



Unlocking High-Quality Education: A Comparative Analysis of Online versus Traditional Teaching Modalities in a Higher Education Institution in Milagro, Ecuador

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Abstract

Introduction: Nowadays, the quality of teaching is a key and decisive factor in the field of education. Technological innovations have transformed teaching and learning, sparking debates among the academic community about the vision of online learning and, in this case, whether it achieves the same level as face-to-face learning.

Objective: This study aimed to compare the effectiveness of online teaching in relation to traditional education in supporting students' academic success and English language proficiency.

Methodology: This study employed an applied quantitative, quasi-experimental research design to compare the effects of different teaching modalities. The sample consisted of 348

undergraduate students enrolled in an English Language Teaching (ELT) programme, who were non-randomly assigned across eight distinct experimental groups. Data were collected using a standardised achievement test administered to all participants. For the statistical analysis of group differences, a one-way Analysis of Variance (ANOVA) was applied, with a significance level of 0.05.

Results: Both online and traditional groups achieved equal academic performance, indicating that the modalities used do not affect performance and that equal opportunities are provided to all students.

Key recommendation: It is essential to examine the pedagogical frameworks that shape learning experiences at different levels, and their implications for student participation, knowledge retention, and long-term progress. These factors are vital for both educators and policymakers focused on improving instructional strategies.

Innovative contribution: The study integrates cognitive processes with observable behaviours by examining academic performance across various learning strategies. This contributes to the development of effective teaching strategies adapted to specific contexts by providing them with solid evidence.

Conclusion: Advances in technology have transformed education by providing numerous forms of learning that extend beyond the traditional teaching framework.

Keywords: online courses, quality of education, learning methods, higher education, new technology

Introduction

Higher education institutions are constantly striving for academic excellence, and this is increasing even more with the rapid emergence of new digital tools that they can implement to develop student learning and provide the necessary skills demanded by the labour market. This creates the need to restructure the curricular and pedagogical educational model established in the higher education institution. With the integration of artificial intelligence, this, in particular, is incorporated to adapt to new innovative methodologies; this allows for the renewal of traditional paradigms in teaching and learning (Means, et al. 2021)

Due to the increased demand for developing new solutions in the scalable distance education context, driven by COVID-19 reasons, which has made it easier to adopt and opt for new hybrid and online educational methods. The aforementioned models have been characterised by being flexible and inclusive through personalised learning according to the pedagogical needs, cultural contexts and learning preferences of the student. The rise of online education has also sparked scholarly discourse regarding its efficacy and academic accuracy in comparison to in-person instruction. While some argue that digital learning can match or even surpass traditional methods, empirical evidence supports its effectiveness. Meta-analyses suggest that online learners often achieve better outcomes than their students in the classroom, attributed to self-paced progression and adaptive feedback mechanisms (Means et al., 2013).

On the other hand, other research highlights challenges such as reduced student participation, fewer opportunities for social interaction, and concerns about the quality of teaching. The absence or limited real-time interactions in asynchronous learning environments can hinder the development of fundamental social skills such as collaboration, communication, and problem-solving (Martin et al., 2020). As online education continues to evolve, analysing strategic pedagogical innovations is essential to ensure that it not only improves accessibility and flexibility but also maintains the quality of teaching while facilitating academic performance in diverse learning contexts.

Traditional education: the gold standard?

Traditional education has its advantages: organised environments and participation channels that facilitate understanding and the acquisition of skills, as well as fostering self-discipline, responsibility, and time management. Empirical studies indicate that structured educational environments help to improve academic engagement, minimising distractions and facilitating the understanding of guidelines. In face-to-face teaching, educators can adapt their interventions through direct observation of students, providing individualised support. In addition, traditional classrooms foster meaningful social interactions that encourage the development of socioemotional skills, integrating the dimensions of cognitive, social, and academic learning.

