Humanities & Social Sciences Communications

ARTICLE

https://doi.org/10.1057/s41599-026-07001-9 OPEN

Pre-service teachers' perspectives on online learning and its challenges in higher education

Sibel Aybek[1]✉ & Ebru Kaya[1]

The global crises such as COVID-19 pandemic, earthquakes, economic crises and other large-scale disruptions force higher education institutions worldwide to transition from face-to-face instruction to distance and virtual learning. This shift presents several pedagogical and practical challenges, including the effectiveness of online instruction, IT adoption, use of online learning platforms, and accessibility issues. Situated within the Education for Sustainable Development framework (UN SDG 4), this descriptive study explores experiences, preferences, challenges, and resource constraints of English Language Teaching pre-service teachers at Cukurova University, Turkey, regarding online (distance) learning. Data were collected using an open-ended questionnaire and structured interviews. Content analysis was applied to the qualitative data obtained. Results indicate that, despite benefits in flexibility, cost savings, and reduced commuting emissions, a clear majority of participants favored face-to-face instruction, citing more effective interpersonal engagement, richer classroom dynamics, and stronger motivational and social supports. Key barriers to sustainable online learning included technical failures (network outages, band-width limitations), inequitable home-based resources (shared devices, inadequate study spaces), and compromised assessment integrity. These findings underscore that achieving a truly sustainable digital pedagogy entails more than deploying technology: it requires targeted investments in reliable Internet infrastructure, equitable access to devices, and the design of home-learning environments that minimize social and environmental stressors.

[1] English Language Teaching Department, Cukurova University, Adana, Turkey. ✉email: sibelaybek1@gmail.com

Introduction

The World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19) a global pandemic in mid-March 2020 (WHO, 2020). Consequently, educational activities shifted from face-to-face classroom settings to distance education to reduce the risk of infection and virus spread. This transition significantly impacted higher education institutions worldwide, leading to widespread adoption of distance and virtual teaching and learning. According to UNESCO (2021) report, the closure of schools affected 24.9 million students, necessitating the implementation of distance education to ensure continued access to learning.

Online learning, a form of distance education, allows students to access education remotely or if they cannot attend a school for various reasons (Hrastinski, 2008; Singh and Thurman, 2019; Watts, 2016; Yilmaz, 2019). While shifting to online education can be effective in digitally advanced countries (Basilaia and Kvavadze, 2020), it posed significant challenges in many institutions, especially in countries like Egypt, Brazil, and India (Crawford, Butler-Henderson, Rudolph and Glowatz, 2020). These challenges included limited access to appropriate technology, issues in the arrangement and delivery of online courses, and online presentation services. The rapid change to online education left both students and educators unprepared in terms of online teaching/learning experience and available resources (Seeletso, 2022). Institutions were not equipped for emergencies such as COVID-19 concerning IT adoption, online learning platforms, and reaching students with limited or no access (Seeletso, 2022).

The International Association of Universities (2020) identified three main challenges in distance education: (1) technical infrastructure and accessibility, (2) distance learning competencies and pedagogies, and (3) the field of study. These challenges include the growing digital divide, socioeconomic inequalities, the lack of teaching preparation, and the disparities in online learning within higher and international education.

Sahu (2020) noted that school closures led to several pedagogical challenges, including the effectiveness of sudden online instruction and the mental health of students. University support services played a crucial role during this virtual learning period. Online/virtual learning can be synchronous, asynchronous, or a blend of both (Sahu, 2020). According to Henriksen et al. (2020), video conference technologies such as Zoom, Webex, and Google Hangout were utilized for synchronous online instruction, providing students with meaningful interactions with their instructors and classmates (Simonson et al., 2008).

On the other hand, asynchronous online instruction allows students to engage with learning materials at their convenience (Glenn, 2018). This flexibility benefits students with additional responsibilities, such as work or caregiving. However, Glenn (2018) also highlighted that asynchronous instruction might isolate some students due to the lack of real-time interactions with their instructors and peers.

Recently, scholars have begun to articulate frameworks for embedding sustainability principles directly into digital pedagogy. Huang et al. (2024) introduce the Digital Pedagogy for Sustainable Education Transformation (DP4SET) framework, which rests on four pillars; digital competence for deep learning, evidence based use of high-quality resources, learner centered environments enabled by appropriate technologies, and the synergistic integration of human teachers with trustworthy AI; and demonstrate through a field test in Chinese higher education contexts that DP4SET can meaningfully reshape teaching and learning toward sustainable outcomes. Building on this, Kivunja (2013) emphasizes the importance of integrating digital pedagogical training into preservice teacher education in order to cultivate educators equipped to address both pedagogical and ecological challenges, advocating for learning designs that are resource efficient, and learner centred. Complementing these perspectives, Alharthi, Spichkova and Hamilton (2019) propose a requirement for engineering framework for sustainable eLearning systems, categorizing sustainability into human, social, technical, environmental, and economic dimensions and highlighting the critical roles of collaboration, material reuse, and equitable access in fostering resilient digital learning ecosystems. Together, these studies provide a robust theoretical foundation for examining how digital teaching practices can advance the goals of educational sustainability.

