

Student Access, Engagement, and Inequality in Emergency Online Learning: Evidence from Sri Lankan Higher Education

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ABSTRACT

The rapid transition to online learning during the COVID-19 pandemic exposed deep structural inequalities within higher education systems, particularly in contexts with uneven digital infrastructure. This paper examines student access, engagement, and learning experiences during emergency online education in Sri Lankan universities. Drawing on qualitative evidence, the analysis focuses on student-reported challenges relating to device access, internet connectivity, learning environments, motivation, and adaptation to digital platforms. The findings reveal that online learning was not experienced uniformly, but shaped by socio-economic conditions, technological access, and prior exposure to digital tools. Students without reliable devices or stable internet connections faced persistent barriers to participation, while others struggled with reduced interaction, concentration difficulties, and declining motivation. These

challenges were not isolated but reflected broader structural inequalities embedded within the higher education system. This paper contributes to ongoing research on digital inequality and student experience by offering a context-sensitive account of emergency online learning in a developing higher education setting. It argues that access to education during crisis conditions cannot be understood solely in terms of availability of online platforms but must consider the material and social conditions that enable meaningful participation.

Keywords: Online learning, digital inequality, student engagement, COVID-19, higher education, Sri Lanka

INTRODUCTION

The COVID-19 pandemic produced an unprecedented disruption to higher education, compelling universities across the world to replace face-to-face teaching with online delivery in an exceptionally short period. Although this transition enabled educational activities to continue during prolonged campus closures, it also exposed substantial inequalities in students' ability to access and participate in digital learning. These inequalities were particularly evident in low- and middle-income countries, where limitations in digital infrastructure, household resources, and internet connectivity created considerable barriers to educational continuity (UNESCO, 2021).

Emergency online learning differed fundamentally from conventional online education. Planned online programmes are typically designed through careful pedagogical planning, investment in digital infrastructure, and staff development over an extended period. During the pandemic, however, universities were required to adopt what has been described as emergency remote teaching, a temporary response implemented under crisis conditions rather than a deliberately designed educational model (Bond et al., 2021). The distinction is important because student experiences during this period were shaped not only by the online mode of delivery itself, but also by the extraordinary circumstances under which teaching and learning occurred. Research conducted during the first year of the pandemic consistently demonstrated that emergency remote teaching was characterised by uneven institutional preparedness, rapid technological adaptation, and considerable variation in students' capacity to engage with learning activities (Bond et al., 2021).

Access to higher education during the pandemic quickly emerged as a question of digital equity rather than simple technological availability. Reliable internet access, ownership of suitable digital devices, digital competence, and the availability of appropriate study environments became essential prerequisites for successful participation in higher education (Ali, 2020; Vishnu et al., 2022; Mhlongo et al., 2023). Students lacking one or more of these

resources encountered significant obstacles that extended beyond academic performance to include reduced engagement, increased stress, and diminished educational opportunities. Recent studies have demonstrated that these challenges disproportionately affected students from lower socio-economic backgrounds, rural communities, and households with limited technological resources, thereby reinforcing existing educational inequalities rather than creating entirely new ones (Adnan & Anwar, 2020; Aristovnik et al., 2020). These observations indicate that digital exclusion should be understood as a multidimensional phenomenon shaped by economic, social, geographical, and institutional factors rather than access to technology alone.

Student engagement also assumed renewed importance during the pandemic. Engagement has long been recognised as a central determinant of learning quality and academic success in higher education. Digital environments, however, require different forms of interaction, communication, and self-regulation compared with conventional classroom teaching. Reduced opportunities for face-to-face discussion, limited informal interaction with peers, and prolonged social isolation altered the nature of students' educational experiences. Research conducted across multiple countries reported declines in motivation, concentration, participation, and satisfaction during emergency online learning, while also identifying considerable variation according to institutional support, digital competence, and individual circumstances (Aristovnik et al., 2020; Aguilera-Hermida et al., 2021; Bond et al., 2021). These findings suggest that meaningful engagement depends upon a combination of technological, pedagogical, and social conditions that cannot be secured through digital platforms alone.