Technological advances have significantly transformed education, challenging traditional models and facilitating new methods of digital teaching. While online education, mobile learning, and artificial intelligence tutoring are expanding, face-to-face classrooms remain crucial, especially for students with limited digital access (Ramírez & Cuenca, 2021). Research comparing both models showed mixed results; the quality of teaching and student support are critical in all educational settings. Consequently, traditional education must evolve, while online formats have yet to establish comprehensive academic standards and a commitment to education.

Online education: opportunities and challenges

The growth of online education has facilitated personalised and flexible learning. Online education offers advantages such as temporal and spatial flexibility, as it adapts to the diverse needs of students. This flexibility enables students to access educational materials at their convenience and in various locations. Online platforms and digital resources can reach a broader demographic, including non-traditional students who face geographical or economic challenges (Allen & Seaman, 2017). This flexibility enhances accessibility for learners who manage work, have family responsibilities, or face physical or mental disabilities.

Virtual learning environments are designed to support a constructivist methodology, allowing for learning paths tailored to the learning styles and goals of each student. The retrieval of online diploma components responds to a personal requirement, allowing students to face, of their own free will, the content that is most challenging in order to improve their understanding and mastery of the required skills. With regard to adaptive learning courses, these new technologies use data analysis and artificial intelligence to alter the level of difficulty of the

courses in real time and personalise comments, thus ensuring support at the right time for autonomous learning (Pane et al., 2017).

The self-paced nature of online education fosters independent learning skills, which are essential for lifelong learning and professional development. As students take responsibility for managing their own learning schedules, they develop relevant skills such as time management, self-discipline and goal setting (Zimmerman & Schunk, 2011). By fostering autonomy and adaptability, online education can not only improve academic performance but also equip learners with essential skills for lifelong learning and professional growth in an increasingly digital world.

Despite the opportunities and potential of online education, the effectiveness of this learning modality is not without challenges, particularly in relation to infrastructure, educators' skills, students' socioemotional state of mind and their ability to facilitate the achievement of academic performance and curricular standards. One of the critical factors influencing the effectiveness of online education is the availability of a robust technological infrastructure. Technical problems and the digital divide continue to be significant barriers to effective online education, particularly for students in rural and low-income communities across different countries (Selwyn, 2011). Many students from disadvantaged backgrounds may lack reliable internet access, suitable digital devices or sufficient digital skills to navigate online learning effectively. For example, in rural areas of Ecuador and Peru, limited infrastructure and high connectivity costs exclude large parts of the population from educational opportunities.

Online education offers significant opportunities, but its effectiveness is meeting considerable resistance, which can be summarised in the areas of teacher training, the socioemotional well-being of students and the comparison of student performance with established benchmarks. The existence of a technological infrastructure within a clearly diverse educational framework represents one of the main challenges. The persistent shortage of technological resources, combined with the phenomenon known as the digital divide, renders online education ineffective for a considerable segment of the rural and low-income populations in most countries (Selwyn, 2011). Students living in rural areas face obstacles such as a lack of internet connectivity, insufficient devices and a lack of digital resources, all of which impede their ability to participate meaningfully in online education.

According to a study carried out by the Economic Commission for Latin America and the Caribbean (ELAC) (2020), it was found that around 46% of rural households in the region do not have internet access, compared to just 10% of urban households. Without intervention, this gap risks perpetuating systemic inequities for students who could most benefit from online education but face disproportionately unequal barriers to participation and academic achievement. Access to technology, stable internet connectivity, and the internet itself are fundamental prerequisites for effective online learning; their lack, in the context of inclusive and vertical educational excellence, constrains the scope.

The effectiveness of online education depends largely on the quality of the teaching design and the digital skills of the teachers. Poorly designed courses that rely solely on the passive delivery of content, such as recorded lectures and static readings, may not engage students or promote deep learning. Educators' competence in digital literacy is crucial for effectively integrating

technology into the curriculum and creating learning spaces that promote engaging virtual interactions and highly reliable assessment methods. Research indicates that well-designed online courses that incorporate interactive and collaborative elements can produce learning outcomes comparable to those of traditional environments (Garrison & Vaughan, 2008).

