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A SERVQUAL-based gap analysis in higher education: Basis for online learning improvement

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Abstract

This study aimed to establish a foundation for enhancing online learning experiences in higher education by evaluating service quality through the SERVQUAL framework. Specifically, it examined the gaps between students' expectations and satisfaction across five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The study provided empirical insights to guide improvements in digital learning environments. An analytical research design, utilizing SERVQUAL gap analysis to assess online learning service quality was used. Data were collected through an online survey of 1,892 college students, measuring their perceived expectations and satisfaction with online learning modality. The paired sample t-test and Cohen's d effect size analysis were used to quantify the significance of the gaps. The results indicated significant negative gaps across all five SERVQUAL dimensions ($p < .001$), confirming that online learning platforms fall short of students' expectations. The largest gaps were observed in technological reliability, instructor responsiveness, and institutional support, suggesting systemic deficiencies in online education. These findings highlight the urgent need for infrastructure improvements, faculty training in digital pedagogy, and enhanced student support services. This study provides a data-driven foundation for improving online learning systems using SERVQUAL analysis, offering actionable insights for higher education institutions, policymakers, and educators to enhance the quality and effectiveness of digital learning environments.

Keywords: *SERVQUAL, online learning, higher education, service quality, gap analysis, student satisfaction*

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1. Introduction

The COVID-19 pandemic significantly altered the educational landscape, with online learning emerging as a critical alternative during the crisis (Hodges et al., 2020). Higher education institutions adapted to the evolving learning environments, spurred by technological advancements and global disruptions. As the reliance on online and hybrid learning modalities increased, concerns about student satisfaction, instructional quality, and academic performance became more pronounced. Understanding the factors influencing these dimensions is essential for enhancing online learning experiences.

Several studies have highlighted factors influencing student satisfaction in online learning. Firdousi et al. (2024) found that student learning, expectations, and instructional quality significantly impact perceived satisfaction and academic performance across various learning environments. Likewise, General et al. (2023) emphasized the roles of motivation, school climate, and online learning self-efficacy in determining student satisfaction in the Philippines. Fabia (2024) stressed the importance of effective student-teacher interaction, relevant course content, and well-designed assessments in emergency online learning contexts. However, a critical concern identified by Hassen and Aliakbari (2022) is the persistent gap between student expectations and the realities of e-learning, suggesting a need for improved instructional design and support systems. This issue was further confirmed by Magayon et al. (2021), whose sentiment analysis of students' experiences with distance learning revealed that mismatched expectations were a primary driver of dissatisfaction. Sanasi (2023) also explored how these gaps between expectation and reality persist, emphasizing the importance of structured evaluation tools to capture and address student concerns.

The gap between student expectations and satisfaction with online learning remains a significant challenge in Philippine higher education. While motivation, instructional quality, and student-teacher interaction are critical to student satisfaction (De Souza et al., 2021), failing to align these elements with student expectations hinders their effectiveness. This misalignment poses a threat to student retention and academic success, as unmet expectations lead to disengagement and dissatisfaction, ultimately impacting students' overall academic performance. Therefore, addressing these gaps is vital to improve student satisfaction and foster a more supportive and engaging online learning environment.

This study aims to fill this critical gap in the literature by focusing on the SERVQUAL dimensions of online learning: reliability, tangibles, responsiveness, assurance, and empathy.

It provides empirical evidence on the service quality gaps experienced by college students in the Philippines. By assessing the discrepancies between students' expectations and their actual satisfaction, this research offers valuable insights into how these gaps affect their learning experience and academic outcomes. Specifically, it highlights how these gaps may contribute to issues related to retention and academic performance in online education.

2. Literature Review

2.1. Challenges in Online Learning in Higher Education

Online learning has been widely embraced for its flexibility, but it also presents significant challenges that hinder its effectiveness in higher education. Several studies have identified common barriers affecting the learning experience. Sabio and Sabio (2024) found that low student engagement and limited interaction significantly hinder learning outcomes in the Philippines. Matarneh et al. (2024) highlighted challenges faced by engineering students, including a lack of peer interaction and reduced instructor feedback, both of which negatively impacted motivation and performance. Yan and Pourdavood (2024) further emphasized the issue of social isolation, which was reported to decrease student motivation, a sentiment echoed by Binder (2024), who noted that isolation is a considerable barrier in online courses. Additionally, Binder (2024) observed difficulties with both synchronous and asynchronous learning, where issues like time zone differences and unreliable internet exacerbated challenges. Arumugam and Chandre (2023) also emphasized the need for reliable technology, citing poor internet connectivity and distractions as frequent issues that hinder engagement. Although these challenges are widely acknowledged, it is essential to identify effective strategies to address these barriers and enhance overall student engagement and satisfaction.

2.2. Expectation and Satisfaction of College Students in Online Learning

Research on student expectations and satisfaction in online learning reveals significant gaps between what students expect and what they experience. Xu and Xue (2023) found that students' satisfaction declined post-pandemic, indicating that their expectations for quality and engagement were unmet. This highlights a pressing need for improved course design, faculty preparedness, and technology. Nunez et al. (2024) reported that Filipino students’ satisfaction with home-based distance learning was only slightly positive, with low satisfaction concerning acquired knowledge and skills. Similarly, Tanguihan (2024) found that dissatisfaction was

closely linked to a lack of instructor support and personalized interaction, which further affected students' perception of learning outcomes.

Aguirre et al. (2022) found that students prioritize quality learning, technology, and service over physical facilities, underlining the importance of technological support and personalized services in online learning. Additionally, Arumugam and Chandre (2023) and Matarneh et al. (2024) noted that satisfaction improved with better resources and more engaging online interactions. However, Sabio and Sabio (2024) found that in emergency online settings, students' satisfaction remained lower, underscoring gaps in support systems and e-learning resources. These studies suggest that while students expect high-quality instruction and active engagement, dissatisfaction persists due to a mismatch between their expectations and the actual online learning experience.

