

Undergraduates' Experiences of E-learning at Teacher Training Universities in the South of Vietnam: A Comparative Case Study

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ABSTRACT

Vietnamese higher education institutions have increasingly integrated technology into their teaching and learning. This study examines the e-learning experiences of 659 pedagogical students at two teacher-training universities in southern Vietnam. Using a comparative case study approach, it investigates the institutional contexts and outcomes of e-learning adoption. Informed by national digital transformation policies and recent experiences with e-learning implementation, both universities have accelerated the integration of online modules into their formal programs in the post-COVID-19 era. Overall, students were positive toward the online environment and e-learning courses. While Ho Chi Minh City University of Education students appreciated the availability of e-learning services, those at Can Tho University were even more favorable but expressed lower satisfaction with specific course components. These findings provide valuable insights for enhancing technological infrastructure and course design to support effective e-learning.

Keywords: E-learning, online environment, undergraduates' experiences, teacher training universities

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Introduction

Higher education institutions (HEIs) worldwide have increasingly integrated technology into their teaching and learning processes. Since the mid-1990s, e-learning or web-based courses have been adopted by HEIs in more economically advanced countries (Bates, 2001). The use of learning management systems (LMSs) to support e-learning has subsequently expanded to many other regions, including Southeast Asia (Bhuasiri et al., 2012). E-learning offers numerous benefits to students, such as flexible timing and location for learning, broader and easier access to educational resources, and greater autonomy in managing their learning processes (Kiran et al., 2025; Loh et al., 2016).

In Vietnam, early e-learning adoption mainly took place within distance education programs. Only a few universities piloted small-scale e-learning initiatives. Among these, Hanoi University of Science and Technology joined the ASEAN Cyber University project in the mid-2010s to promote digital education. Nevertheless, e-learning integration into traditional curricula remained limited, primarily due to a lack of comprehensive national policies and institutional incentives for systematic implementation (Pham & Ho, 2020).

The COVID-19 pandemic in 2020-2021 served as an unprecedented catalyst for e-learning adoption in Vietnamese HEIs. By mid-April 2020, during the first lockdown, fewer than half of HEIs had managed to switch to online instruction (Pham & Ho, 2020), and only a small number had LMSs in place. Despite initial unpreparedness among institutions, lecturers, and students, e-learning eventually became viewed as a convenient, enjoyable, and effective training model (Le et al., 2021). During and after the

pandemic, a range of national policies have been introduced to accelerate digital transformation and increase e-learning courses to account for 20-30% of higher education curricula (Vietnamese government, 2022). Many Vietnamese HEIs have expanded their e-learning offerings, contributing to national objectives and broader regional efforts to advance digital education (ASEAN, 2021).

Students are the primary beneficiaries of integrating information communication technology (ICT) into higher education. Student perceptions and satisfaction with their learning experiences are prominent themes in e-learning literature (De Nito et al., 2022). While research on e-learning at the course level, focusing on teaching and learning methods, is widespread, studies addressing e-learning at the institutional level regarding policy, organization, and technology are comparatively fewer (Pinheiro et al., 2023).

To bridge this gap, the current paper explores student perceptions of e-learning at two teacher-training universities in Vietnam, focusing on their institutional contexts and practices. Given the differences in institutional conditions and policy choices, it remains unclear whether both universities have achieved similar outcomes. By investigating the following research questions, this study aims to provide an in-depth understanding of the processes, outcomes, and challenges in e-learning adoption at the institutional level and to offer practical policy recommendations for university leaders, lecturers, and education policymakers.

- (1) How has e-learning been adopted at the two teacher-training universities?
- (2) What are the outcomes of e-learning adoption, particularly regarding pedagogical undergraduate students’

learning experiences, and are there any significant differences between the two universities?

- (3) What factors might explain the current state of students' learning experiences?