Digital literacy encompasses a deep understanding and mastery of how to effectively utilise technological tools (e.g., content creation software, learning management systems, gamification, simulators, augmented reality, and artificial intelligence) to enhance active participation, critical thinking, and collaborative problem-solving. Institutions that invest in professional development and infrastructure are better positioned to provide high-quality education, regardless of the learning modality (Allen & Seaman, 2017). As online education continues to evolve, ongoing teacher training will be essential to maximise its potential to effectively support students in achieving academic success and content management.

Online education presents challenges related to the emotional state of students, such as isolation and low motivation, particularly among younger students who require routines and constant supervision. Unlike face-to-face classes, the digital environment demands more autonomy and internal motivation. In addition, the spontaneous interaction that helps develop important socioemotional skills is lost. To counteract this, it is recommended to include interactive and personalised experiences with the active presence of the teacher. Research shows that the use of forums, live classes, group work and tutorials improves participation and learning (Richardson, et al., 2017). Without adequate support and clear objectives, students tend to become demotivated and struggle more to retain what they have learned.

The broad academic debate around the effectiveness of online education centres mainly centres on its capacity to achieve high academic standards and guarantee the reliability of academic performance evaluation. The transition from traditional face-to-face exams to digital assessment platforms has raised significant concerns regarding knowledge retention, academic integrity, the validity of remote assessment environments and the effectiveness of alternative digital assessment tools (Dee & Jacob, 2012).

In light of these challenges, higher education institutions will have to incorporate assessment frameworks that incorporate problem-based learning, collaborative online discussions, and monitoring technology that help minimise the risks associated with academic dishonesty, while ensuring the reliability of the assessment. However, as the digital transformation of education progresses, the need for empirical research to examine its impact on student performance becomes increasingly critical.

Study Hypothesis

In this study, the following hypothesis was tested:

Ho: There is no statistically significant difference in students' academic performance between online and traditional teaching modalities.

Hypothesis justification: This hypothesis guided the quasi-experimental analysis and aimed to determine whether both learning environments could produce comparable academic

outcomes. Martin et al. (2020) emphasise that empirical studies are essential for identifying best practices that maintain rigorous academic standards and foster the development of sound, equitable assessment methodologies in online education. Through continuous evaluation and improvement of online education, institutions can refine their pedagogical approaches, strengthen curriculum development, and implement policies that ensure online education remains a credible and academically rigorous learning option.

Methodology

This research applied a quasi-experimental quantitative group design in order to examine differences in academic achievement between online and traditional classroom instruction. The quasi-experimental framework was selected for its ecological validity in educational research contexts where random assignment proves impractical due to institutional constraints. This design accommodates the complexities of higher education environments while maintaining the authentic learning contexts of both comparison groups, where learner demographics, instructional approaches, and institutional factors collectively influence outcomes. By systematically evaluating the relative efficacy of these instructional modalities, the study generates actionable empirical evidence to inform: pedagogical decision-making, curriculum development, and institutional policy formulation in higher education. The results provide key information to all stakeholders looking to develop teaching methodologies and the quality of education, regardless of the mode of delivery.

This programme focuses on the teaching of (EFL) English as a Foreign Language, with a strong emphasis on teaching methods and language acquisition techniques. To ensure comparability between teaching modalities, participants were evenly distributed between online teaching (n = 174) and traditional face-to-face teaching (n = 174). The equitable distribution of students between both modalities and academic levels reinforces the validity of the study, allowing for rigorous examination. Table 1 shows the detailed distribution taking into account the teaching modality and the semester.