The literature suggests that bridging the gap between student expectations and actual learning experiences is crucial to improving satisfaction. However, it remains unclear how well these factors—such as technology, instructional design, and student support—are integrated into a cohesive online learning strategy.

2.3. SERVQUAL in Higher Education Learning

The SERVQUAL model has proven useful in assessing service quality in higher education, particularly within e-learning environments. Studies have shown that perceived service quality significantly influences student satisfaction and their commitment to online learning platforms. Dangaiso et al. (2022) emphasized the importance of reliability, responsiveness, and empathy in enhancing students' satisfaction with online education. Quist et al. (2024) also highlighted the impact of system quality on satisfaction, noting that technical reliability directly affects students' engagement and their continued use of e-learning platforms. Further, Quinn et al. (2009) and Yidana et al. (2023) reinforced the idea that faculty interaction and technological support are key components of service quality in online learning. Dugenio-Nadela et al. (2023) similarly stressed the importance of empathy and personalized service to improve the overall learning experience. While previous studies have highlighted the importance of SERVQUAL dimensions in online learning, there is limited research on how these dimensions specifically influence the gap between student expectations and satisfaction. This gap is critical, as it impacts student retention and academic success.

The literature on online learning highlights several key areas of concern: technological barriers, student engagement, and the significant gap between student expectations and satisfaction. Despite extensive research on the challenges students face in online education, few studies have comprehensively examined how these challenges, across different SERVQUAL dimensions, directly contribute to students' overall satisfaction and retention. Furthermore, while studies suggest that students expect high-quality technology, interactive learning, and personalized support, the failure to meet these expectations consistently leads to dissatisfaction, which can threaten academic success.

This study fills a crucial gap in the existing literature by focusing on the SERVQUAL dimensions in Philippine higher education institutions, offering a nuanced understanding of how student expectations and satisfaction interact in an online learning environment. By assessing these dimensions—reliability, tangibles, responsiveness, assurance, and empathy—this research provides a comprehensive evaluation of how these factors influence student experiences and academic outcomes in a post-pandemic online learning context.

2.4. Theoretical Framework

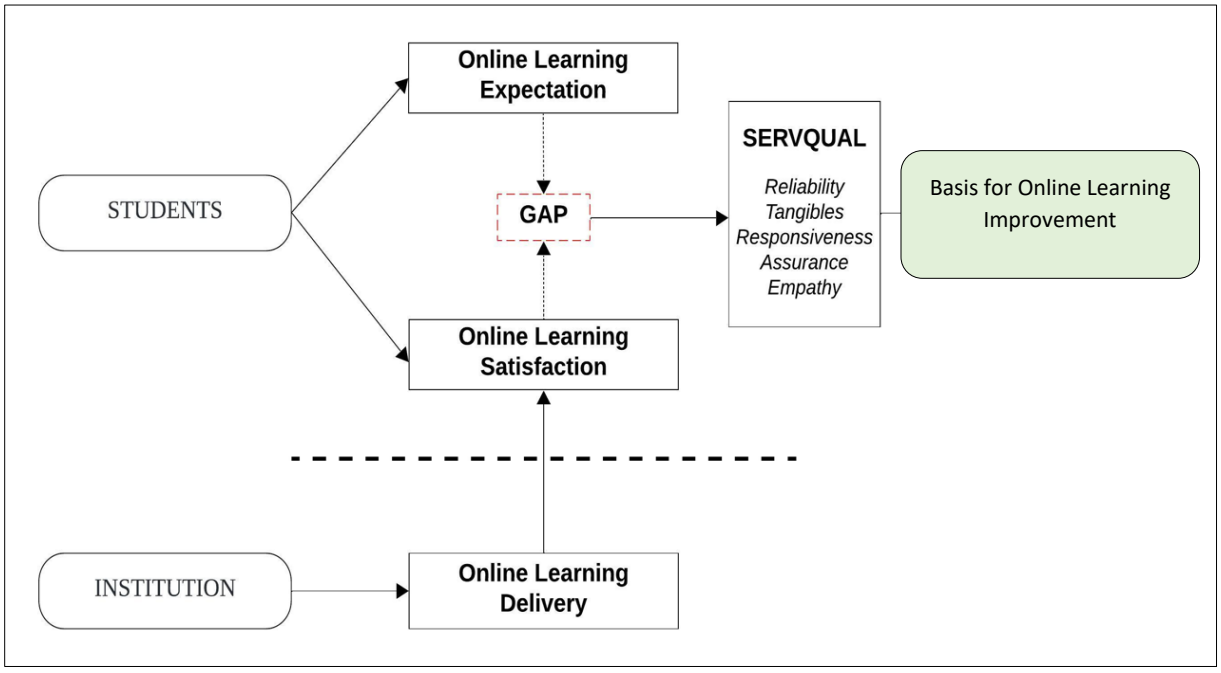
The study is grounded in the SERVQUAL model developed by Parasuraman et al. (1988), which evaluates service quality through five key dimensions: *reliability, tangibles, responsiveness, assurance, and empathy*. In the context of this study the service quality being studied is the online learning modality, while the factors in the dimensions are contextualized based on the available literature. By measuring student expectations and perceptions across these dimensions, institutions can identify specific areas where online learning falls short and implement targeted improvements.

The SERVQUAL framework has been widely applied in various sectors, including education, to assess the gap between student expectations and perceived experiences in service delivery (Wider et al., 2024). In the educational context, SERVQUAL has been used to measure satisfaction in e-learning settings (Firdaus et al., 2020), assess user satisfaction with MOOCs (Stodnick & Rogers, 2008), and extend the model to include "e-learning" as a specific dimension (Rasheed et al., 2020). Furthermore, studies in education have explored the relationship between service quality and satisfaction, offering insights that inform improvements in online learning experiences. These applications highlight SERVQUAL's versatility in assessing and enhancing service quality within the learning environment.