Literature Review

The Concept of e-Learning

The precise origins of the term e-learning are unclear, though it is generally believed to have emerged in the 1990s along with the rise of the Internet. As a term describing the application of new technologies in education, e-learning is often used interchangeably with other related concepts, such as online learning, web-based learning, technology-enhanced learning, and distance learning environments (Moore et al., 2011; Singh & Thurman, 2019), and more recently, with digital learning. However, subtle distinctions remain among these terms.

Defining e-learning comprehensively, Sangra et al. (2012) identified four general elements commonly highlighted in the concept, including technology, delivery systems, communication and interactions, and educational models. The emphasis on each of these elements often depends on whether the researcher's perspective is more educational or technological. Researchers with a technological orientation often consider e-learning a broader concept than online learning (Moore et al., 2011). Additionally, e-learning encompasses various modalities, each defined by different levels of online integration and technology-enhanced applications (Means et al., 2013).

In this study, we define e-learning as an umbrella term that describes the use of

ICT to support and enhance student learning. When describing the learning environment, we use "e-learning" and "online learning" interchangeably, as both refer to instructional delivery on the Internet or online. E-learning modalities are categorized into two types: (1) blended learning, which combines face-to-face and online instruction with a reduction of in-class seat time for students, and (2) fully e-learning/online learning, where all instruction is delivered online.

Student Experiences of e-Learning

In general, students' learning experiences encompass a wide range of activities and interactions that occur throughout their educational journey. These include their perceptions of the learning environment, attitudes toward study, and interpersonal and academic engagement (Liu et al., 2023). In e-learning contexts, such experiences are shaped by multiple factors, including technological infrastructure, pedagogical design, and institutional support.

Regarding the technological aspect, the Technology Acceptance Model (TAM) has been widely applied to examine the effects of perceived usefulness and perceived ease of use on students' attitudes toward e-learning platforms. While TAM offers a valuable framework for studying technology acceptance in Southeast Asian higher education, it has been expanded by incorporating various external variables to enhance its explanatory power (Garcia, 2017; Teo, 2010). Therefore, a comprehensive understanding of e-learning adoption requires consideration of contextual factors, including cultural, infrastructural, and pedagogical differences across countries and HEIs.

Several studies have shown that students hold a positive perception of e-learning, especially when its implementation is well-prepared and designed. They were satisfied with blended learning, specifically when online activities and ICT tools supported and complemented face-to-face classes, thereby enhancing their academic performance (Lopez-Perez et al., 2011). While students appreciated e-learning for its flexibility in accessing course materials, self-paced study, and time and travel savings, they also faced challenges, including teamwork difficulties, technological discomfort, low motivation, and self-study fatigue (Loh et al., 2016). As experience with e-learning grew and faculty training in online and blended course design progressed, Santa Clara University (SCU, 2019) in the United States reported an increase in student satisfaction. With institutional support provided to both instructors and students, technology-enhanced online teaching facilitated personalized learning at Malaysian, Singaporean, and Thai universities, even during the COVID-19 pandemic (Kiran et al., 2025). In the Philippines, students reported positive attitudes toward proactively implemented LMSs (Garcia, 2017), but expressed dissatisfaction with online learning platforms lacking institutional preparedness in the COVID-19 period (Ganal et al., 2022).

In Vietnam, during COVID-19, students appreciated flexible timing and location, access to recorded lectures, and opportunities to retake tests in online learning (Huynh & Le, 2021). However, their satisfaction with LMS remained moderate due to unstable internet, unfamiliarity with the system, difficulty understanding subject content, and limited interaction with lecturers (Phan et al., 2020). Over time, students adapted to online learning and reported more positive experiences (Le et al., 2021).

In the post-COVID-19 era, blended learning has become more widespread. A variety of innovative pedagogical strategies in blended learning courses, especially flipped classrooms, have contributed to students' self-directed learning competencies (Mai et al., 2025; Thai et al., 2024). Students have frequently participated in student-centered teaching approaches, such as active learning, flipped classrooms, and personalized instruction.