The sample for this study consisted of 348 university students enrolled on the English Language Development course of the National and Foreign Language Teaching Programme, during their fourth first-semester cohorts, at a public higher education institution in Milagro, Ecuador. This programme focuses on the teaching of English as a Foreign Language, with a strong emphasis on teaching methods and language acquisition techniques. To ensure comparability between teaching modalities, participants were evenly distributed between online teaching (n = 174) and traditional face-to-face teaching (n = 174). The students were also classified into eight groups, and each semester one group was assigned to online learning and another to traditional face-to-face learning. The equitable distribution of students between both modalities and academic levels reinforces the validity of the study, allowing for rigorous examination. Table 1 shows the detailed distribution taking into account the teaching modality and the semester.

Table 1. *Distribution of the sample*

Groups	Semesters	Mode of study	Participants
Group 1	First	Online	52
Group 2		Face-to-face	52
Group 3	Second	Online	39
Group 4		Face-to-face	39
Group 5	Third	Online	39
Group 6		Face-to-face	39
Group 7	Fourth	Online	44
Group 8		Face-to-face	44
Total			348

The study was conducted over a single academic term, which lasted approximately five months. Both teaching study modalities followed the same curriculum, covering the same academic content to achieve the linguistic competence planned at the beginning of the semester, in accordance with the standards of the CEFR (Common European Framework of Reference for Languages). The didactic design of the curriculum was structured to facilitate the development of basic language skills (listening, reading, writing and speaking), while maintaining pedagogical coherence between the two modalities. In the traditional classroom modality, students attended four hours of face-to-face English classes, which focused on developing receptive skills (reading and listening) and reinforcing grammatical structures. These sessions were complemented by an additional two hours, dedicated to the increasing of productive skills (listening and writing), using communicative and composition-based activities.

In contrast, the online modality used synchronous and asynchronous teaching classes. The six hours of instruction were divided into two asynchronous hours for self-study, where students completed practical exercises, tasks and projects at their own pace through digital platforms with the purpose to improve the receptive skills. The last four hours were conducted as synchronous online sessions led by the teacher, aimed at developing students' productive language skills and facilitating real-time interaction and communication. In these sessions the students had the opportunity to practice their writing and speaking skills, the teacher provided formative feedback. This kind of hybrid educational model provide flexibility in scheduling and keep the academic rigor to protect the quality of education and outcomes in both modalities.

The free version of the Michigan English Test (MET), a recognised and standardised international examination aligned with the Common European Framework of Reference for Languages (CEFR), was used as a valid instrument to compare academic performance across different modalities and establish the validity and reliability of the study. The ninety-minute assessment measured three fundamental language skills through an exam consisting of sixty multiple-choice questions. The listening comprehension section, which comprised twenty items, evaluated students' ability to discern both main concepts and details in relation to authentic passages of spoken English. The reading section included twenty questions that assessed literal and inferential comprehension of the participants. The grammar section consisted of twenty questions, assessing comprehension of language principles, including sentence structure, verb forms, and the general accuracy of statements. These robust

psychometric characteristics allowed for the validation of the comparison following an international acceptance assessment procedure.

All students were evaluated under similar conditions using the same validated instruments to assess both academic achievements and language proficiency. Students from the traditional modality completed their test in a supervised computer laboratory, while those in the online modality accessed the same test remotely through a secure platform. This platform had technological features that verified student identity and minimised irregularities during the test. These measures were implemented to reduce differences caused by environmental conditions and ensure a consistent level across both groups.

The test results were carefully compiled and organised using Microsoft Excel to preserve data accuracy and prepare for the comparative analysis. The data was categorised by academic term to facilitate reliable evaluation across different semesters. Additionally, Statistical analysis was conducted using SPSS software, applying a one-way ANOVA to determine whether a significant difference existed in student performance between the online and face-to-face groups, protecting the integrity of the information. Each academic semester was analysed independently, using an alpha level of 0.05 and a 95% confidence interval, in accordance with standard practices in educational research.