These issues are especially relevant within developing higher education systems where structural inequalities often pre-date periods of crisis. Sri Lankan universities entered the pandemic with varying levels of technological readiness, differing institutional capacities, and uneven student access to digital resources. Consequently, the rapid transition to online learning presented challenges that

extended beyond instructional delivery to encompass wider questions of educational equity, participation, and inclusion. Research has explored these experiences through qualitative investigation of both lecturers and students during the pandemic (Wickramasekara et al., 2026). This paper concentrates exclusively on the student dimension, providing a focused examination of how learners experienced emergency online education under conditions of constrained digital access and significant socio-economic variation.

Unlike many international studies that have relied predominantly on large-scale surveys and quantitative indicators, this paper presents a qualitative account of student experiences grounded in the realities of Sri Lankan higher education. Such an approach permits closer examination of how structural inequalities influenced students' everyday educational experiences, revealing the interaction between technological limitations, home environments, motivation, and participation. Rather than treating online learning as a uniform educational experience, attention is directed towards the diversity of student circumstances that shaped engagement throughout the pandemic.

This paper therefore examines student access, engagement, and educational inequality during emergency online learning in Sri Lankan higher education. Particular attention is given to barriers relating to digital access, internet connectivity, learning environments, and sustained participation. Through this focused analysis, evidence is presented that access to online education cannot be evaluated solely through institutional provision of digital platforms. Meaningful participation depends upon the wider social, economic, and technological conditions within which students attempt to learn. Understanding these conditions remains essential for strengthening educational resilience and promoting greater equity in future responses to large-scale disruptions.

METHODOLOGY

Research Design

A qualitative research design was adopted because the primary objective was to explore participants' experiences, perceptions, and interpretations of emergency online learning within their own educational and social contexts. Qualitative inquiry is particularly appropriate when little is known about a phenomenon or when an in-depth understanding of lived experience is required (Creswell & Poth, 2018).

The unprecedented nature of the pandemic meant that students encountered circumstances that had not

previously been experienced within higher education. Consequently, a qualitative approach provided the flexibility needed to capture detailed accounts of how students navigated technological barriers, changes in learning practices, and broader challenges associated with emergency online education.

Study Context

The research was undertaken within the Sri Lankan higher education sector during the COVID-19 pandemic, when universities were required to suspend conventional face-to-face teaching and rapidly implement online learning. This period represented an exceptional educational context characterised by prolonged campus closures, movement restrictions, and widespread dependence on digital technologies for educational continuity.

The sudden transition created significant demands on both institutions and students. Although online teaching enabled learning to continue, access to educational opportunities varied considerably according to students' technological resources, internet connectivity, and home learning environments. These contextual factors formed an important backdrop to the experiences explored in this paper.

Participants and Data Collection

Data were generated through semi-structured interviews. Semi-structured interviewing allowed participants to describe their experiences in detail while ensuring that discussion remained focused on the study objectives. This approach also provided opportunities for participants to elaborate on issues that they considered particularly significant during their transition to online learning.

For the present paper, only data relating to students' experiences were considered. Responses concerning lecturers, institutional practices unrelated to student experience, or broader organisational issues were excluded from the analysis unless they directly informed students' access to or engagement with online learning.

Data Analysis

The research employed thematic analysis to identify recurring patterns across participants' accounts. Thematic analysis is widely recognised as an appropriate analytical approach for identifying, organising, and interpreting patterns of meaning within qualitative datasets (Braun & Clarke, 2022). This method facilitated systematic examination of students' experiences while preserving the richness and complexity of individual accounts.

For this paper, themes relating specifically to student access, engagement, participation, digital barriers, learning environments, and adaptation to online learning were examined. The analysis remained grounded in participants' accounts throughout the interpretive process.

Trustworthiness

The credibility of qualitative research depends upon transparency, methodological rigour, and careful interpretation of participants' experiences. Throughout the research, participants were encouraged to provide detailed accounts of their experiences, allowing themes to emerge directly from the interview data rather than being imposed through predetermined assumptions. Maintaining consistency between the research questions, interview process, and thematic analysis strengthened the credibility of the findings.

Analytical rigour was further supported through systematic examination of the interview data and careful comparison of participants' accounts during theme development. The findings presented in this paper therefore represent patterns consistently identified within the original dataset rather than isolated observations.

Ethical Considerations

Ethical approval was obtained from the Ethics Committee of the University of East London before data collection. Participation was voluntary, and informed consent was obtained from all participants before interviews commenced. Participants were informed of the purpose of the study, their right to withdraw at any stage, and the measures taken to protect confidentiality and anonymity. Personal identifiers were removed during transcription and analysis to safeguard participants' identities. This paper reports only findings relevant to the stated research objective and maintains the confidentiality of all participants.