Figure 1 presents the conceptual framework of the study. At the core of this framework is the "gap" between students' online learning expectations and their actual satisfaction with the learning experience. This gap represents the primary problem of the study—the discrepancy between what students anticipate from online learning and their perceived experiences. The framework suggests that student expectations are influenced by prior learning experiences, institutional reputation, and the perceived effectiveness of online education. However, if online learning delivery does not meet these expectations, dissatisfaction arises, highlighting areas needing improvement. Moreover, the institution plays a key role in shaping online learning delivery, which should ideally align with student needs. The SERVQUAL dimensions serve as benchmarks to measure both expectations and satisfaction. By analyzing the gap across these dimensions, the study identifies critical areas for improvement in online learning systems and instructional strategies.

Figure 1

Conceptual framework



3. Methodology

3.1. Research Design

This analytical research study employed the SERVQUAL model (Parasuraman et al., 1988) to examine the gap in the online learning modality, focusing on the expectations and

perceived satisfaction of Philippine higher education students. Analytical research systematically evaluates data to identify patterns and trends that aid in informed decision-making (Williams, 2024). Using a structured analytical framework, this study assesses the discrepancies between student expectations and satisfaction levels in online learning environments. The quantitative nature of the study ensures the reliability of the findings, offering a comprehensive understanding of the factors influencing students' online learning experiences.

The SERVQUAL model was selected due to its well-established application in service quality research across various sectors, including education. It focuses on five key dimensions: reliability, tangibles, responsiveness, assurance, and empathy, which are particularly relevant in evaluating the service quality of online learning platforms. Unlike other models, SERVQUAL allows for a detailed comparison of expected and actual service quality, making it highly suitable for addressing the gap between student expectations and their actual learning experiences in an online environment. Its robustness and ability to capture multi-dimensional perceptions of service quality make it an ideal tool for this study.

3.2. Participants and Sampling

The study involved college students enrolled in various State Universities and Colleges (SUCs), Local Universities and Colleges (LUCs), and Private Universities and Colleges (PUCs) in the Philippines who had participated in online learning as part of their academic programs. To ensure representativeness and minimize selection bias, a simple random sampling technique was employed (Thomas, 2023). Participants were selected based on the following inclusion criteria: (1) current enrollment in a higher education institution (SUCs, LUCs, or PUCs), (2) prior experience with online learning during their academic program, and (3) classification as first-year to fourth-year students, regardless of location, sex, or age.

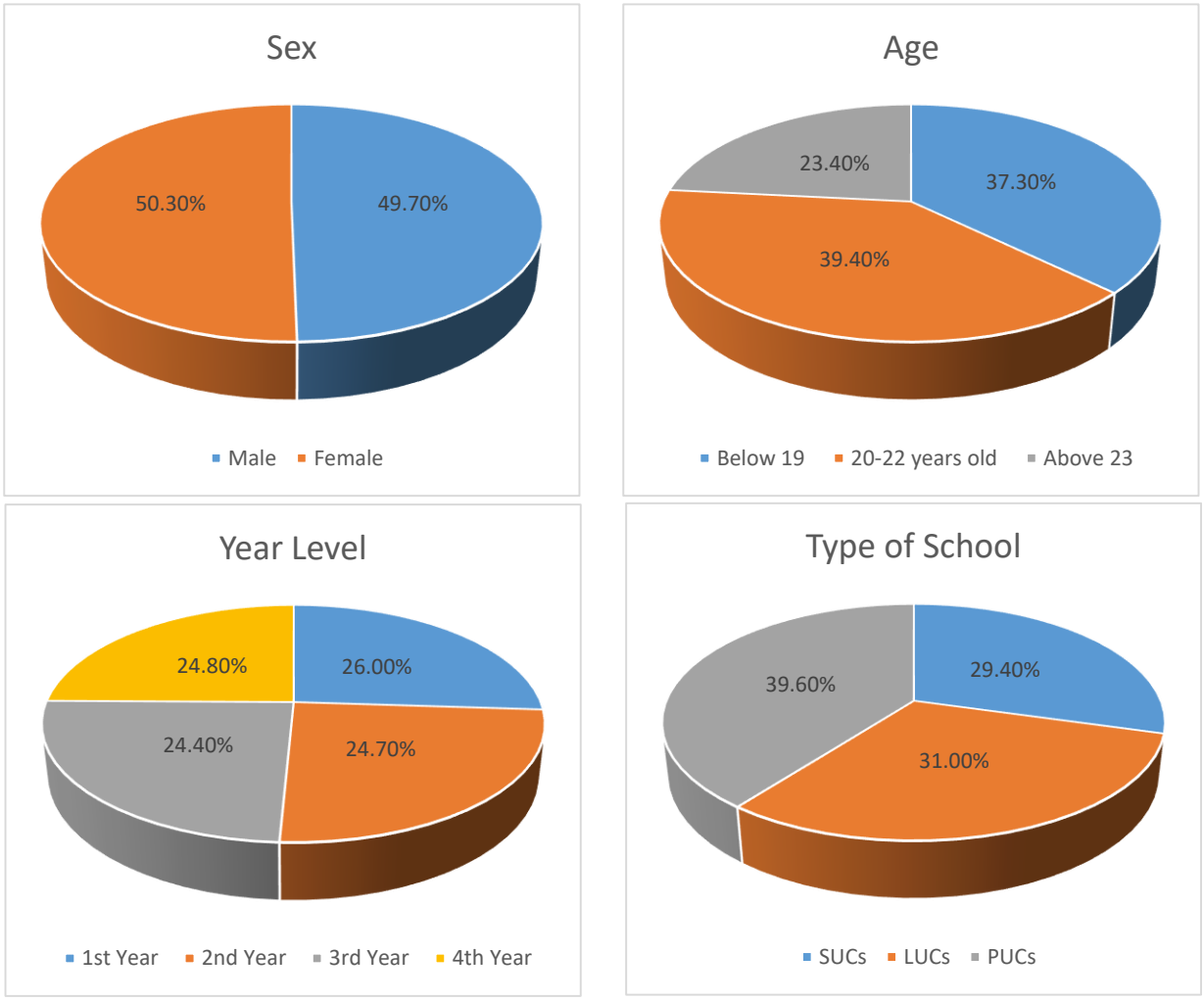
This study is unique due to its large-scale approach and its inclusive sample from a diverse range of institutions, including SUCs, LUCs, and PUCs. This broad sampling allows for meaningful comparisons across different types of institutions, highlighting how factors such as instructional design, technology access, and support services are perceived similarly or differently in varied educational settings.