Ethical considerations: All research procedures adhered to the ethical principles of confidentiality, voluntary participation, and informed consent. Participants were informed about the academic purpose of the study, and no personal or identifying data were collected. Ethical approval was granted by the Research Ethics Committee of Milagro State University (UNEMI) under resolution OCS-SO-1-2024-No.35, ensuring compliance with institutional and international research standards.

Results

This study focuses on analyzing the effect of digital learning compared to face-to-face teaching, with the aim of detecting any difference in students' academic performance. An ANOVA analysis was carried out on a sample of eight groups of students from different school strata. This method first examined the impact of performance in various educational settings and secondly controlled for other educational background factors. The ANOVA results for each semester cohort are presented in tables 2 to 5. The analysis did not reveal statistically significant differences in academic performance between the two teaching modalities in all the cohorts examined: First semester $F(1.103) = 1.204$; $p < 0.275$; Second semester $F(1.77) = 0.321$; $p < 0.573$; Third semester $F(1.77) = 1.293$; $p < 0.259$; Fourth semester $F(1.87) = 0.357$; $p < 0.552$. The descriptive statistics presented in table 6 show that the average scores of the online and traditional learning groups in all semesters appear comparable, with minimal variation, which reinforces the statistical results of the ANOVA tests.

Table 2: *Group difference by modality, for the first semester cohort*

	Sum of squares	dl	Mean square	F	Sig.
Between groups	199,385	1	199,385	1,204	,275
Within groups	16884,731	102	165,537		

Total	17084,115	103
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The first-semester results indicate no significant difference between the online and face-to-face groups ($p = .275$). This suggests that both modalities produced comparable outcomes in the initial phase of the program, demonstrating that digital and traditional teaching environments offer similar opportunities for early academic success.

Table 3: *Group difference by modality, for the second semester cohort*

	Sum of squares	dl	Mean square	F	Sig.
Between groups	41,654	1	41,654	,321	,573
Within groups	9874,564	76	129,928		
Total	9916,218	77			

In the second semester, the ANOVA result ($p = .573$) again shows no statistically significant difference between groups. This reinforces the stability of learning outcomes across modalities, indicating that consistent academic performance can be achieved regardless of the instructional format.

Table 4: *Group difference by modality, for the third semester cohort*

	Sum of squares	dl	Mean square	F	Sig.
Between groups	184,615	1	184,615	1,293	,259
Within groups	10855,333	76	142,833		
Total	11039,949	77			

The third-semester cohort also reflects no significant performance difference between online and traditional modalities ($p = .259$). The consistency of these results suggests that students adapt effectively to both environments over time, maintaining similar academic standards as they progress through the program.

Table 5: *Group difference by modality, for the fourth semester cohort*

	Sum of squares	dl	Mean square	F	Sig.
Between groups	28,409	1	28,409	,357	,552
Within groups	6837,409	86	79,505		
Total	6865,818	87			

In the fourth semester, the absence of statistically significant differences ($p = .552$) confirms the robustness of both modalities. These results indicate that by the end of the program, both

online and face-to-face instruction lead to comparable levels of achievement, supporting the study's main hypothesis of equivalence in academic performance between the two modalities.

Table 6 *Analysis of variance (ANOVA) on the face-to-face and online modalities groups by semesters*