RESULTS

Student Access, Engagement, and Inequality During Emergency Online Learning

Analysis of the interview data identified four closely related themes that characterised students' experiences of emergency online learning during the COVID-19 pandemic. These themes illustrate how access to technology, household circumstances, learning engagement, and adaptation to digital education shaped students' participation in higher education during a period of unprecedented disruption.

Access to Digital Devices and Internet Connectivity

Access to appropriate digital technology emerged as one of the most significant determinants of students' ability to participate in online learning. Participants consistently described difficulties associated with obtaining suitable devices for academic work. Although some students were able to access laptops or desktop computers, others relied primarily on smartphones, which limited participation in synchronous classes, completion of assignments, and access to learning resources.

Internet connectivity presented an equally important challenge. Students reported frequent interruptions caused by unstable network connections, inconsistent mobile data coverage, and insufficient internet bandwidth during live teaching sessions. Connectivity problems affected attendance, disrupted communication with lecturers, and reduced opportunities to participate in online discussions. Several participants explained that internet failures often occurred during lectures or assessments, creating considerable anxiety regarding academic performance.

The findings indicate that technological barriers were not isolated incidents but recurring features of students' educational experiences throughout the transition to online learning. Access to higher education therefore depended not only on institutional provision of virtual learning platforms but also on students' ability to secure reliable technological resources within their own environments (Table 1).

Table 1: Principal technological barriers affecting students' participation in emergency online learning

Theme	Description	Illustrative interpretation
Limited access to suitable devices	Reliance on smartphones or shared devices	Reduced ability to complete academic tasks effectively
Poor internet connectivity	Frequent interruptions during online classes	Inconsistent participation and communication

Cost of internet access	Financial burden associated with mobile data	Restricted access to teaching sessions and learning materials
Technical disruptions	Platform and connectivity failures	Interrupted learning continuity

Home Learning Environments and Educational Participation

Students' experiences demonstrated that learning environments extended beyond access to technology. Household circumstances substantially influenced participation in online education. Participants described difficulties associated with limited study space, household noise, competing family responsibilities, and other domestic interruptions that affected concentration during online classes.

Several students indicated that studying from home required continuous adaptation to environments that had not previously been intended for formal education. These circumstances reduced opportunities for sustained academic engagement and often disrupted scheduled learning activities. Home environments therefore became an important factor influencing students' educational participation throughout the pandemic.

The findings also suggest that household circumstances interacted with technological limitations. Students experiencing poor internet connectivity frequently encountered additional challenges associated with unsuitable study environments, illustrating how multiple disadvantages accumulated simultaneously rather than occurring independently.