An online survey was administered (Fricker, 2017), resulting in 2,341 initial responses. After applying inclusion criteria, verifying informed consent, and ensuring the completeness

of responses, 1,892 valid responses were retained for analysis. The demographic distribution (figure 2) demonstrates a well-balanced sample, with a near-equal sex distribution (49.7% male, 50.3% female) and a wide age range, the majority of which falls within the 20-22 age group. This diversity ensures a comprehensive understanding of students' perspectives across different backgrounds and year levels.

Figure 2

Demographics



3.3. Instrumentation

This study utilized an adapted version of the SERVQUAL instrument (Parasuraman et al., 1988) to assess online learning service quality across five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The 25-item survey instrument was validated in

accordance with Taherdoost's (2016) guidelines. Face validity was confirmed by a panel of seven experts, and the instrument's reliability was evaluated through a pilot test. The survey, using a 5-point Likert scale *(5 for Strongly Agree and 1 for Strongly Disagree)*, measured both students' expectations and satisfaction with online learning. The expectation scale assessed anticipated learning quality, while the satisfaction scale evaluated actual experiences.

Table 2 determine the relative importance of each SERVQUAL dimension, participants allocated a total of 100 points across the five dimensions.

Table 2

Dimension weights

Dimensions	Feature	Points
Reliability	The knowledge and expertise of instructors in delivering online lessons and their ability to create an engaging learning experience.	20.93
Tangibles	The online learning system's ability to deliver lessons, assessments, and materials dependably and accurately.	22.02
Responsiveness	The appearance of the online learning platform, including its interface design, ease of navigation, and accessibility of materials.	18.09
Assurance	The level of support and personalized attention given to students, including consideration of individual learning needs and challenges.	19.04
Empathy	The responsiveness of instructors and support staff in addressing student inquiries and providing prompt assistance.	19.92
	Total	**100.00**

Tangibles received the highest weight (22.02), indicating the priority of a functional learning system. Reliability (20.93) and Empathy (19.92) were also prioritized, reflecting the importance of knowledgeable instructors and responsive support. Assurance (19.04) and Responsiveness (18.09) followed, highlighting the need for personalized attention and accessible platforms. These weighted dimensions facilitated a structured, data-driven evaluation of students' expectations and satisfaction.

3.4. Data Collection Procedure

The online survey design and administration followed the protocols outlined by Regmi et al. (2017), ensuring clear survey questions, proper instructions, data confidentiality, and effective response management. To maximize participation, the survey link was distributed across various colleges and shared through social media and other online channels. Participants

provided voluntary informed consent, ensuring they understood the study's purpose, their rights, and the voluntary nature of participation. Only valid, fully completed responses that met the inclusion criteria were included in the final dataset, ensuring data integrity and accuracy for analysis.

3.5. Data Analysis

Data were analyzed using both descriptive and inferential statistical methods to assess students' expectations and satisfaction in online learning based on the SERVQUAL model. Descriptive statistics, including mean, median, and average mean scores, were computed to summarize students' expectations and satisfaction across the five SERVQUAL dimensions. A weighted gap score was calculated to identify discrepancies between expectations and actual experiences. A RADAR chart visually displayed these gaps, offering an intuitive representation of perceived strengths and weaknesses in online learning. To examine significant differences between expectations and satisfaction, a paired t-test was conducted. The null hypothesis assumed no significant difference between the two variables, with a p-value less than 0.05 indicating statistical significance.

3.6. Ethical Considerations

This study followed ethical guidelines set by Streiner et al. (2015) to protect participants' rights and data privacy. Informed consent was obtained prior to participation, with students receiving clear information about the study's objectives, procedures, and potential risks. A digital consent form was provided in the survey, ensuring voluntary participation. Confidentiality and data protection were prioritized, with responses anonymized and securely stored using JotForm, an encrypted platform compliant with data privacy regulations. Only the research team had access to raw data, and no personally identifiable information was collected. Participants were informed of their right to withdraw at any time without consequence, and their responses would not be included if they chose to discontinue. The study adhered to non-maleficence principles, with survey questions carefully designed to avoid discomfort or distress. Participants could reach out for clarifications or concerns. Academic integrity and transparency were maintained by ensuring objective data analysis and honest reporting of findings. Proper citation and research integrity practices were followed to uphold credibility and ethical standards.

4. Findings and Discussion

This section presents the results of the SERVQUAL analysis, which evaluates the gap between students' expectations and satisfaction in online learning across five dimensions: reliability, tangibles, responsiveness, assurance, and empathy. The findings reveal how well higher education institutions met students' anticipated standards of service quality in the online learning environment.

4.1. SERVQUAL Reliability Dimension

Table 3 shows the SERVQUAL Reliability dimension results, comparing student expectations (E) and satisfaction (S) in online learning environments.

Table 3

Reliability dimension – SERVQUAL results

No.	Reliability Factors	E	S	Gap Score (S-E) =MD
1.	Online learning platforms should provide learning materials on time.	4.31	2.68	-1.63
2.	Instructors should respond to student inquiries within a reasonable time frame.	4.28	2.68	-1.60
3.	Online courses should operate without technical issues that disrupt learning.	4.31	2.67	-1.64
4.	The online system should ensure that all submitted assignments are received and recorded properly.	4.29	2.66	-1.63
5.	Online classes should be conducted as scheduled without frequent cancellations or interruptions.	4.29	2.68	-1.61
	Average Mean Scores	**4.30**	**2.67**	**-1.62**
`	**Dimension Weight**			**20.93**
	Weighted Gap Score			**-33.91**

The mean expectation score for reliability is m= 4.30, indicating that students have high expectations regarding the dependability of online learning platforms. However, the satisfaction score is notably lower at m= 2.67, revealing a substantial negative gap of *md*= -1.62, suggesting that online learning platforms fail to meet students' reliability expectations. The reliability dimension weight of 20.93 and a weighted gap score of -33.91 further

emphasize the importance of addressing these shortcomings to enhance the overall online learning experience.