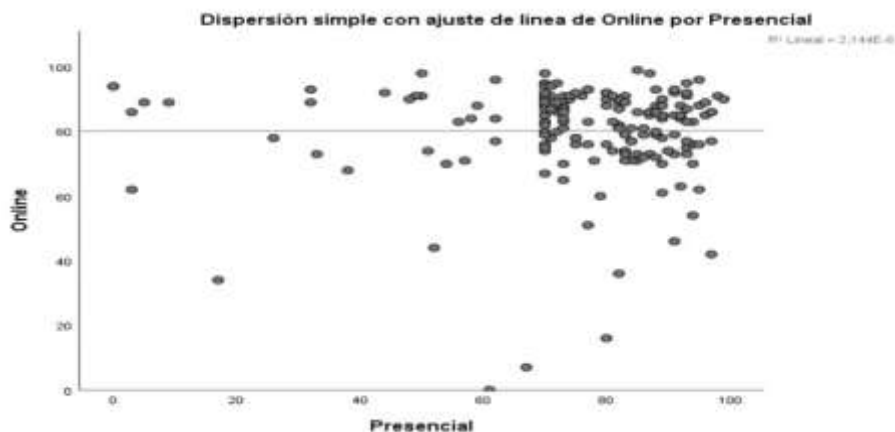
Semester	Factor	N	Mean	Standard Deviation			P value
First Semester	Online	52	80,2500	11,52470	40,00	98,00	,275
	Face-to-face	52	77,4808	14,08029	33,00	98,00	
Second Semester	Online	39	79,4359	9,83226	36,00	94,00	,573
	Face-to-face	39	77,9744	12,77433	26,00	93,00	
Third Semester	Online	39	81,1026	14,53995	7,00	98,00	,259
	Face-to-face	39	84,1795	8,61722	62,00	96,00	
Fourth Semester	Online	44	80,4773	9,31737	54,00	96,00	,552
	Face-to-face	44	81,6136	8,49683	58,00	95,00	

These results suggest that the mode of instruction, whether online or in a traditional classroom, does not have a measurable impact on students' academic performance within the analysed context. The comparable achievement levels in both modalities highlight the potential effectiveness of online education as an alternative to traditional classroom instruction, reinforcing the notion that well-structured online learning environments can produce similar academic outcomes and support the development of students' language skills.

To further examine the distribution of student performance, a scatter plot (Figure 1) was used to visualise the distribution of final exam scores in online and traditional classroom settings. This graph illustrates the variability of scores, the grouping patterns and the possible laggards within each teaching modality. The average scores of both groups on the MET exam are approximately 80, indicating that although students in both modalities demonstrated satisfactory academic performance, their performance falls within a moderate range rather than reflecting exceptionally high levels of mastery. The dispersion of scores is relatively consistent across the sample, with no significant biases or outliers indicating significant disparities in learning outcomes when comparing the two modes of instruction. The analysis revealed comparable score distributions between online and traditional classroom cohorts, indicating that instructional format does not significantly affect overall academic outcomes. This finding suggests that both delivery methods demonstrate similar efficacy in terms of student performance variability.

Figure 1.

Dispersion of final scores of all participants



The analysis revealed no statistically significant differences in final evaluation outcomes between students in face-to-face and online learning environments ($p > 0.05$). This suggests that, when learners receive appropriate support from instructors, both modalities can lead to comparable academic achievement. These findings provide evidence that online education can serve as a pedagogically sound alternative to traditional in-person instruction, as long as it is implemented within a well-organised curriculum and supported by research-based engagement strategies that enhance the learning experience.

Discussion

The expansion of online education has changed conventional teaching practices. The widespread use of learning management systems, AI-powered educational tools, and virtual collaboration platforms has enabled the delivery of more personalised, student-centred learning experiences. Although these technologies have improved flexibility and broadened access to education, concerns about the effectiveness of online learning remain central to academic discussions (Angelino et al., 2007; Park & Choi, 2009; Selwyn, 2011). Key questions persist around whether online education can sustain high teaching standards, keep students motivated, foster long-term knowledge retention, and develop cognitive, social, and soft skills as effectively as traditional classroom instruction.

This study contributes to the ongoing debate by presenting empirical data that show no meaningful differences in academic performance between students in online courses and those in physical classrooms. These results are consistent with previous research (Bernard et al., 2014; Means et al., 2013; Sitzmann et al., 2006; Slavin, 2020), which highlights that academic success is more strongly influenced by factors such as instructional design, curricular coherence, clarity of content, and effective assessment practices than by the mode of delivery itself. Therefore, the study emphasises the importance of higher education institutions to prioritise innovative teaching strategies and active learning practices that ensure academic rigour and student engagement across all learning environments, rather than focusing solely on whether instruction is delivered in person or online.