In Turkey, preschool and secondary schools began online education on March 16, 2020, with universities following three weeks later (Koyuncu and Düşkün, 2020). From March 22, 2020, until the summer break, universities provided asynchronous distance education via the Internet using platforms such as Zoom, Google Meet, Skype, and Microsoft Teams. For the 2020–2021 academic year, the Council of Higher Education (YÖK) (2020) allowed universities to decide whether to continue online education based on departmental and faculty needs due to a spike in Covid-19 cases. Cukurova University, where this study was conducted, opted for online education for the Spring term of 2020–2021 academic year. With the continuation of the virus and closures around the globe, the university decided to continue online education for both Fall and Spring terms of 2021–2022 academic year, as well. With the faculty council approval, Cukurova University adopted both synchronous and asynchronous instructions through Perculus platform, introduced by the university's Information and Technology Department (IT) department.

In much the same way that the COVID-19 pandemic necessitated a swift shift to remote instruction, the recent earthquake, which took place in February 2023 in Kahramanmaraş, Turkey, has again underscored the vital role of online education as a resilient alternative when physical classrooms become inaccessible. Natural disasters, whether viral outbreaks or seismic events, are likely to recur, and since that day our faculty has continued to deliver several pedagogical courses, particularly vocational electives, through virtual platforms. This enduring presence of online learning not only ensures continuity of instruction amidst crisis but also highlights persistent challenges and resource constraints for EFL student teachers (STs). Accordingly, this study aims to explore ELT student teachers' reflections, experiences, and challenges regarding online learning during and after the pandemic to better understand how ELT student teachers perceive online learning within the framework of sustainable pedagogy and Education for Sustainable Development (ESD). Specifically, the study examines their perceptions of course suitability, student engagement, assessment practices, and the effectiveness of presentations and micro-teaching in digital environments. This study is significant because it provides long-term insights into how future language teachers conceptualize online learning, offering implications for sustainable pedagogy and post-pandemic teacher education.

ELT student teachers' long-term reflections on online learning are expected to reveal a persistent tension between flexibility and pedagogical quality in teacher education. While online learning is anticipated to be valued for its accessibility and convenience, it is hypothesized that student teachers will perceive it as less sustainable and less suitable than face-to-face instruction for supporting practice-based training (such as micro-teaching and presentations), maintaining interaction, motivation, and engagement, and ensuring effective and equitable assessment over time; however, perceived instructional and institutional support is expected to partially mitigate these challenges.

Review of literature

Research conducted during and after the COVID-19 pandemic has extensively documented the opportunities and challenges associated with the rapid transition to online learning. Early pandemic studies (Adnan and Anwar, 2020; Khraishi, 2021; Mseleku, 2020; Zhong, 2020) consistently highlight structural and technological barriers that inhibited effective online education. Students across multiple contexts lacked reliable Internet access, adequate devices, and institutional support, which diminished their readiness for digital learning environments. Adnan and Anwar (2020) and Mseleku (2020) both identified insufficient technological infrastructure and limited interaction as key obstacles for students and institutions, findings echoed in Zhong's (2020) account of outdated institutional resources and minimal instructor–student communication.

Across literature, a central challenge concerns reduced interaction and weakened social presence in online environments. Studies consistently note that virtual platforms cannot fully replicate the communicative affordances of face-to-face classrooms (Britt, 2006; Kim, 2020). Britt (2006) argued that tactile and socially oriented learners are especially disadvantaged, while Kim (2020) emphasized the irreplaceable role of in-person social activities in supporting learning. Khraishi's (2021) findings further substantiate these observations: group work, presentations, and peer collaboration deteriorated in the absence of physical classroom contact. More recent empirical work suggests that these communicative barriers persist despite evolving digital tools. Wut, Ng, and Low (2024) demonstrated that structured social-presence strategies (e.g., breakout discussions, synchronous Q&A, collaborative annotation) significantly increase engagement only when stable infrastructure is available. In lower-connectivity contexts, even well-designed interactional tasks failed to sustain motivation, underscoring the interdependence of pedagogical design and technological access.

A second body of research examines how students' psychological and academic profiles influence their adaptation to online learning. Larionova et al. (2020) found that students with low self-regulated learning skills, lower intrinsic motivation, and expectations of communication difficulties were more likely to struggle in online environments. These outcomes align with Jung and Lee (2018) and Vayre and Vonthron (2019), who observed that students uncertain about their learning strategies tend to underperform in both online and traditional contexts. Such work suggests that the effectiveness of online learning is shaped not only by external conditions but also by learners' internal capacities for autonomy, persistence, and digital competence.

Declines in motivation and engagement represent another widely documented issue. Means and Neisler (2020) reported a noticeable drop in student satisfaction during the pandemic, while Kapasia et al. (2020) identified stress, loneliness, and unfavorable study environments as significant barriers—patterns also recorded across the USA (Aucejo et al., 2020), India (Kapasia et al., 2020), Switzerland (Elmer et al., 2020), and Russia (Aleshkovskiy et al., 2020; Zener and Oshkina, 2020). Students experiencing increased anxiety or isolation found online learning particularly challenging. Deng and Yang's (2025) large-scale post-pandemic survey of 4200 undergraduates offers further evidence: although flexibility and cost savings remain highly valued, many students still experience cognitive overload, behavioral disengagement, and "Zoom fatigue," with nearly 60% reporting weekly disengagement related to technical disruptions. Their findings highlight the importance of instructor presence and emotional support, which were strong predictors of sustained behavioral engagement ($\beta = 0.42$, $p < 0.001$).