Figure 3

Comparison of expectation and satisfaction of the SERVQUAL reliability dimension

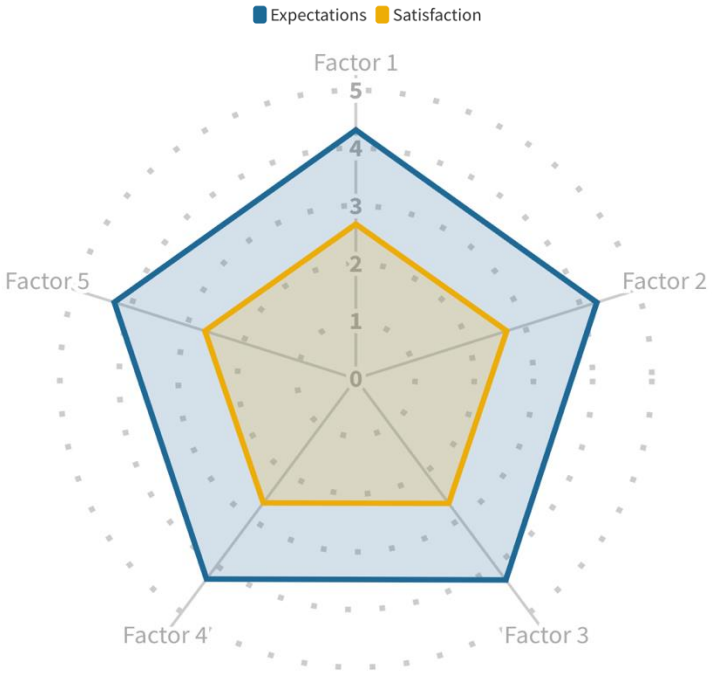


Figure 3 visually compares student expectations and satisfaction levels across the five SERVQUAL dimensions, highlighting a consistent gap between anticipated and actual online learning experiences. The reliability dimension shows a pronounced discrepancy, indicating that students perceive online learning platforms as less dependable than expected. This aligns with the findings of Giday and Perumal (2024), who reported that post-pandemic students continue to face challenges related to unstable online learning environments, negatively impacting their engagement and academic performance.

4.2. SERVQUAL Tangibles Dimension

Table 4 presents the SERVQUAL results for the tangibles dimension which refers to the physical and technological aspects of online learning platforms as perceived by the students.

Table 4

Tangibles dimension – SERVQUAL results

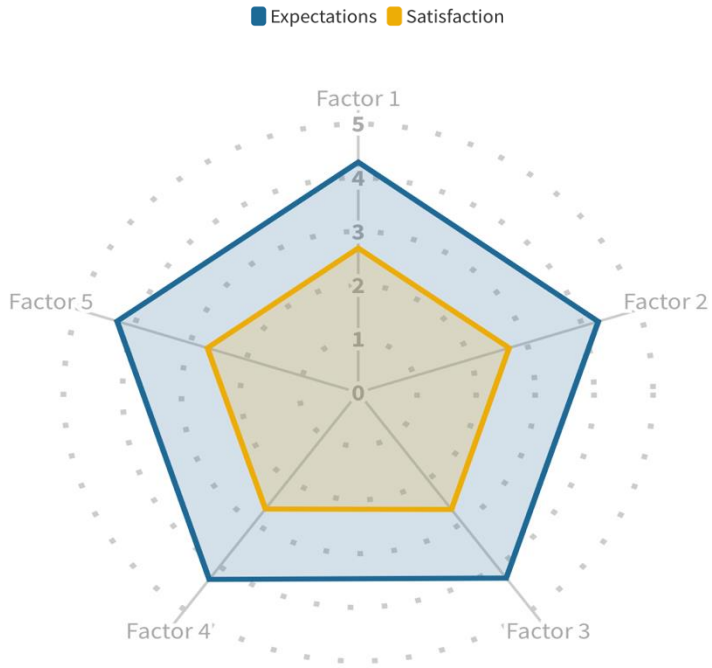
No.	Tangibles Factors	E	S	Gap Score (S-E) =MD
1.	The online learning platform should have a user-friendly interface.	4.29	2.69	-1.60
2.	Course materials should be visually clear, well-organized, and easy to access.	4.28	2.69	-1.59
3.	Video and audio materials should be of high quality.	4.27	2.69	-1.58
4.	The institution should provide access to digital resources such as e-books and research databases.	4.30	2.68	-1.62
5.	Online platforms should have mobile-friendly features for learning on different devices.	4.30	2.69	-1.61
	Average Mean Scores	**4.29**	**2.68**	**-1.60**
`	Dimension Weight			22.02
	Weighted Gap Score			-35.23

The average expectation score is 4.29, reflecting students' strong anticipation that online learning platforms should provide well-structured, visually appealing, and easily accessible materials. Conversely, the average satisfaction score is 2.68, indicating that students perceive significant deficiencies in these areas. The mean gap score of -1.60 further confirms the disparity between student expectations and their actual experiences with the tangible aspects of online learning. The dimension weight of 22.02 and a weighted gap score of -35.23 underscore the critical importance of the tangibles dimension in shaping students' online learning experiences.

Figure 4 presents a radar chart comparing student expectations and satisfaction across the five factors of the SERVQUAL tangibles dimension. The results reveal a consistent pattern in which students anticipate a higher standard of digital learning environments, yet their actual experiences fall short. This gap suggests a systemic issue in the physical aspects of online learning, particularly in platform usability, accessibility, and technological infrastructure. These findings align with the concerns highlighted by UNESCO (2023), which emphasize that despite technological advancements, disparities in digital access and quality continue to affect students' learning experiences globally.