Methodology

Research Design

This study utilizes a comparative case study approach, analyzing and comparing multiple cases to achieve an in-depth understanding of a complex issue within its real-life context. This approach is well-suited for addressing “how” and “why” questions and for incorporating both qualitative and quantitative methods (Yin, 2014). Specifically, this paper examines data on institutional settings and students' e-learning experiences at two teacher-training universities in the South of Vietnam. Ho Chi Minh City University of Education (HCMUE) and Can Tho University (CTU) were selected as they are long-established teacher-training institutions located in different geographical areas, thus representative of teacher education in the region.

The paper draws on both qualitative and quantitative data. Qualitative sources include university records, such as website documents, internal and annual reports, and scientific articles on e-learning. Quantitative sources come from student feedback on digital learning environments and e-learning practices, collected as part of a larger survey.

The survey instrument was adapted from relevant literature and an online course survey developed by SCU (2019). It comprised three main sections: (1) an introduction outlining the study's academic purpose, voluntary participation, anonymity, and absence of foreseeable risks; (2) questions evaluating the digital learning environment and e-learning courses; and (3) questions on student characteristics. Students rated their e-learning experiences using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A pilot test was conducted with five HCMUE students, who provided feedback on minor wording issues and confirmed the questionnaire was clear and easy to understand.

Participants

At HCMUE, the survey targeted pedagogical students in two departments of Primary Education and Information Technology. At CTU, it was distributed to students, typically in their second year, studying a course in Pedagogy offered by the School of Education. Both Google Forms and paper-based questionnaires were distributed to students through faculty members.

Convenience sampling was used to facilitate the study. Conducted from February to August 2024, the survey received 659 valid responses after excluding outliers. Table 1 presents the characteristics of the participants.

Cronbach's alpha coefficients for four dimensions measuring students' perceptions of e-learning are presented in Table 2. They range from .86 to .94, indicating a high level of scale reliability.

Table 1

Characteristics of the Participants

			HCMUE	CTU	Total
Academic year	First year	N	154	5	159
		%	23.4	.8	24.1
	Second year	N	108	165	273
		%	16.4	25.0	41.4
	Third year	N	79	0	79
		%	12	0	12
	Fourth year	N	139	9	148
		%	21.1	1.4	22.5
	Total	N	480	179	659
		%	72.8	27.2	100
Gender	Male	N	104	63	167
		%	15.8	9.6	25.3
	Female	N	374	113	487
		%	56.8	17.1	73.9
	Other	N	2	3	5
		%	.3	.5	.8
	Total	N	480	179	659
		%	72.8	27.2	100
Percentage of online classes within the curriculum completed	< 10%	N	24	61	85
		%	3.6	9.3	12.9
	10% to < 20%	N	103	74	177
		%	15.6	11.2	26.9
	20% to 30%	N	172	41	213
		%	26.1	6.2	32.3
	> 30%	N	181	3	184
		%	27.5	.5	27.9
	Total	N	480	179	659
		%	72.8	27.2	100

Table 2

*Reliability Coefficients of Scales
Measuring Students' Perceptions*

Dimensions	No. of Items	Mean	Standard Deviation	Cronbach α
Availability of e-learning services	6	22.02	3.84	0.86
Advantages of e-learning	5	20.89	3.24	0.91
Disadvantages of e-learning	6	19.82	4.55	0.85
Course design	7	26.60	4.61	0.94

Ethical Considerations

This study adhered to ethical standards for educational research (Fraenkel et al., 2012), ensuring that participants faced no harm or discomfort. Adult participants voluntarily responded to non-sensitive questions after reading the introduction to the questionnaire. A small token of appreciation was provided upon survey completion. Informed consent was implied through participants' submission of responses, and anonymity was ensured by not collecting identifiable information such as names, ages, or class identifiers.

Data Analysis

Qualitative data were analyzed by thoroughly reviewing and interpreting institutional documents related to the universities' policies and experiences with ICT implementations. These sources offered valuable insights into the institutions' e-learning initiatives and adoption processes.