Another recurring theme concerns assessment practices and academic integrity. Khraishi (2021) reported declines in course performance, attendance, and assessment quality in online settings. Students indicated that homework, group projects, and presentations were adversely affected, and communication among group members deteriorated. These issues mirror broader concerns about inequities in assessment conditions during remote learning, particularly where Internet instability and device shortages (Zhong, 2020) limit equal access to examinations and feedback.

Although many students acknowledged the benefits of online learning such as flexibility, cost savings, and ease of access (Khraishi, 2021) several studies suggest that pandemic experiences have negatively shaped long-term attitudes toward online education (Aucejo et al., 2020). Deng and Yang (2025) similarly reported that even four years after initial lockdowns, students still perceive online learning as convenient but emotionally taxing and pedagogically inconsistent, indicating persistent tensions between flexibility and engagement.

Recent research has further emphasized that successful online learning depends not solely on instructional or technical support but on learners' psychological engagement. García-Machado et al. (2024), using a structural equation modeling approach with university students, demonstrated that academic support does not directly predict academic performance in online contexts. Instead, its effects are fully mediated by students' intrinsic motivation and academic engagement. In other words, even when students receive adequate instructional, peer or technical support, performance improves only when these supports translate into sustained motivation and active participation in coursework. These findings align with broader work identifying motivation, interaction, and engagement as central determinants of online learning success, reinforcing the idea that digital environments require not only technological infrastructure but also pedagogical designs that promote commitment and social presence. This framework is particularly relevant for ELT teacher education, where active participation, communicative competence and interaction-oriented tasks constitute essential components of learning.While much of the literature has focused on technological and pedagogical challenges, recent research suggests that these issues cannot be fully understood without considering the role of academic leadership. Lalani et al. (2025), in their thematic review of early pandemic literature, demonstrate that leadership styles such as authentic, servant, and distributed leadership play a crucial role in shaping how educational technologies are adopted and implemented in higher education. Their findings highlight that transparency, institutional support, and leader–follower relationships significantly influence both staff adaptation and student engagement in online learning environments.

Taken together, these studies reveal a coherent set of themes: technological limitations, reduced interaction, student readiness, motivational decline, and challenges related to assessment. Despite improvements in digital pedagogy and institutional support, online learning continues to struggle with sustaining interaction, fairness, and engagement, particularly in practice-intensive fields such as teacher education. Existing research has predominantly examined students' initial pandemic experiences or single-course interventions. However, less is known about how ELT student teachers' perceptions evolve after prolonged exposure to hybrid or online modes, especially regarding micro-teaching, skill-based instruction, and classroom management, areas central to teacher preparation. The present study addresses this gap by providing an in-depth exploration of ELT student teachers' long-term reflections on online learning, their perceived challenges, and the pedagogical implications for teacher education programs.

ELT pre-service teachers' reflections are expected to indicate that, despite the acknowledged benefits of online learning in

terms of flexibility and accessibility, online instruction is perceived as pedagogically constrained and less sustainable for teacher education. Specifically, it is hypothesized that online learning will be viewed as less effective than face-to-face instruction in supporting practice-based learning (e.g., micro-teaching and presentations), sustaining interaction, motivation, and engagement, and ensuring fair and effective assessment, with perceived instructional and institutional support functioning as a moderating factor in these perceptions.

Methodology

This study aims to explore the reflections, experiences, preferences, interpretations, perspectives, and challenges of pre-service teachers at the ELT Department of Cukurova University, Turkey, regarding the online education. The study utilized an open-ended questionnaire and structured interviews as data collection tools. Starting from the Spring term of 2020–2021 academic year to the end of 2021–2022 academic year, Cukurova University conducted solely online courses. From then up until now, some of the courses have still been conducted online, meaning online learning has become part of our lives.

Research design

Although the study is descriptive in design, the analysis was guided by analytically formulated hypotheses to structure the interpretation of student teachers' reflections. This research aims to understand the reflections and perspectives of ELT STs on online learning during and after the pandemic. It also investigates the challenges they face in the online learning period. Initially, the STs completed a 14-item survey to define online learning, express their preferences, and discuss the advantages and disadvantages of both online and face-to-face learning. The survey included both "Yes–No" questions and open-ended questions. Following this, 20 participants were randomly selected for interviews: 10 third year and 10 fourth-year ELT students. These interviews addressed issues such as motivation, appropriateness of assessment tools, and suggestions for improving online learning. Research ethics approval was obtained from the Board of Scientific Research and Publication Ethics in the Social and Human Sciences at Çukurova University (Approval No. E-74009925-604.01.02-502349). All participants provided informed consent prior to participation, and the study was conducted in accordance with the ethical standards of the institution.