Figure 4

Comparison of expectation and satisfaction of the SERVQUAL tangibles dimension



A significant issue contributing to this gap is the limited access to essential digital resources, such as e-books and research databases. The absence of adequate learning materials negatively impacts students' ability to engage with coursework and conduct independent research, mirroring the findings of Gocotano et al. (2021), who noted that students in rural areas struggle with inadequate digital resources, leading to learning disruptions. Additionally, dissatisfaction with mobile-friendly features indicates that current platforms are not fully optimized for smartphones and tablets, restricting students' ability to learn flexibly—a challenge also observed by Mohd Basar et al. (2021).

Another key concern is the usability and organization of online course materials. While students expect a structured and intuitive interface, the findings suggest that difficulties in navigation, cluttered layouts, and inconsistent multimedia quality diminish their overall satisfaction. Poor video and audio quality, particularly in content-heavy courses, further exacerbate learning difficulties. This is consistent with Lee (2023), who emphasized the need for digital learning platforms to adopt a user-centered design approach to enhance accessibility and engagement.

4.3. SERVQUAL Responsiveness Dimension

Table 5 presents the SERVQUAL results for the responsiveness dimension, highlighting the gap between student expectations and their actual experiences. The high expectation scores indicate that students value prompt feedback, reliable technical support, timely notifications, active instructor engagement, and institutional responsiveness to concerns. However, the lower satisfaction scores suggest that these expectations are not being adequately met, leading to a significant discrepancy across all factors. This gap underscores the need for improved communication, faster response times, and more proactive support systems in online learning environments.

Table 5

Responsiveness Dimension – SERVQUAL Results

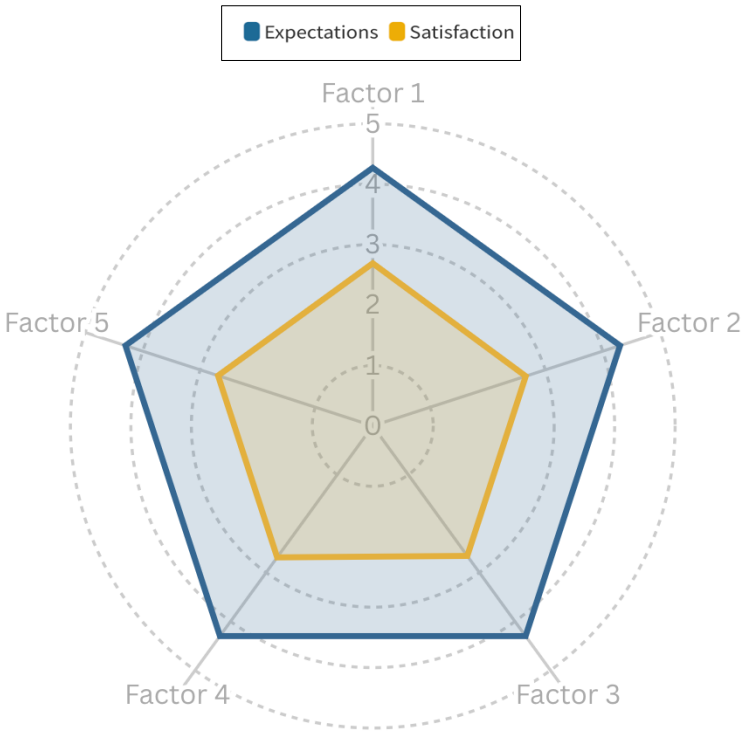
No.	Responsiveness Factors	E	S	Gap Score (S-E) =MD
1.	Instructors should provide timely feedback on assignments and assessments.	4.27	2.69	-1.58
2.	Technical support should be available to assist students with online learning issues.	4.30	2.66	-1.64
3.	Online learning platforms should notify students about important updates and changes.	4.30	2.66	-1.64
4.	Instructors should engage with students actively during online discussions.	4.30	2.69	-1.61
5.	The institution should address student concerns about online learning promptly.	4.30	2.69	-1.61
	Average Mean Scores	**4.29**	**2.68**	**-1.62**
`	**Dimension Weight**			**18.09**
	Weighted Gap Score			**-29.23**

The average expectation score is M= 4.29, reflecting students' strong anticipation of a responsive and supportive online learning environment. In contrast, the average satisfaction score is M= 2.68, illustrating a notable deficiency in responsiveness. The mean gap score of MD= -1.62 indicates a significant discrepancy between what students expect and what they experience. The responsiveness dimension weight of 18.09 and a weighted gap score of -29.23 further emphasize the importance of addressing these shortcomings to enhance the overall online learning experience. The analysis of the responsiveness dimension reveals a significant

gap between students' expectations and satisfaction levels, as depicted in figure 5. The radar chart highlights a pronounced disparity between the two, with expectations consistently exceeding satisfaction scores. This finding mirrors the results in table 5, illustrating that students expect higher levels of responsiveness from online learning platforms than they are currently experiencing.

Figure 5

Comparison of expectation and satisfaction of the SERVQUAL responsiveness dimension



The largest gaps are observed in technical support services and institutional communication, where students anticipate timely assistance and clear notifications but face delays and inefficiencies instead. This aligns with the research by Li et al. (2023), who found that timely feedback and support are crucial to students' satisfaction with online learning, as delays in responses can hinder their learning progress. Similarly, Paulsen and McCormick (2020) emphasized that student engagement and academic success are closely linked to institutions' ability to provide adequate support and maintain consistent communication with learners.

The lack of prompt technical support and instructor engagement further exacerbates student dissatisfaction. Students often face difficulties navigating online platforms, yet receive insufficient assistance, leading to frustration and disengagement. These findings corroborate Dyer (2024), who highlighted the importance of real-time support and proactive communication in maintaining student engagement in online education.