Survey data were analyzed using SPSS 22.0. A diagnostic test for normality through visual inspection of histograms indicated that the data approximated a normal distribution. Skewness and kurtosis values for all observed variables fell within a range of -1 to 1. With a sample size exceeding 600, the data qualified as a large sample and were considered normally distributed, supporting the use of parametric statistical tests (Hair et al., 2014). Descriptive statistics were computed to explore students' evaluations of their e-learning experiences. Group means were compared using independent-sample t-tests to assess differences between groups.

Findings and Discussion

Initiatives of e-Learning Adoption at the Two Universities

Hochiminh City University of Education (HCMUE)

HCMUE is one of the two key pedagogical universities in Vietnam, with extensive experience in teacher training. In recent years, the university has enrolled approximately 1,800 pedagogical students annually. In 2017-2018, the university piloted e-learning via its virtual learning environment (VLE) system, offering the same course in two formats: fully online for full-time students and blended for in-service learners. These initial implementations underscored the importance of course design, technical support, and technological infrastructure for a successful expansion of e-learning.

In response to national directions, digital transformation has become a strategic priority for the university during 2021-2025, with a vision for 2030. Its roadmap prioritizes several areas, including building digital content, organizing

data systems, deploying VLE, and enhancing digital awareness and competencies for both staff and students (HCMUE, 2021). All lecturers have received training in e-learning course development and can access support from an established expert team.

HCMUE's e-learning regulations have been in place since 2023. By April 2024, the university had offered 104 e-learning courses, with two fully online compulsory ones (accounting for 3.5% of each curriculum) and the rest in blended formats. It aims for e-learning courses to comprise up to 30% of all curricula. The flipped classroom, widely used in blended learning courses, has helped enhance students' self-study competencies (Thai et al., 2024).

Can Tho University (CTU)

CTU is a multidisciplinary university that includes teacher training. In recent years, the university has enrolled approximately 800 pedagogical students annually. In 2003, it launched an LMS project in collaboration with foreign partner universities to enhance the campus learning environment. The LMS supported around 50,000 users across 1,600 courses (Tran & Nguyen, 2017). Approximately 10% of these courses were used by self-motivated lecturers to deliver online lessons, supplementing face-to-face instruction. The remaining 90% primarily served to distribute learning materials, post test results and announcements, and facilitate discussion forums.

Since 2022, the university has issued e-learning regulations. Under its strategic development plan, at least 6% of courses in each program transitioned to fully online delivery in 2022-2023, with a targeted annual increase of

7%. By 2025, the university aims for at least 20% of courses to be delivered online (Pham et al., 2023).

Currently, CTU is promoting fully online courses, particularly general education courses with large enrollments, while emphasizing the use of video conferencing to support real-time interaction between lecturers and students. In the university's teacher-training programs, approximately 7% of online courses are mandatory, while 0-6% are elective, depending on students' choices.

Pedagogical Undergraduate Student Experiences of e-Learning

Overall, students reported noticeably positive perceptions of e-learning services availability (Table 3). Online classes were more widely available at HCMUE than at CTU ($p < .01$), possibly contributing to HCMUE's greater use of online exams and computer-based tests ($p < .01$). In contrast, the digital library resources were evaluated significantly higher by CTU students compared to their HCMUE peers ($p < .05$).

Both universities demonstrated a comparable level of technology availability, with similar mean scores for smart technology use and no significant difference in LMS functionality. Overall means for LMS were slightly above average ($M = 3.83$, $M = 3.67$), suggesting a need for improvement in the platform's quality and interactivity. Notably, student perceptions of LMSs in this study were more favorable than those reported during COVID-19 in Phan et al. (2020).