Participants

The study involved 95 third and fourth-year ELT student teachers from Cukurova University through convenience sampling. These participants had attended online courses through the Spring term of 2020–2021 and the whole 2021–2022 academic year. The study was conducted in the Spring term of 2022–2023 academic year when the STs were attending face-to-face classes. However, some of the courses have still been provided since 2020–2021 academic year. The participants, aged between 21 and 24 ($M = 22$), volunteered to participate in the study and their anonymity was ensured, contributing to the trustworthiness of the study. All 95 participants completed the questionnaire, while 20 were interviewed via Zoom and Microsoft Teams.

Data collection procedures

Data were collected using both the questionnaire and structured interviews, yielding qualitative data. The questionnaire, consisting of 13 open-ended items and one demographic question, was administered during regular classes. For the structured interviews, 20 participants from the initial 95 were selected to provide in-depth data. These interviews were conducted online using platforms such as Zoom and Microsoft Teams. In the interviews, the participants were asked to respond to 12 predetermined questions. Their consent was obtained, and their anonymity was ensured, contributing to the trustworthiness of the study. All the interview sessions were recorded and transcribed, allowing the researchers to analyse participants' reactions and responses comprehensively.

Data analysis

The data collected from the questionnaire were analyzed in two steps. First, descriptive statistics were calculated for the "Yes–No" questions. Then, responses to the open-ended questions were compiled into a sheet. The recorded interviews were transcribed carefully for content analysis. In this study, the content analysis scheme of Creswell (2012) was followed to analyze the qualitative data obtained throughout the study. First, the data were organized and rigorously analyzed using content analysis. Next, both researchers independently coded the data to determine a set of codes which were then classified into themes. The themes along with the codes were compared with researchers to reach an agreement and ensure interrater reliability throughout the qualitative analysis. To assess the consistency of the qualitative coding, two researchers independently applied the inductive coding scheme to the full set of questionnaire responses and interview transcripts. Cohen's κ in SPSS to correct for chance agreement was calculated across all assigned codes. The resulting $\kappa = 0.81$ (Landis and Koch, 1977) falls within the "almost perfect" agreement range, demonstrating that two coder process yielded a robust and trustworthy classification of themes.

At the end of the comparison, the codes were grouped under the appropriate themes, and ten themes were found to emerge inductively. That is to say, the analysis was not based on a set of predetermined themes or codes. Instead, the codes and themes emerged as the data were being analyzed (Creswell, 2012). Finally, the categories that emerged were reviewed and finalized by a field expert.

Findings

Definition of online learning by pre-service teachers. Participants were asked to define online learning in the questionnaire. They typically described online education as teaching utilizing technological devices and the internet on online platforms. Two STs defined online education in the interview as follows:

Online teaching is a way of teaching conducted by making use of technology. It is a platform for teaching, and it doesn't include any physical classes. All the classes are conducted in an online platform (ST2).

Online education is teaching/learning in a digital environment without any physical boundaries (ST5).

During the interviews, STs provided five adjectives to describe both face-to-face and online learning. The analysis revealed that positive and negative adjectives varied depending on the student's preferences. Those who favored online learning described it as accessible, convenient, comfortable, autonomous, flexible, innovative, timesaving, easy, and practical. Conversely, they found face-to-face learning demanding, tiring, stressful, expensive, and time-consuming. On the other hand, STs who preferred face-to-face learning characterized it as social, productive, effective, motivational, collaborative, enjoyable, dynamic, super, planned, interactive, engaging, and efficient. They viewed online learning as ineffective, uninspiring, unproductive, boring, tiring, demotivating, inadequate, complex, and distracting.

Perspectives on online vs. face-to-face learning: preferences, advantages, and challenges

The analysis of the findings was guided by the overarching hypothesis of the study, which anticipated a tension between the

perceived flexibility of online learning and its pedagogical suitability and sustainability for teacher education.

The majority of student teachers (71.5%) preferred face-to-face learning, citing stronger classroom dynamics, enhanced motivation, and more effective teacher–student interaction. Participants emphasized that the physical presence of the teacher, eye contact, and immediate feedback supported concentration and contributed to a disciplined learning environment. As one participant noted:

"In face-to-face learning, when you see the teacher and feel their presence, you feel more ready to learn. At home, I feel too relaxed and only try to pass the course" (ST9). Another added, "Teaching and learning are social activities. You need to be present, make eye contact, and give or receive feedback—none of which truly happens online" (ST12).

Face-to-face settings were also valued for promoting socialization and peer interaction. Participants reported that being part of a physical classroom helped them build relationships, develop social skills, and balance academic and social life. The importance of nonverbal cues was frequently mentioned:

"Facial expressions are important for me. Online teaching didn't give me much of it, and I couldn't interact with my classmates" (ST11).

Quick feedback, especially in courses involving presentations and micro-teaching, was another widely cited benefit of in-person learning. Despite this general preference, 22% of the participants favored online learning, mainly for its flexibility, relaxed environment, and time-saving nature. Students appreciated the ability to join classes easily, avoid commuting, and manage their schedules more efficiently. One participant stated:

"Online learning saves time—we can join from anywhere without commuting or preparing for the day" (ST8).

Some also mentioned financial advantages, such as reduced transportation and food expenses. When evaluating advantages of online learning, participants highlighted accessibility, the ease of attending classes with a single click, and the ability to rewatch asynchronous recordings. This feature particularly benefited working students and those who faced connection problems. As one participant explained:

"A subject that is not understood can be watched again, and we can learn when we feel more open to learning" (ST3).