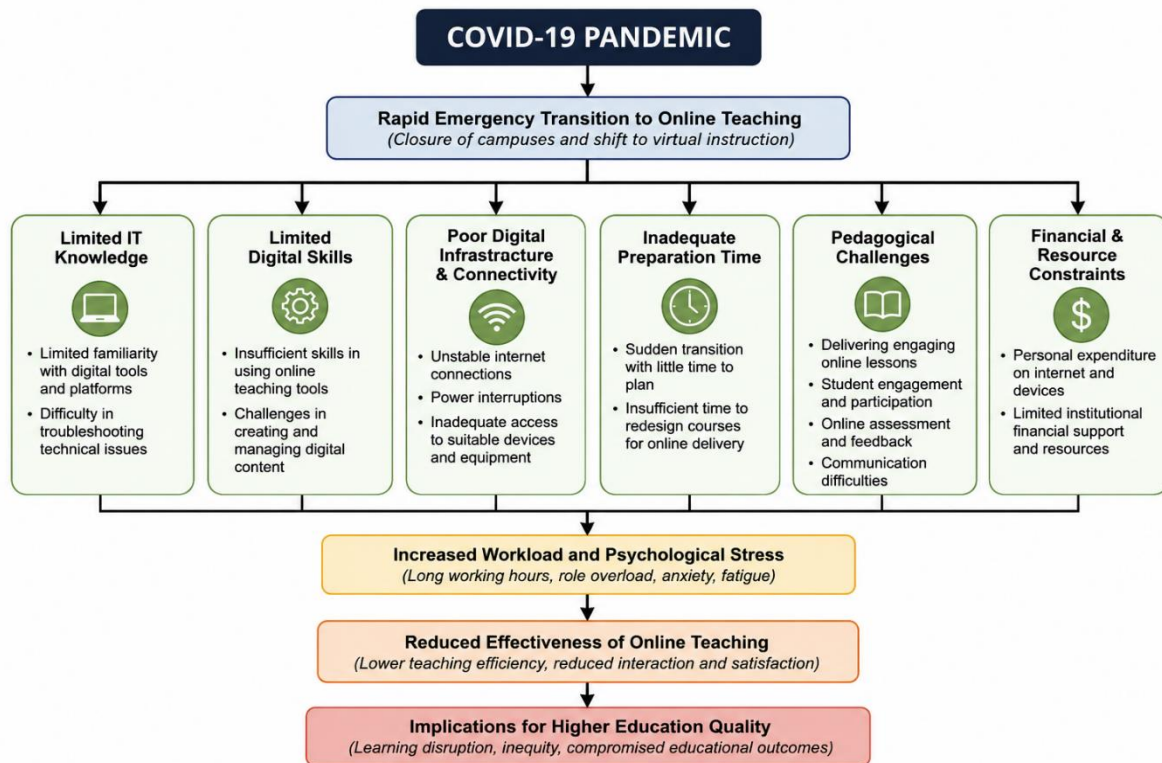
Student Engagement and Motivation

Student engagement declined considerably during prolonged periods of emergency online learning. Participants frequently described reduced motivation, diminished concentration, and difficulties maintaining consistent participation throughout the academic year. Although students recognised the necessity of online learning during the pandemic, many reported that prolonged screen time, reduced interaction, and limited opportunities for collaborative learning negatively affected their educational experience.

Interaction with lecturers and fellow students was identified as an important component of engagement. Participants explained that online environments limited opportunities for spontaneous discussion, immediate clarification of academic questions, and informal peer support that normally occurred within conventional classroom settings. These changes contributed to feelings of isolation and reduced enthusiasm for learning.

Students also described challenges maintaining structured study routines. The absence of physical attendance requirements and campus-based learning environments altered daily learning habits, making sustained engagement increasingly difficult as online learning continued (Figure 1).

Figure 1: Factors influencing student engagement during emergency online learning



Adaptation to Emergency Online Learning

Despite considerable challenges, participants demonstrated varying levels of adaptation throughout the transition to online education. Some students reported gradual improvement in their confidence using digital platforms as familiarity increased. Others continued to experience difficulties throughout the study period, particularly where technological barriers remained unresolved.

Adaptation was influenced by several interconnected factors. Students with previous experience using digital technologies generally adjusted more quickly to online learning than those with limited technological confidence. Access to reliable devices and internet connectivity also facilitated smoother adaptation. Conversely, students experiencing persistent technological difficulties reported continued frustration and reduced participation throughout the online learning period.

The findings indicate that adaptation should not be understood solely as an individual characteristic. Institutional support, technological resources, and household circumstances collectively influenced students' ability to engage successfully with emergency online education.

Summary of Findings

The findings reveal that students' experiences of emergency online learning were shaped through the interaction of technological, educational, and socio-economic factors. Access to appropriate devices, reliable internet connectivity, supportive learning environments, and opportunities for meaningful engagement all influenced educational participation during the pandemic. Rather than functioning as separate challenges, these factors frequently reinforced one another, creating cumulative barriers for many students.

Evidence presented in this research suggests that emergency online learning exposed inequalities that were already present within higher education rather than creating entirely new forms of disadvantage. Students with greater technological and household resources adapted more readily, whereas those facing multiple constraints experienced considerably greater obstacles to participation. These findings provide the foundation for the discussion that follows, where the implications of these experiences are considered in relation to digital inequality, student engagement, and educational resilience.

DISCUSSION

The findings demonstrate that students' experiences of emergency online learning in Sri Lankan higher education were shaped by a complex interaction between technological access, learning environments and wider socio-economic inequalities. Rather than representing a

uniform educational experience, the transition to online learning exposed substantial differences in students' capacity to participate effectively in higher education. Access to suitable digital devices, reliable internet connectivity and supportive home learning environments emerged as fundamental determinants of engagement, indicating that educational participation during the pandemic depended as much on students' living circumstances as on institutional provision. These findings reinforce the paper's central argument that emergency online learning widened existing educational inequalities rather than affecting all students equally (Development Asia, 2021; Alikhan, 2024).