Generally, students at both universities perceived the e-learning environment as highly

Table 3*Student Perceptions of the Availability of e-Learning services and Technologies*

	Overall	t-test for equality of means		
		HCMUE	CTU	t (d.f.)
You often have online classes	3.48	3.59	3.15	5.968** (265.772)
You frequently use smart classrooms equipped with interactive screens, wireless computers, and touch devices	3.68	3.69	3.67	0.136 (308.326)
LMS allows you to self-study and tracks your learning progress and results	3.83	3.80	3.92	-1.887 (321.624)
LMS includes a forum for students to engage in discussions with lecturers	3.67	3.71	3.58	1.851 (311.285)
The digital library meets your needs for learning materials	3.83	3.79	3.93	-1.985* (318.180)
You often take online exams and tests on computers	3.56	3.61	3.42	2.660** (330.535)

** Significant at $p < .01$; * Significant at $p < .05$ **Table 4***Student Perceptions of the Advantages of e-Learning Environment*

	Overall	t-test for equality of means		
		HCMUE	CTU	t (d.f.)
Easier access to learning: Access lectures and materials anytime, anywhere	4.22	4.17	4.34	-2.638** (319.619)
Maintain learning: Review lectures multiple times and access all lessons, even when absent	4.25	4.23	4.32	-1.439 (322.652)
Useful student portal: Display notifications, register for courses, view scores, and get answers to questions via Chatbots	4.22	4.15	4.41	-4.012** (366.498)
Enhanced interaction: Interact with the university, lecturers, and peers via multiple channels	4.07	4.09	4.00	1.262 (304.272)
Develop ICT skills: Learn new skills in information and communication technology	4.14	4.12	4.18	-1.041 (338.446)

** Significant at $p < .01$

beneficial, with overall means ranging from 4.07 to 4.25 (Table 4). The strong perceived usefulness of e-learning indicates a high level of e-learning acceptance among students, as predicted by TAM (Garcia, 2017; Teo, 2010).

However, CTU students reported slightly higher satisfaction in the ease of access to learning materials ($p < .01$) and the utility of the student portal ($p < .01$) compared to HCMUE students.

Table 5*Student Perceptions of the Disadvantages of e-Learning*

	Overall	t-test for equality of means		
		HCMUE	CTU	t (d.f.)
Lack of motivation to study: Low interest in spending many hours in front of a screen	3.55	3.49	3.73	-2.868** (310.812)
Difficulty concentrating: Hard to focus and grasp the lesson when study sessions are lengthy	3.59	3.50	3.82	-3.707** (328.492)
Limited communication: Feelings of loneliness due to minimal interaction with teachers and peers.	3.48	3.46	3.54	-0.881 (296.138)
Lack of technological devices: Limited access to computers, smartphones, etc.	3.00	2.98	3.06	-0.835 (293.341)
Unstable network connection: No internet access or unreliable connection	3.45	3.42	3.53	-1.155 (304.403)
Lack of software skills: Limited knowledge of using computer software or mobile applications	2.76	2.89	2.43	5.101** (656)

** Significant at $p < .01$

Table 6*Student Perceptions of e-Learning Course Design*

	Overall	t-test for equality of means		
		HCMUE	CTU	t (d.f.)
I clearly understand the components and structure of the course	3.85	3.89	3.72	2.705** (657)
Online learning modules help me understand the course material	3.82	3.90	3.61	4.506** (657)
Online testing is a good way to evaluate my understanding of the course material	3.72	3.79	3.54	3.642** (657)
Watching recorded lectures improves my understanding of the course material	3.89	3.93	3.80	1.783 (657)
Online assignments or activities help understand the course content	3.83	3.86	3.75	1.654 (657)
Online assignments or activities promote my discipline and creativity	3.76	3.81	3.61	2.785** (657)
The online components of the course enhance my engagement and participation	3.72	3.83	3.43	5.774** (656)

** Significant at $p < .01$

The high overall rating for e-learning's role in ICT skill development (M=4.14) suggests that modern digital learning models contribute to

meaningful learning outcomes. This finding is consistent with several studies, e.g., Thai et al. (2024) and Kiran et al. (2025), which indicate

that blended learning enhances students' self-study skills.

The lack of software skills was not seen as a major issue, with the lowest overall mean score among students' perceived disadvantages (Table 5). However, HCMUE students reported significantly lower proficiency than their CTU counterparts ($p < .01$), possibly indicating greater expectations for support from lecturers and the university.