Many participants agreed that online learning saved substantial time, allowing them to dedicate more hours to family, studying, or personal activities. These findings reflect key principles of sustainable pedagogy, particularly flexibility, accessibility, and learner autonomy, which are widely emphasized in ESD frameworks.

Nevertheless, participants also identified several significant disadvantages of online learning. These included technical problems such as unstable internet, power outages, and lack of technological devices, issues that disproportionately affected students with limited financial resources. Some reported sharing a single computer with siblings or missing classes due to weak internet connections.

A major theme across interviews was the lack of interaction, communication, and feedback in online settings. Students felt disconnected from teachers and peers, which negatively influenced their motivation and learning. One participant stated:

"The lack of human interaction affects my motivation most. Without it, I don't feel like I'm in a classroom" (ST13).

Similarly, participants believed that instructors struggled to provide timely feedback and observed that teachers' motivation often decreased when students attended asynchronously or did not participate. Concerns about assessment were also prominent. Many students felt that online exams and tasks did not provide fair or objective evaluation due to increased opportunities for cheating. As one student observed:

"It would be naïve to think fair grading took place during online teaching—cheating is unavoidable in online exams" (ST6).

Taken together, these concerns substantiate the assessment-related aspect of the overall hypothesis, highlighting perceived limitations in the effectiveness and fairness of online assessment practices.

Finally, several students reported decreased motivation, distractions at home, and difficulty focusing, especially when family members interrupted them or when the home environment felt unsuitable for learning. Only a small minority (5%) stated that they experienced no difficulties during online learning.

Overall, participants viewed face-to-face learning as more effective for interaction, motivation, and feedback, while recognizing that online learning offers considerable convenience, flexibility, and cost savings. Yet significant challenges, particularly technical limitations, reduced social engagement, and concerns about assessment that prevented many from viewing online learning as an equivalent alternative to in-person education. The reported inequalities in access to devices and connectivity highlight the ESD concern with educational equity, suggesting that sustainability cannot be achieved without addressing infrastructural disparities.

In this respect, participants' accounts provide empirical support for the interaction- and engagement-related component of the study's hypothesis, suggesting that prolonged exposure to online instruction did not fully alleviate motivational and interactional challenges.

Course suitability, micro-teaching experiences, and perceptions of online lecture delivery

Across questionnaires and interviews, student teachers consistently distinguished between courses appropriate for online versus face-to-face delivery. Theoretical courses such as linguistics, literature, translation, material design, Turkish language, and pedagogical foundations were viewed as well-suited to online learning since they require less hands-on application. As one participant summarized:

"Theoretical courses are more suitable for online platforms; practical ones require interaction" (ST20).

In contrast, practical and performance-based courses, including teaching language skills, TEYL, drama, methodology, oral communication, and teaching practice were overwhelmingly associated with face-to-face instruction. Students emphasized the need for classroom dynamics, peer engagement, and real-time feedback. As ST13 noted:

"*Practical and engaging courses are more suitable for face-to-face teaching, especially for young learners who need interaction."*

Preferences for course delivery extended strongly to micro-teaching, with 77% of students reporting that presentations were more effective in face-to-face settings. Key reasons included eye contact, the authenticity of the classroom environment, improved communication, and immediate feedback from instructors and peers. One participant stated,

"In online presentations I couldn't make eye contact, and the teacher couldn't know whether students were listening" (ST16). Another emphasized the developmental value of in-person practice: "Face-to-face micro-teaching helps us gain confidence and progress through feedback" (ST20).

These findings align with the practice-based dimension of the overall hypothesis, indicating that while online learning was considered manageable for theoretical content, it was perceived as less effective for developing practical teaching skills.

A smaller group (23%) found online presentations beneficial, mainly because reduced social pressure eased anxiety. As one student explained,

"Students feel more comfortable when they don't see their peers; anxiety decreases" (ST7).

For introverted students, this was experienced as an opportunity rather than a limitation.

Students' evaluations of how online lessons were delivered varied considerably. Thirty-eight percent appreciated the convenience of ready-to-use digital materials, accessible instructors, and the ability to rewatch recorded lessons. ST15 stated,

"We could watch lessons again, and various materials were always available." (ST76)

However, 32% were dissatisfied, mainly due to passive teaching practices such as reading directly from slides or limited interaction. Some also struggled to express themselves without body language:

"I use my body language a lot, but online I feel insufficient to express myself" (ST6).

The remaining 30% expressed mixed experiences, noting that lesson quality depended largely on the lecturer's preparedness and digital pedagogical competence. As ST4 commented,

"Some teachers were very interactive, but others just tried to finish the lesson quickly."

Students also reported cases of teachers being unable to use platforms effectively, leading to disruptions:

"At the beginning some teachers couldn't use the system properly, and we couldn't have our lessons" (ST14).

Taken together, students demonstrated clear distinctions between theoretical and practical course needs, a strong preference for face-to-face micro-teaching, and varied evaluations of online lecture quality based on instructors' digital readiness. These findings suggest that while online environments can effectively support theoretical content and flexible learning, practical components of ELT education continue to rely heavily on the affordances of physical classrooms, interaction, and real-time pedagogical feedback.