One of the most significant findings concerns unequal access to digital technologies. Many students encountered difficulties obtaining appropriate devices for online learning, while unstable internet connectivity and the financial cost of mobile data created additional barriers to participation. These technological constraints frequently interrupted attendance at online classes, restricted engagement with learning activities and reduced opportunities for interaction with lecturers and peers. The findings therefore suggest that digital access should be viewed not simply as a technical issue but as an important dimension of educational equity. Students who possessed reliable internet connections and suitable digital equipment were able to participate more consistently in online learning, whereas those with limited technological resources experienced greater disruption to their studies (Alikhan, 2024; Wickramasekara et al., 2026).

The importance of digital access has been recognised internationally throughout the COVID-19 pandemic. Previous studies have consistently shown that unequal access to devices and internet connectivity contributed to widening educational disparities during periods of emergency remote teaching (Bozkurt & Sharma, 2020; Reynolds et al., 2022; Golden et al., 2023). The present study supports these observations while demonstrating how these challenges became particularly acute within the Sri Lankan context, where variations in digital infrastructure and household economic circumstances created additional obstacles to educational participation (Development Asia, 2021; Liyanagunawardena & Williams, 2021). The findings therefore extend existing evidence by illustrating how national infrastructure and socio-economic conditions interact to shape students' opportunities for engagement in higher education.

The home learning environment also emerged as a major influence on students' educational experiences. Unlike traditional campus-based learning, emergency online education transferred responsibility for the learning

environment from universities to individual households. Students described difficulties associated with limited study space, household distractions and competing family responsibilities, all of which affected concentration and participation. These findings suggest that educational engagement cannot be understood solely through institutional factors, as learning conditions outside the university became equally important determinants of academic participation during the pandemic. Students with access to quiet study environments were generally better positioned to participate in online learning than those studying in crowded or disruptive home settings (Medaille & Usinger, 2020; Díaz et al., 2021; Keser et al., 2023).

The findings further indicate that technological and environmental challenges had important consequences for student engagement. Reduced participation in online discussions, inconsistent attendance and limited interaction with lecturers and classmates were frequently associated with barriers beyond students' direct control. This observation is important because it challenges interpretations that attribute disengagement primarily to learner motivation. Instead, the evidence suggests that engagement during emergency online learning reflected the interaction between individual motivation and structural constraints. Students who encountered persistent technological disruptions or unsuitable learning environments often experienced reduced opportunities to contribute actively to teaching sessions despite their willingness to participate. Consequently, measures of student engagement during periods of emergency online learning should be interpreted within the broader context of digital inequality and unequal access to learning resources rather than solely through behavioural indicators (Oana & Mitrea, 2021; Kennedy et al., 2022; van de Werfhorst et al., 2022).

Another important finding concerns the cumulative nature of educational disadvantage. Technological barriers, financial constraints and challenging home environments rarely occurred in isolation. Rather, many students experienced several of these difficulties simultaneously, creating interconnected obstacles that affected learning continuity, academic confidence and educational participation. This cumulative pattern suggests that educational inequality during the pandemic was multidimensional. Students facing multiple disadvantages were not merely exposed to isolated interruptions but experienced sustained barriers that limited their ability to benefit from online education. The findings therefore support wider discussions of the digital divide as a broader socio-economic phenomenon that encompasses access to technology, learning opportunities and educational outcomes, rather than simply ownership of digital devices

(Azionya, 2021; Mirazchiyski & Černe, 2023; Mwansa et al., 2025).

Despite these considerable challenges, the study also demonstrates that many students gradually adapted to emergency online learning. Participants described developing greater confidence in using digital platforms, establishing new study routines and seeking support from peers and lecturers where possible. These adaptive responses illustrate that resilience emerged alongside adversity. Nevertheless, the findings suggest that individual resilience should not be regarded as a substitute for institutional responsibility. Students' ability to adapt was influenced by the resources available to them, meaning that resilience itself was unequally distributed. Consequently, future strategies for digital education should prioritise equitable access to technological resources, targeted student support and inclusive learning environments to reduce inequalities that become particularly visible during periods of educational disruption (Eden et al., 2024; Kulal et al., 2024; Celbis, 2025).