4.4. SERVQUAL Assurance Dimension

Table 6 presents the SERVQUAL results for the assurance dimension, highlighting the disparity between students' trust, security, and reliability in online learning. The high expectation scores suggest that students highly value instructor competence, data security, policy clarity, and institutional guidance. However, the lower satisfaction scores indicate that these expectations are not being met, leading to a substantial gap in perceived assurance.

Table 6

Assurance dimension – SERVQUAL results

No.	Assurance Factors	E	S	Gap Score (S-E) =MD
1.	Instructors should be knowledgeable and competent in delivering online lessons.	4.28	2.68	-1.60
2.	Online platforms should ensure data security and student privacy.	4.27	2.67	-1.60
3.	Instructors should be confident in handling online learning technologies.	4.30	2.66	-1.64
4.	The institution should provide clear policies regarding grading, assessments, and deadlines.	4.31	2.68	-1.63
5.	Instructors should provide guidance to help students succeed in online learning.	4.28	2.67	-1.61
	Average Mean Scores	**4.29**	**2.67**	**-1.62**
`	**Dimension Weight**			**19.04**
	Weighted Gap Score			**-30.77**

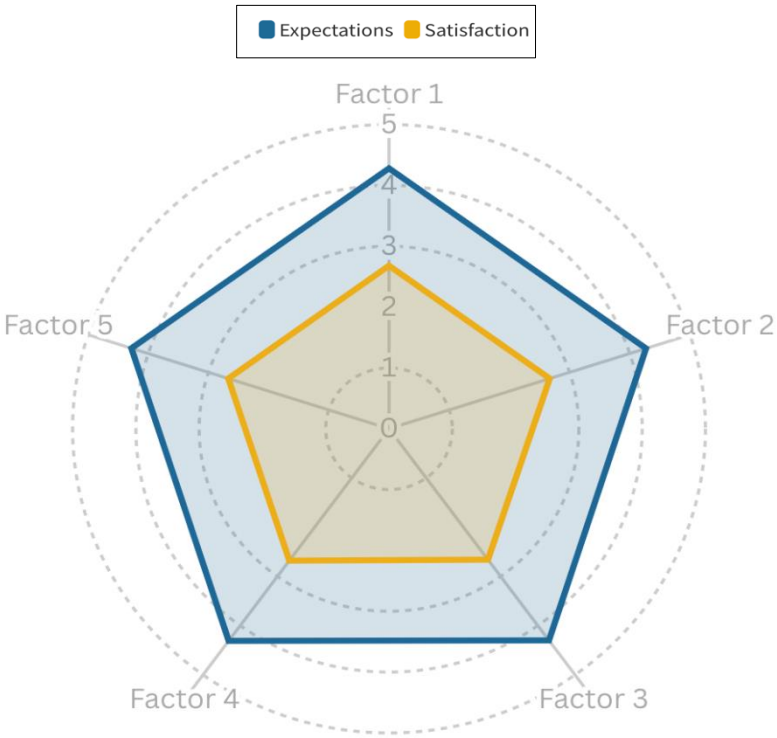
At an average expectation score of m = 4.29, students demonstrate a strong belief in the necessity of high standards of assurance in online learning. However, the significantly lower satisfaction score of m = 2.67 suggests that their actual experiences fail to meet these expectations. The mean gap score of md = -1.62 highlights a considerable shortfall, indicating that institutions need to enhance their efforts in providing a secure, reliable, and transparent

online learning environment. The assurance dimension emerges as a critical area requiring immediate attention to improve students' overall online learning experience with a dimension weight of 19.04 and a weighted gap score of -30.77.

Figure 6 visually illustrates the disparity between students' expectations and satisfaction regarding the assurance dimension in online learning. The larger pentagon formed by expectation scores compared to the smaller pentagon of satisfaction scores suggests a consistent shortfall across key assurance-related factors, particularly in instructor confidence with technology, institutional policies, and student guidance. This pattern indicates that while students expect a high level of assurance in online learning, their actual experiences fail to align with these expectations.

Figure 6

Comparison of expectation and satisfaction of the SERVQUAL assurance dimension



The gap in the assurance dimension has direct implications for student trust, engagement, and academic performance. A critical issue is the lack of instructor confidence in handling digital tools and online teaching methodologies. Troeglazova (2022) found that insufficient digital literacy among educators leads to ineffective lesson delivery and technical

disruptions, which negatively impact student engagement. Addressing this issue requires faculty development programs that enhance instructors' digital competencies and their ability to use learning management systems effectively (Sato et al., 2023). Another major concern is the perceived lack of clear institutional policies regarding grading, assessments, and deadlines. Students expect transparent and consistent academic guidelines, but the findings suggest dissatisfaction due to unclear or inconsistently applied policies. UNESCO (2024) emphasizes that well-defined academic policies, coupled with effective communication strategies, are essential for fostering a structured and supportive learning environment. Institutions should ensure that policies are clearly communicated through multiple channels, such as online portals, course syllabi, and direct instructor-student interactions. Data security and student privacy also emerge as critical concerns. As online learning increasingly relies on digital platforms, students expect robust security measures to protect their personal information. Moreover, Fabriz et al. (2021) highlight the importance of strong cybersecurity measures in fostering trust in online education.

4.5. SERVQUAL Empathy Dimension

Table 7 presents the SERVQUAL results for the empathy dimension, measuring the extent to which students perceive that instructors and institutions demonstrate care, understanding, and support in an online learning environment. The table reveals a significant gap highlighting deficiencies across all empathy-related factors.