Being a student vs. a teacher in online learning context

Forty-eight percent of the students preferred being students in online education because they found classroom management and lesson preparation difficult and overwhelming. They believed it took considerable time to prepare materials and that there was no real classroom environment. They also felt that online learning was stressful and demotivating for teachers, as class participation was low, and assignments were often incomplete:

"I would like to be a student because class participation in online education is very low and this may be a big irritating problem for the teacher. Teachers cannot be sure whether the students are really interested in the lesson especially when their webcam is off. While the students have a chance like attending the classes in such a comfortable way, teachers always have to be ready and active during the lesson" (ST16).

The participants' comments indicated that teachers have more responsibility than students, which is tiring for teachers. The STs also noted that teachers had to deal with students who did not attend the classes, and some teachers were unfamiliar with online teaching, and lacked computer skills, causing inefficiencies. However, 20% of the participants preferred being teachers in online education because they felt teachers are more active in online education and could use digital tools and platforms more effectively:

"I'd like to be the teacher because you are the one mostly directing the syllabus. You provide resources, you draw the road map and arrange meetings, you mediate the classroom decisions" (ST8).

Meanwhile, 27% of STs preferred being neither teachers nor students in an online education context, as they found the process ineffective and preferred authentic face-to-face classroom:

"I want to be neither a teacher nor a student in online classes because online classes lack motivation which is available in face-to-face classes" (ST9).

Only 5% of students expressed a preference for being a teacher or a student in an online learning context, viewing online education as the future and highlighting its flexibility in allowing people to teach or learn from anywhere:

"I would like to be a teacher in online learning because I could create a better environment for my students" (ST19).

Comments reveal a dissatisfaction among STs towards online learning regarding teachers' lack of motivation, ineffectiveness of online lectures and low student participation in the lectures.

Effects of online education on the pre-service teachers' family members

Online education during the pandemic affected other members of the family (49%) from various perspectives. One significant problem was the noisy and crowded environment at home, as many parents had to work online, and siblings had online lessons, leading to concentration problems. Additionally, the lack of rooms and technological devices at home created substantial problems among family members. The following comment supports this finding:

"Online learning during the pandemic was not effective for me because I have a sister and we had only one computer at home. Time to time I couldn't attend the online lessons since my sister also had to attend her lessons at the same time" (ST20).

However, 51% of the pre-service teachers reported that they did not experience any problems with their family members during this period. One ST commented:

"They aren't really affected by online education since I had my own room and nobody interrupted me. Our internet connection was also enough for everyone in my family" (ST7).

The other 49% was not content with the conditions, noting that not everyone has equal access to the internet, sufficient technological devices, or knowledge of online platforms:

"If we improve the platforms and teach both students and teachers how to use them, they can use it effectively, it could be nice" (ST6).

"It is necessary for teachers to give feedback to developers to improve and add functions to the different platforms that are used during online education" (ST13).

STs also expressed that online education platforms and materials should be improved and modified in various ways to be more effective.

Suggestions by the pre-service teachers for improving online learning environment

The participant STs generally believe that providing sufficient Internet access and required technological devices would improve their learning and participation. They also suggested that teachers should use different items during classes, such as interactive platforms, apps, or films. They believe that lecture presentations can be colorful, varied, and engaging to make students more active in online lessons. Some STs commented:

"Even online courses should be structured in a more dynamic and interactive way en-couraging participation. Lessons can be made more fun or colorful by using the tech-nologies available on the internet (different programs) instead of just reading the slides. Yet I do not believe that online courses can become as effective as face-to-face courses" (ST18).

Another suggestion was to educate both teachers and students about using technology and different tools, as there is a lack of knowledge about utilizing technology and online platforms:

"I think it is already easy to use the online platforms, but what we can do is to educate our students and teachers in terms of digital literacy. The sources should be fun and motivating to create active participation. Maybe the curriculum could be designed in way to integrate using such digital tools and technological devices" (ST15).

Regarding technical issues, the STs felt that the department, university, or government should have provided assistance. Many had problems getting used to the online platforms and software but managed to overcome these issues independently. Some participants believed that the government should have provided laptops or free network connections to families and students. One excerpt highlights this issue:

"It can be useful to get help with technical issues during the distance education process. This assistance can also be given during this period when we continue to receive education both face-to-face and online. This support, which will be given by our department, will not only be helpful in our current lessons, but will also be useful in our professional life in the future" (ST9).

Most courses were conducted using Microsoft Teams in the department, and STs were asked to express their opinions about the platform. Sixty-one percent of the students did not encounter any problems using Microsoft Teams. However, 39% experienced difficulties at the beginning of online learning, such as connecting to the platform, attending crowded classes, and sharing slides.

"We had a hard time at first using Microsoft Teams because we didn't know anything about this application. We had difficulties such as attending to the class, sharing a slide, video or screen, but over time we overcame them. Plus, it saved us time and we were able to watch the lessons again. I think it's pretty good right now" (ST12).

They also added that a manual or some kind of guidance about the program would have helped them learn, adapt, and get used to it more quickly and in a feasible way.

