to-peer professional development network. *Australasian Journal of Educational Technology*, 33(1). <http://doi.org/10.14742/ajet.2593>
- Tsai, C. C., & Liu, S. Y. (2005). Developing a multi-dimensional instrument for assessing students' epistemological views toward science. *International Journal of Science Education*, 27(13), 1621–1638.
- Tsang, J. T. Y., So, M. K. P., Chong, A. C. Y., Lam, B. S. Y., & Chu, A. M. Y. (2021). Higher education during the pandemic: The predictive factors of learning effectiveness in COVID-19 online learning. *Education Sciences*, 11, 1-15. <http://doi.org/10.3390/educsci11080446>
- Tuan, H. L., Chang, H. P., Wang, K. H., & Treagust, D. F. (2000). The development of an instrument for assessing students' perceptions of teachers' knowledge. *International Journal of Science Education*, 22(4), 385–398.
- University of Waterloo. (n.d). *Synchronous and asynchronous online learning*. <https://uwaterloo.ca/keep-learning/strategies-remote-teaching/synchronous-vs-asynchronous-online->

- learning#:~:text=Asynchronous%20learning%20means%20that%20the,through%20as%20their%20schedules%20permit.
- Varenin, L., Vecherinina, E., Shchedrina, E. Valiev, I., & Islamov, A. (2021). Developing critical thinking skills in a digital educational environment. *Thinking Skills and Creativity*, 41, 1-9. <http://doi.org/10.1016/j.tsc.2021.100906>
- Vu, C. T., Hoang, A. D., Than, V. Q., Nguyen, M. T., Dinh, V. H., Le, Q. A. T., Le, T. T. T., Pham, H. H., & Nguyen, Y. C. (2020). Dataset of Vietnamese teachers' perspectives and perceived support during the COVID-19 pandemic. *Data in Brief*, 31, 1-9. <http://doi.org/10.1016/j.dib.2020.105788>
- Vu, N. T., Nguyen, T. T. T., & Hoang, H. (2021). English-majoring student teacher response to employability in light of a transition to online learning. *International Journal of Teacher Education and Professional Development*, 5(1), 1-16. <http://doi.org/10.4018/IJTEPD.2022010105>.
- Vygotsky, L. S. (1978). *Mind in society*. Cambridge: Harvard University Press.
- Wang, C. H., Shannon, D. M., & Ross, M. E. (2013). Students' characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning. *Distance Education*, 34(3), 302-323.
- Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. Cambridge University Press.
- Wijekumar, K., Ferguson, L., & Wagoner, D. (2006). Problem with assessment validity and reliability in web-based distance learning environments and solutions. *Journal of Educational Multimedia & Hypermedia*, 15, 199-215. <http://www.editlib.org/p/6259?nl>
- Yukselturk, E., & Bulut, S. (2009). Gender differences in self-regulated online learning environments. *Journal of Educational Technology & Society*, 12(2), 12-22.
- Zeng, X., & Wang, T. (2021). College student satisfaction with online learning during COVID-19: A review and implications. *Multidisciplinary Perspectives in Higher Education*, 6(1), 182-195.
- Zhi, X., Lu, L., Pu, Y., Meng, A., Zhao, Y., Cheng, F., Jiang, J., Xu, J. L., & Zeng, Y. (2020). Investigation and analysis of psychological stress and professional identity of nursing students during COVID-19 pandemic. *Indian Journal of Experimental Biology*, 58, 426-432.

## Notes on Contributors

**Ngoc Tung Vu** is a doctoral student at The University at Albany, SUNY. He is also a Lecturer of English at University of Languages and International Studies, as a member of Vietnam National University, Hanoi City. His research interests cover Research Methodologies in Educational Research, Statistical Modelling, and Intercultural Communication in Higher Education. He has published many articles in the top-tier journals in the related fields. He can be reached at [vungoctung2006@gmail.com](mailto:vungoctung2006@gmail.com); ORCID: 0000-0002-7661-2885

**Dr. Nguyen Minh Hai Tran** is a Lecturer of Finance at Banking University Ho Chi Minh City (BUH), Vietnam. She also obtained her PhD degree at BUH in 2019. Her research interests mainly lie in Quality Assessment in Higher Education, Corporate Finance Management, Insurance, Pension Funds, Microfinance, FinTech, Finance & Banking products and services. She can be reached at [haitnm@buh.edu.vn](mailto:haitnm@buh.edu.vn).

**Appendix A: Cronbach's alpha values**

Items/Factors	Corrected Item- Total Correlation	Cronbach's Alpha If Item Deleted
<b><i>Factor 1: Learning experience</i></b>		
SOL enables my insights into how to manage my and colleagues' academic progress in a mutually reciprocal way)	0.496	0.929
SOL supplies many forms of learning within and beyond the classrooms	0.490	0.929
SOL allows me to manage my academic performances from the various perspectives of an instructor, faculty members, and school leaders	0.445	0.930
<b><i>Factor 2: Perceived growth</i></b>		
SOL enabled me to realize how to develop my learning productivity;	0.670	0.925
SOL facilitated my sense of necessary collaboration with my instructor and classmates	0.675	0.925
SOL offered me a feeling of belongingness to the learning environments within and beyond the classrooms	0.712	0.924
SOL allowed me to develop my sense of familiarity in light of the current situations	0.697	0.924
SOL developed my sense of responsibility and commitment to learning in support of my future career prospects;	0.696	0.924
SOL enabled our increased analytical and critical thinking in light of the many forms of learning within and beyond the classrooms	0.61	0.924
SOL enabled me to increase my sources of academically content-related knowledge, non-academically soft skills, and other crucial competences	0.725	0.925
SOL promoted my sense of interest, enthusiasm, and curiosity towards the subject in general and the course in particular due to its potential benefits and positive influences	0.695	0.924
SOL allowed me to engage myself in the academic sessions (with instructors, tutors, and peers) and non-academic sessions (such as extracurricular activities) in a satisfactory manner	0.656	0.925
<b><i>Factor 3: Learning-related assistance</i></b>		
SOL helped me stay in touch with the instructors who provided necessary instruction and academic support	0.722	0.924

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SOL could develop my technological knowledge in support of my contacts with those relevant and responsible	0.592	0.927
SOL enabled my self-management towards the different characteristics of online learning within and beyond the classrooms	0.663	0.925
SOL facilitated my engagement in many forms of learning environments (such as Google Classrooms, Canvas, and some others) regardless of possibilities and constraints	0.619	0.926
SOL helped familiarize myself with the changing landscapes of learning environment within and beyond the classrooms, so I could consider those landscapes positively dynamic and open	0.663	0.925

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**Appendix B: Extraction Method: Principal Component Analysis.**

<b>Total Variance Explained</b>									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.100	47.647	47.647	8.100	47.647	47.647	4.780	28.120	28.120
2	1.388	8.164	55.811	1.388	8.164	55.811	3.524	20.727	48.847
3	1.082	6.367	62.178	1.082	6.367	62.178	2.266	13.331	62.178
4	.748	4.400	66.577						
5	.701	4.122	70.700						
6	.603	3.549	74.249						
7	.582	3.423	77.673						
8	.519	3.054	80.727						
9	.484	2.846	83.573						
10	.472	2.775	86.348						
11	.411	2.420	88.768						
12	.383	2.251	91.019						
13	.349	2.054	93.073						
14	.337	1.980	95.053						
15	.311	1.829	96.882						
16	.296	1.741	98.622						
17	.234	1.378	100.000						