Students reported a moderate level of difficulty with e-learning. The top-rated challenges were social isolation, including a lack of motivation, concentration, and communication, with CTU students experiencing slightly higher levels of difficulty compared to HCMUE students ($p < .01$). Regarding technological aspects, limited access to technological devices and unstable internet were reported to be similar at both universities, indicating the same constraints in infrastructure. Such challenges are difficult to solve, especially for developing countries, as reported by Bhuasiri et al. (2012) and Phan et al. (2020).

In general, students at both universities rated pedagogical elements in e-learning courses relatively high, with means ranging from 3.72 to 3.89 (Table 6). However, HCMUE students reported greater satisfaction across all pedagogical aspects, most of which were significant ($p < .01$).

Explanations for the Current Status of Student e-Learning Experiences

Both universities have implemented e-learning in formal academic programs via LMSs for several years. This development results from a combination of institutional initiatives,

government directives, and efforts toward international integration with the Southeast Asian region and globally in the digital transformation era. Overall, students report high satisfaction with their e-learning experiences.

However, institutional contexts have led to variations in students' perceptions. CTU, one of Vietnam's earliest e-learning adopters, operates a robust LMS and maintains a well-developed website, reflecting the university's commitment to open and extensive digital resources. These contribute to CTU students' greater satisfaction with the digital library and environment. In contrast, students at HCMUE express lower satisfaction in this aspect, likely due to the system overload during peak hours.

Despite these strengths, CTU students report a lower sense of social presence during e-learning courses. This stems from CTU's emphasis on a fully online format, whereas HCMUE adopts a combination of fully online and blended learning approaches. Students with higher self-directedness tend to exhibit greater motivation and more active engagement in online learning environments. Blended learning, through fostering self-directed learning, contributes to HCMUE students' stronger sense of social presence and reduced perception of e-learning disadvantages.

HCMUE students express greater satisfaction with course design and online components, likely due to increased interaction in blended courses and a larger number of lecturers trained in e-learning. While all lecturers at HCMUE are required to develop at least blended courses, CTU's fully online offerings are limited to a few modules and do not involve all lecturers. This may hinder lecturers' ability to support students facing difficulties in online learning.

Conclusions and Recommendations

This study investigated pedagogical students' experiences of e-learning at two teacher-training universities in southern Vietnam, focusing on institutional contexts and practices. The findings reveal that universities are expanding e-learning provision in line with national digital transformation objectives, and students highly value online environments and services, indicating more effective implementation in the post-COVID-19 era. Given differences in institutional conditions and policy choices, students' satisfaction with specific e-learning components varies. This study contributes to the literature by providing insights into how institutional, technological, and pedagogical factors shape students' e-learning experiences in Southeast Asian and other developing countries.

The HCMUE case highlights the significance of institutional policies in facilitating its structured course design and institution-wide lecturer training. The integration of blended and fully online formats, especially the widespread use of flipped classrooms, promotes students' self-directedness, engagement, and meaningful learning outcomes. In contrast, CTU's strong digital infrastructure and library resources contribute to students' higher satisfaction with online services. However, its emphasis on fully online courses leads to reduced social presence and course interactivity.

The research findings inform the following recommendations. First, although improvement in LMS functionality has been observed in teacher-training HEIs, further investment is needed to enhance platform quality and interactivity. Second, HEIs should invest in faculty training in e-learning pedagogy, particularly to strengthen interaction and learner support. Third, institutions currently focusing heavily on fully

online models may consider integrating blended learning to improve communication and student engagement. Fourth, comprehensive national policies should continue supporting e-learning implementation while providing resources and training to build internal capacity.

A major limitation of this study is its reliance on convenience sampling, leading to a female-imbalanced sample and potential limitations in generalizability. Additionally, the absence of qualitative interviews limits in-depth insights into student experiences. Future research should consider employing stratified random sampling to ensure a representative sample. Exploring long-term impacts of blended learning and fully online courses on student learning outcomes could also yield valuable insights.



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Bio Note

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