These findings hold significant implications for higher education professionals -including instructors, curriculum designers, and administrators- operating in a progressively digital learning environment. Prior studies suggest that educator training programs should prioritise developing competencies in digital teaching strategies, designing online courses, leveraging AI-powered feedback tools, and implementing data-driven assessment methods. These skills are essential for effectively tracking student engagement and academic progress in digital settings. In turn, both programmes and assessments must be adapted to the characteristics of online learning, guaranteeing academic quality, active learning and better results. Given that it has been shown that the results of online learning can be comparable to those of face-to-face learning, it is essential to apply innovative and interactive pedagogical approaches, such as gamification strategies and adaptive technological resources that have improved student motivation, self-regulation and knowledge retention (Picciano, 2017). It is also recommended to explore more robust assessments, such as competency-based assessments, projects and adaptive tests with artificial intelligence support, which allow for better measurement of learning and reduce the risk of academic dishonesty.

The results of this research indicate that there are no significant differences between the two types of study programmes, suggesting that advanced digital education can be a viable option for teaching at the higher education level. This has profound implications for higher education institutions in regions seeking to expand access, diversify their student populations, increase enrollment rates, and reduce systemic barriers to education. For students from low-income backgrounds, rural communities, underserved demographics and those balancing work and family responsibilities, access to traditional education is often hindered due to geographical, financial and socioeconomic constraints (UNESCO, 2023). The online study modality has several advantages, including flexibility and cost-effectiveness, which allow students to minimise high collective expenses or financial burdens. Online education, therefore, increases educational inclusion, and competent authorities and higher education institutions must be aware of the disparities that exist in access to digital resources, digital literacy and infrastructure, as these types of situations affect certain populations. Investments in digital equity initiatives (e.g., subsidised Internet access, provision of digital devices and specific technology training programmes) are essential to ensure that online education remains a model of inclusive and equitable learning.

While this study provides valuable insights comparing the effectiveness of online and traditional education, further research is needed on other variables that determine student success, teaching effectiveness, and long-term knowledge retention and career outcomes. Future studies should examine effective pedagogical strategies and individual factors, such as self-regulated learning, digital literacy, motivation and the institutional support mechanism, necessary to achieve knowledge retention and academic performance. Longitudinal research is also necessary to evaluate whether online graduates experience similar job success and career advancement. In addition, barriers to online education, particularly for historically underrepresented populations, and the socioemotional impact of online learning should be examined. Establishing a research-based framework for online education will not only improve the reliability of students' academic performance and language development but will also contribute to its long-term sustainability and effectiveness, ensuring that the online education modality is not only accessible but also pedagogically effective and socially transformative.

Conclusion

Technological advances have transformed educational paradigms, encouraging the development of innovative and alternative learning pathways that go beyond traditional teaching methods. Currently, academic debates on the effectiveness of various modalities remain a central topic in academic and scientific research, as they evaluate their impact on student participation, knowledge retention, and overall academic outcomes. The final results of this study confirm that online and conventional classroom teaching techniques yield equivalent educational outcomes, suggesting that both methods effectively support students' academic success and English language proficiency in higher education.

This finding supports the notion that when essential educational components (e.g., curricular alignment, engagement strategies, and assessment methodologies) are consistently applied, online education can be an effective pedagogical alternative for learning. However, despite the comparability of academic performance between the two modalities, moderate average performance levels suggest the need for pedagogical improvements to enhance the student experience, ensuring academic rigour and active participation. Future improvements should incorporate interactive technologies and blended learning approaches to enrich the teaching-learning experiences inside the both instructional formats.

Furthermore, this study highlights the challenges and opportunities of the online education especially in terms of bridging the educational gap for students from rural and disadvantaged communities. To guarantee an inclusive, high-quality digital education, collaboration between educational institutions is essential, enabling the development of accessible, equitable and pedagogically sound online learning environments.

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