PRACTICAL IMPLICATIONS

The findings of this study have important implications for universities, policymakers and higher education leaders seeking to strengthen the resilience and inclusiveness of digital education. Although the rapid transition to online learning enabled educational activities to continue during the COVID-19 pandemic, the evidence demonstrates that continuity alone was insufficient to ensure equitable learning opportunities. Future digital learning strategies should therefore prioritise student access, engagement and educational equity alongside technological development.

A primary implication concerns the need to reduce digital inequalities among university students. Access to reliable internet connectivity, appropriate digital devices and affordable online services should be regarded as essential components of higher education rather than optional resources. Universities should work collaboratively with government agencies, telecommunications providers and other stakeholders to improve digital accessibility, particularly for students from economically disadvantaged households and geographically underserved communities. Institutional initiatives such as device loan schemes, subsidised internet packages and expanded campus digital facilities may help reduce barriers to participation during both routine teaching and future emergencies.

The findings also highlight the importance of adopting student-centred approaches to online learning. Student engagement was influenced not only by access to technology but also by the quality of interaction with lecturers, opportunities for collaborative learning and the

flexibility of teaching practices. Consequently, universities should encourage the design of online learning environments that promote active participation, timely feedback and meaningful communication. Flexible learning resources, recorded lectures and asynchronous learning opportunities may further support students whose participation is affected by technological or household constraints. These measures can improve inclusivity without compromising academic standards.

Another important implication relates to institutional preparedness for future disruptions. The pandemic demonstrated that higher education institutions require comprehensive contingency plans capable of sustaining learning under rapidly changing circumstances. Such plans should extend beyond technological infrastructure to include policies addressing student welfare, digital inclusion, academic support and communication strategies. Emergency preparedness should therefore become an integral component of institutional planning rather than a temporary response to exceptional events. Lessons learned from the COVID-19 pandemic provide an opportunity for universities to strengthen their capacity to maintain equitable educational provision during future public health emergencies, natural disasters or other large-scale disruptions.

Finally, the study underscores the need for national policies that recognise digital access as an important determinant of educational opportunity. Investments in broadband infrastructure, affordable internet services and national digital literacy programmes have implications that extend beyond higher education to wider social and economic development. Strengthening these foundations will improve the capacity of higher education institutions to implement effective digital learning while reducing inequalities that became increasingly apparent during the pandemic. The experience of Sri Lankan higher education therefore illustrates that achieving equitable online education requires coordinated action at institutional, governmental and societal levels rather than isolated technological interventions.

STRENGTHS AND LIMITATIONS

This study contributes to the growing body of research examining student experiences of emergency online learning by providing evidence from the Sri Lankan higher education context, an area that has received comparatively limited attention within the international literature. The qualitative approach enabled an in-depth exploration of students' experiences, allowing participants to describe the technological, social and environmental factors that influenced their engagement with online learning during the COVID-19 pandemic. The findings provide contextually

grounded insights into how digital inequality, home learning environments and institutional responses shaped educational participation during a period of unprecedented disruption.

Several limitations should also be acknowledged. The study was conducted within a specific national and institutional context, and the findings may not be directly transferable to higher education systems with different technological infrastructures, educational policies or socio-economic conditions. As a qualitative investigation, the research sought to develop a rich understanding of participants' experiences rather than generate statistically generalisable conclusions. Furthermore, the study reflects students' experiences during an exceptional period of emergency remote teaching, which differed substantially from intentionally planned online education. These contextual factors should be considered when interpreting the findings and applying them to other settings.

Future research could build upon these findings by undertaking comparative studies across universities, regions and countries to examine how different institutional and national contexts influence student engagement in digital learning. Longitudinal research would also be valuable in exploring whether the inequalities identified during the pandemic continue to influence educational outcomes as universities expand blended and online learning beyond the emergency period. Quantitative investigations could further examine the relative contribution of technological access, socio-economic status and learning environments to student engagement and academic performance, thereby complementing the qualitative insights presented in this study.

CONCLUSION

Emergency online learning enabled higher education in Sri Lanka to continue during the COVID-19 pandemic, but the findings demonstrate that students' experiences varied considerably according to their access to digital resources, home learning environments and wider socio-economic circumstances. Educational participation was shaped by interconnected technological, financial and environmental factors that influenced students' ability to engage consistently with online learning. Consequently, the transition to emergency online education exposed and, in many cases, intensified existing educational inequalities rather than creating a uniform learning experience.