Overall, the findings offer qualitative validation of the study's hypothesis by revealing a persistent tension between the flexibility of online learning and its pedagogical and sustainable suitability for teacher education. While participants acknowledged the advantages of online instruction, their reflections consistently emphasized its limitations for practice-based learning, interaction, and assessment.

Discussion, conclusion, and suggestions

Emergency and crisis situations such as the COVID-19 pandemic have compelled higher education institutions to adopt online learning rapidly, often without sufficient pedagogical or infrastructural preparation. The findings of the present study suggest that while online learning offers clear structural benefits, most notably flexibility, cost-effectiveness, and ease of access, these advantages alone are insufficient to sustain high-quality learning experiences in ELT teacher education. The abrupt transition from face-to-face to online instruction appears to have compromised curriculum coherence and pedagogical alignment, as materials and syllabi originally designed for physical classrooms were transferred to digital platforms without systematic adaptation. This indicates that the effectiveness of online education is less a function of modality itself and more dependent on the intentional redesign of curricula, materials, and instructional strategies for digital environments.

The findings of the present study largely support the overarching hypothesis, which anticipated a persistent tension between the flexibility of online learning and its pedagogical and sustainable suitability for teacher education. While ELT pre-service teachers acknowledged the accessibility, convenience, and continuity afforded by online instruction, their long-term reflections consistently revealed concerns regarding practice-based training, interaction, motivation, and assessment. These results suggest that prolonged exposure to online learning, even beyond the immediate crisis period, does not fully resolve the pedagogical limitations associated with digitally mediated teacher education.

The strong preference for face-to-face learning expressed by most student teachers points to the centrality of interaction, social presence, and immediacy in teacher education. Rather than reflecting resistance to technology, this preference suggests that ELT pre-service teachers conceptualize learning as a fundamentally social and relational process. Rapport with instructors, peer interaction, classroom discipline, and real-time feedback appear to play a crucial role in sustaining motivation and concentration, elements that are more readily supported in face-to-face contexts. At the same time, the minority preference for online learning highlights how flexibility, asynchronous access, and reduced financial burden can meaningfully support learners with competing responsibilities, echoing earlier work on adult and non-traditional learners (Fedynich, 2014; Yilmaz, 2019; Adnan and Anwar, 2020). Together, these findings suggest that student teachers' preferences are shaped less by a binary evaluation of modalities than by the extent to which each mode supports their academic, social, and economic needs.

Technical challenges and infrastructural inequalities emerged as persistent barriers that shaped participants' online learning experiences. Rather than isolated inconveniences, issues such as unstable Internet connections, lack of devices, and power cuts functioned as structural constraints that limited participation and exacerbated educational inequities. These findings reinforce international evidence showing that technological access remains uneven and that online learning environments often reproduce broader social disparities (International Association of Universities, 2020; Zhong, 2020; Means and Neisler, 2020). In this sense, technological problems are not merely operational but pedagogical, as they directly undermine interaction, continuity, and learner engagement.

A particularly salient interpretive theme concerns motivation. Participants' accounts suggest that reduced motivation in online learning environments is closely tied to diminished interaction, weakened social presence, and unclear assessment practices. Rather than viewing motivation as an individual learner deficit, these findings point to the affective and relational dimensions of learning as critical determinants of engagement. This interpretation is consistent with prior research identifying motivation loss as a central challenge of emergency remote teaching (Adnan and Anwar, 2020; Kim, 2020; Aucejo et al., 2020). More recent evidence further indicates that even in post-pandemic contexts, unresolved technical disruptions and assessment ambiguity continue to generate disengagement and anxiety (Deng and Yang, 2025). Taken together, these findings suggest that motivation in online learning is best understood as a systemic outcome shaped by interactional design, feedback mechanisms, and institutional support rather than as a stable learner trait.

The perceived lack of interaction and socialization further reinforces this interpretation. Pre-service teachers' emphasis on eye contact, peer communication, and collaborative engagement highlights the importance of social presence for professional identity development in ELT. While digital tools can support interaction in principle, their effectiveness appears contingent on reliable infrastructure and deliberate pedagogical design. The constraints identified by participants align with evidence that social presence strategies only translate into meaningful engagement when supported by adequate connectivity and institutional resources (Wut, Ng, and Low, 2024). Without these conditions, online interaction risks remaining superficial, limiting both learning depth and equity.

Concerns regarding assessment fairness reveal another dimension of the perceived limitations of online learning. Participants' skepticism toward the objectivity of online assessment reflects broader anxieties about academic integrity, transparency, and evaluation validity in digital environments. Rather than attributing these concerns solely to student behavior, the findings suggest a need to reconsider assessment design in online contexts. Similar conclusions have been drawn in studies documenting increased opportunities for cheating and the erosion of trust in online evaluation systems (Alzamil, 2021). These challenges underscore the importance of assessment literacy and clear criteria as integral components of sustainable online pedagogy.

The distinction participants made between theoretical and practical courses provides further insight into modality effectiveness. Student teachers' preference for delivering theoretical content online while reserving practice-oriented courses for face-to-face settings reflects an intuitive alignment between course demands and pedagogical affordances. This perception is supported by large-scale evidence demonstrating that the impact of learning modality varies substantially across course types (Alarifi and Song, 2024). While performance data highlight differential outcomes, the present study contributes by revealing the experiential and motivational mechanisms underlying these patterns, particularly in relation to feedback, interaction, and confidence building in micro-teaching contexts.