The study highlights that equitable access to higher education cannot be achieved solely through the provision of online teaching platforms. Meaningful engagement

requires reliable digital infrastructure, affordable internet access, supportive learning environments and institutional strategies that recognise the diverse circumstances in which students learn. Students demonstrated considerable resilience and adaptability throughout the pandemic; however, their capacity to adjust was strongly influenced by the resources available to them. Sustainable digital education should therefore be founded on principles of inclusion and equity rather than technological innovation alone.

The Sri Lankan experience provides valuable lessons for higher education institutions seeking to strengthen preparedness for future disruptions. Universities and policymakers should adopt integrated approaches that address digital access, student engagement and educational inequality simultaneously. Such strategies will not only improve resilience during future emergencies but also contribute to more inclusive and accessible higher education systems capable of supporting diverse student populations in an increasingly digital educational landscape.

AUTHOR CONTRIBUTION

All authors played a substantive role in shaping this study and developing the manuscript. C.W. conceptualised the work and designed the overall study framework. Data analysis, theme development and validation of findings were carried out collaboratively, with each author contributing to the discussions that informed the final results. N.A.O. and K.O.O. prepared the initial manuscript draft, covering the introduction, methods, results and discussion. Co-authors strengthened the analysis, offered detailed revisions and enhanced the clarity and coherence of the final document. Every author reviewed the complete manuscript, approved the final version and accepted responsibility for the integrity of the work.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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REFERENCES

1. Adnan, M., & Anwar, K. (2020). Online learning amid the COVID-19 pandemic: Students' perspectives. *Journal of Pedagogical Sociology and Psychology*, 2(1), 45–51. <https://doi.org/10.33902/JSPS.2020261309>
2. Aguilera-Hermida, A. P., Quiroga-Garza, A., Gómez-Mendoza, S., Del Río Villanueva, C. A., Avolio Alecchi, B., & Avci, D. (2021). Comparison of students' use and acceptance of emergency online learning due to COVID-19 in the USA, Mexico, Peru, and Turkey. *Education and information technologies*, 26(6), 6823–6845.
3. Ali, W. (2020). Online and remote learning in higher education institutes: A necessity in light of COVID-19 pandemic. *Higher education studies*, 10(3), 16–25.
4. Alikhan, S., & Sritharan, T. (2024). Online learning challenges encountered by university students amidst the Covid-19 pandemic: A systematic review of digital divide perspective. *Journal of the University Librarians Association of Sri Lanka*, 27(2). <https://doi.org/10.4038/jula.v27i2.8092>
5. Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability*, 12(20), 8438. <https://doi.org/10.3390/su12208438>
6. Azionya, C. M., & Nhedzi, A. (2021). The digital divide and higher education challenge with emergency online learning: Analysis of tweets in the wake of the COVID-19 lockdown. *Turkish Online Journal of Distance Education*, 22(4), 164–182. <https://doi.org/10.17718/tojde.1002822>
7. Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2021). Emergency remote teaching in higher education: Mapping the first global online semester. *International Journal of Educational Technology in Higher Education*, 18, 50. <https://doi.org/10.1186/s41239-021-00282-x> (Springer)
8. Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian journal of distance education*, 15(1), i–vi. <https://www.asianjde.com/ojs/index.php/AsianJDE/article/download/447/297>
9. Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE.
10. Celbis, O., van de Laar, M., & Volante, L. (2025). Resilience in higher education during the COVID-19 pandemic: A scoping literature review with implications for evidence-informed policymaking. *International Journal of Educational Research Open*, 8, 100392. <https://doi.org/10.1016/j.ijedro.2024.100392>
11. Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE.
12. Díaz, M. J.S., (2021). Emergency remote education, family support and the digital divide in the context of the COVID-19 lockdown. *International Journal of Environmental Research and Public Health*, 18(15), 7956. <https://doi.org/10.3390/ijerph18157956>
13. Eden, C. A., Chisom, O. N., & Adeniyi, I. S. (2024). Harnessing technology integration in education: Strategies for enhancing learning outcomes and equity. *World Journal of Advanced Engineering Technology and Sciences*, 11(2), 001–008.
14. Golden, A. R., Srisarajivakul, E. N., Hasselle, A. J., Pfund, R. A., & Knox, J. (2023). What was a gap is now a chasm: Remote schooling, the digital divide, and educational inequities resulting from the COVID-19 pandemic. *Current Opinion in Psychology*, 52, 101632.
15. Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause review*, 27(1), 1–9. https://doi.org/10.1163/9789004702813_021
16. Kennedy, A. I., Mejía-Rodríguez, A. M., & Strello, A. (2022). Inequality in remote learning quality during COVID-19: student perspectives and mitigating factors. *Large-scale assessments in education*, 10(1), 29.
17. Keser Aschenberger, F., Radinger, G., Bracht, S., Ipser, C., & Oppl, S. (2023). Physical home learning environments for digitally-supported learning in academic continuing education during COVID-19 pandemic. *Learning Environments Research*, 26(1), 97–128.
18. Kulal, A., Dinesh, S., Abhishek, N., & Anchan, A. (2024). Digital access and learning outcomes: a study of equity and inclusivity in distance education. *International Journal of Educational Management*, 38(5), 1391–1423.
19. Liyanagunawardena, T., & Williams, S. A. (2021). Emergency remote education: experience from Sri

- Lanka during Covid-19. *Asian Journal of Distance Education*, 16(1), 207-229.
20. Mathrani, A., Sarvesh, T., & Umer, R. (2022). Digital divide framework: online learning in developing countries during the COVID-19 lockdown. *Globalisation, Societies and Education*, 20(5), 625-640.
<https://doi.org/10.1080/14767724.2021.1981253>
 21. Medaille, A., & Usinger, J. (2020). Quiet Students' Experiences with the Physical, Pedagogical, and Psychosocial Aspects of the Classroom Environment. *Educational Research: Theory and Practice*, 31(2), 41-55.
 22. Mhlongo, S., Mbatha, K., Ramatsetse, B., & Dlamini, R. (2023). Challenges, opportunities, and prospects of adopting and using smart digital technologies in learning environments: An iterative review. *Heliyon*, 9(6).
 23. Mirazchiyski, P. V., & Černe, K. (2023). Digital divide and equality of opportunity. In *Handbook of equality of opportunity* (pp. 1-28). Cham: Springer International Publishing.
 24. Mwansa, G., Ngandu, M. R., & Mkwambi, Z. (2025). Bridging the digital divide: exploring the challenges and solutions for digital exclusion in rural South Africa. *Discover Global Society*, 3(1), 54.
 25. Oana, L. U. P., & Mitrea, E. C. (2021). Online learning during the pandemic: Assessing disparities in student engagement in higher education. *Journal of Pedagogy*, 1, 31-50.
 26. Reynolds, R., Aromi, J., McGowan, C., & Paris, B. (2022). Digital divide, critical-, and crisis-informatics perspectives on K-12 emergency remote teaching during the pandemic. *Journal of the Association for Information Science and Technology*, 73(12), 1665-1680.
 27. UNESCO. (2021). *Reimagining our futures together: A new social contract for education*. UNESCO. Available at: <https://www.unesco.org/en/articles/reimagining-our-futures-together-new-social-contract-education>, [Accessed: 22/01/2026]
 28. Van De Werfhorst, H. G., Kessenich, E., & Geven, S. (2022). The digital divide in online education: Inequality in digital readiness of students and schools. *Computers and education open*, 3, 100100.
<https://doi.org/10.1016/j.cao.2022.100100>
 29. Vishnu, S., Sathyan, A. R., Sam, A. S., Radhakrishnan, A., Ragavan, S. O., Kandathil, J. V., & Funk, C. (2022). Digital competence of higher education learners in the context of COVID-19 triggered online learning. *Social sciences & humanities open*, 6(1), 100320.
 30. Wickramasekara, C., Obohewemu, K. O., Oguguo, C., Akinmade, O. V., Ituah, F., Haruna, D. O., Mariere, U. I., Nuka-Nwikpasi, K., Jannat, S. A., and Aririsukwu, O. C., (2026). Pedagogical Disruption and Lecturer Preparedness During Emergency Online Teaching: Evidence from Sri Lankan Higher Education. *Journal of Social Sciences and Humanities Research Fundamentals*, 6(02), 6-13.
<https://doi.org/10.55640/jsshrf-06-02-02>