Reluctance to assume teaching roles in online environments further illustrates the professional implications of these findings. Student teachers' concerns about classroom management, lesson preparation, and authentic engagement suggest that online settings may constrain opportunities for pedagogical enactment and professional identity formation. Comparable findings among Turkish and European educators indicate that even high levels of digital literacy do not necessarily translate into confidence in online teaching roles, especially under conditions of low participation and limited feedback (Valizadeh and Soltanpour, 2021; Olofsson et al., 2021; Di Pietro et al., 2020). These insights point to the need for teacher education programs to explicitly address online classroom management and interactional competence.

Beyond individual learners, the study also highlights how online education reshapes domestic learning ecologies. Crowded households, shared devices, and limited study spaces extend the impact of online learning to family members, reinforcing the socio-material dimensions of digital education. Cross-contextual research confirms that even in high-income settings, domestic constraints continue to mediate learners' engagement and well-being (Leech et al., 2022; Evans, 2024). These findings underscore that online learning challenges are embedded within broader social and infrastructural systems.

Finally, interpreted through the lens of sustainable pedagogy and Education for Sustainable Development (ESD), the findings reveal a complex balance between opportunity and constraint. While online learning supports sustainability goals related to flexibility, reduced commuting, and learner autonomy, persistent inequalities, motivational challenges, and reduced social interaction complicate its alignment with equity and wellbeing principles. From this perspective, online education can contribute to sustainable higher education only when supported by robust infrastructure, inclusive pedagogical design, and sustained professional development. Aligning instructional design, technological investment, and teacher preparation is therefore essential for developing resilient, equitable, and sustainable online learning models for the future.

Limitations and directions for future research

This study has several limitations that should be acknowledged when interpreting the findings. First, the research was conducted with a relatively small and context-specific sample of ELT student teachers from a single university, which may limit the generalizability of the results to other teacher education programs or national contexts. Second, although qualitative data provided rich insights into participants' perceptions, self-reported experiences may be influenced by recall bias or social desirability, particularly regarding sensitive topics such as motivation, assessment fairness, or technological barriers. Third, the study focused on synchronous and asynchronous online learning during a unique post-pandemic transition period; therefore, students' experiences may differ in more stable, fully planned online or hybrid learning environments. Finally, the study did not triangulate perceptions with classroom observations, performance data, or instructors' perspectives, which could have offered a more comprehensive view of the pedagogical processes involved.

Future research should build on these findings by examining online and hybrid learning experiences across diverse institutions and cultural contexts to enhance external validity. Longitudinal designs would help capture how student teachers' perceptions evolve as digital pedagogies mature and technologies improve. Comparative studies involving instructors' viewpoints could further illuminate the pedagogical and emotional dynamics of online teaching, particularly around assessment practices, interaction quality, and feedback. Additionally, future work could explore the relationship between online learning and sustainable pedagogy frameworks, including issues of equity, wellbeing, and digital literacy—areas that remain underexplored in ELT teacher education. Employing mixed-methods approaches or integrating learning analytics could also deepen understanding of how online environments shape engagement, performance, and professional identity development.

Data availability

Raw data (e.g. surveys filled, interview recordings), analysis and categorization that support the findings of this study are available from the corresponding author upon reasonable request.

Received: 8 September 2025; Accepted: 9 March 2026;
Published online: 27 March 2026

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Acknowledgements

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author contributions

Conceptualization, methodology, EK, SA; software, SA; validation, SA and EK; formal analysis, SA; investigation, SA; resources, SA; data curation, SA; writing—original draft preparation, SA; writing—review and editing, SA and EK; visualization, SA; supervision, SA and EK; project administration, SA. All authors have read and agreed to the published version of the manuscript.

Competing interests

The authors declare no competing interests.

Ethical approval

Research ethics approval was obtained from the Board of Scientific Research and Publication Ethics in the Social and Human Sciences at Cukurova University (Approval No. E-74009925-604.01.02-502349; Approval Date: 22.09.2022). All participants provided informed consent prior to participation, and the study was conducted in accordance with the ethical standards of the institution.

Informed consent

Informed consent was obtained from all subjects involved in the study. Oral informed consent was obtained from all participants before the participants fill out the surveys (Informed Consent Date for the surveys: 29-30.05.2023 / Informed Consent Date for the interviews: 3-4-5.06.2023). Consent was obtained by the researchers before participation and was documented in contemporaneous field notes as well as recorded as an audio. A verbatim consent script used during the process in which participants were informed about the study aims, procedures, voluntariness, right to withdraw, confidentiality/

anonymisation, and data protection. Oral consent was used because (i) the activity is minimal-risk and anonymous (no names collected on the questionnaire), (ii) signatures would introduce identifiable data and undermine anonymity, and (iii) consent could be efficiently obtained and documented during the in-class administration. A verbatim consent script used during the process is supplied with the submission as a supplementary file.

Additional information

Supplementary information The online version contains supplementary material available at https://doi.org/10.1057/s41599-026-07001-9.

Correspondence and requests for materials should be addressed to Sibel Aybek.

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