Table 7

Empathy dimension – SERVQUAL results

No.	Empathy Factors	E	S	Gap Score (S-E) =MD
1.	Instructors should show a genuine concern for students' learning progress.	4.30	2.67	-1.63
2.	The institution should consider students' individual needs and learning styles in online learning.	4.29	2.69	-1.6
3.	Online learning platforms should provide options for students with disabilities or special learning needs.	4.30	2.66	-1.64
4.	Instructors should be approachable and willing to assist students when needed.	4.31	2.68	-1.63
5.	The institution should create a supportive and inclusive online learning environment.	4.27	2.68	-1.59
	Average Mean Scores	**4.29**	**2.68**	**-1.62**
`	**Dimension Weight**			**19.92**
	Weighted Gap Score			**-32.23**

The high average expectation score of m = 4.29 indicates that students place great importance on personalized support, inclusivity, and concern for their well-being in online education. However, the significantly lower satisfaction score of m = 2.68 suggests that their experiences do not align with these expectations. The mean gap score of md = -1.62 further emphasizes this disconnect, underscoring the need for institutions to enhance their approach to fostering empathy in online learning environments. The weighted gap score of -32.23, coupled with a dimension weight of 19.92, highlights the critical role of empathy in online education and its significant underdeliver.

Figure 7

Comparison of expectation and satisfaction of the SERVQUAL empathy dimension

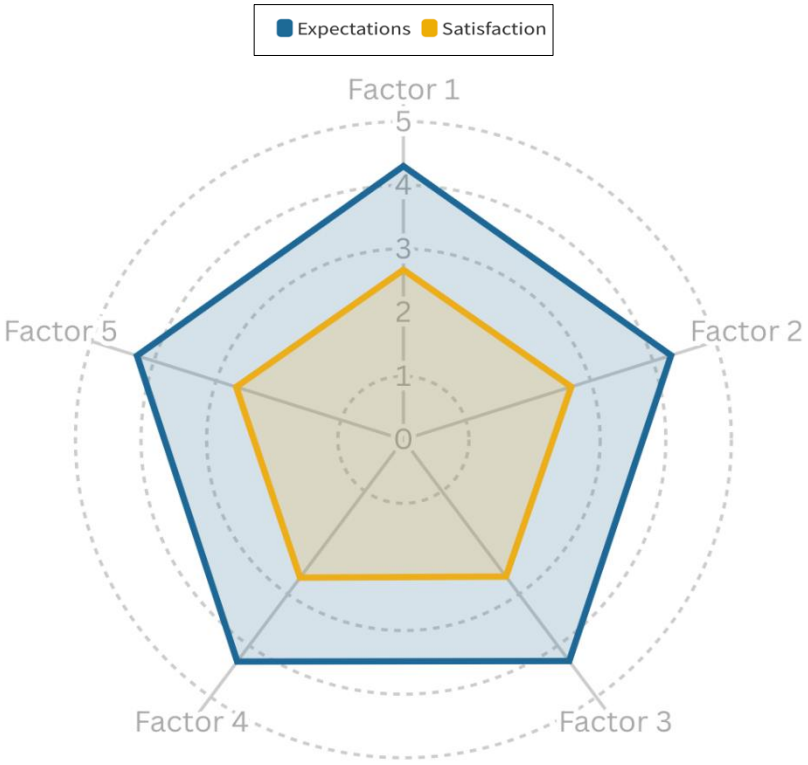


Figure 7 visually represents the discrepancy between students' expectations and their satisfaction with the empathy dimension. The radar chart highlights a significant gap across all five empathy-related factors. The shape of the expectation scores forms a noticeably larger pentagon compared to the satisfaction scores, emphasizing the extent of unmet expectations. The most pronounced deviations are observed in areas related to personalized support, instructor approachability, and inclusivity for students with special needs. These findings

suggest that while students highly value empathy in online education, their actual experiences indicate a shortfall in institutional and instructor support.

Empathy plays a crucial role in fostering student engagement, well-being, and overall learning success. Baria and Gomez (2022) emphasize that strong social support in learning environments enhances student motivation and academic performance. The significant gap in the empathy dimension suggests that students perceive a lack of meaningful support in online learning, potentially leading to lower engagement and satisfaction. Similarly, Hascher and Mori (2024) found that students' well-being is closely linked to their perception of fairness and support from instructors. When students feel neglected or unsupported, it can negatively impact their learning experience and academic outcomes. One critical concern is the lack of inclusivity for students with special needs. Reyes et al. (2022) highlight that online education often fails to accommodate students with disabilities due to inadequate instructional strategies and accessibility barriers.

4.6. Differences between Students' Expectation and Satisfaction on Online Learning

Table 8 presents the results of a paired sample t-test examining the differences between students' expectations and satisfaction levels across the five SERVQUAL dimensions: reliability, tangibles, responsiveness, assurance, and empathy.

Table 8

Paired sample T-test analysis of satisfaction and expectation in online learning based on SERVQUAL dimensions

SERVQUAL Dimensions	t	df	p-value	MD	SE D	Cohen's d	95% CI	
							Lower	Upper
Reliability	-167	1891	<.001	-1.62	0.00971	-3.85	-3.98	-3.71
Tangibles	-173	1891	<.001	-1.60	0.00925	-3.98	-4.12	-3.85
Responsiveness	-116	1891	<.001	-1.62	0.01397	-2.66	-2.75	-2.56
Assurance	-180	1891	<.001	-1.62	0.00901	-4.13	-4.27	-3.99
Empathy	-182	1891	<.001	-1.62	0.00888	-4.18	-4.32	-4.04
Overall	-316	1891	<.001	-1.61	0.00512	-7.26	-7.49	-7.02

Note. $H_a\ \mu_{Measure\ 1\ -\ Measure\ 2} \neq 0$

The t-values for all dimensions are highly significant ($p < .001$), confirming statistically significant differences between students' expectations and actual experiences in online learning. The mean differences (MD) across all dimensions are consistently around -1.62,

indicating a substantial shortfall in satisfaction levels relative to expectations. These findings are consistent with prior research highlighting students' dissatisfaction with online learning experiences, particularly regarding instructor support, digital infrastructure, and course responsiveness (Lobos et al., 2022; Bird et al., 2022).

Cohen's d values further emphasize the magnitude of these differences. The largest effect sizes were observed in the empathy (d = -4.18) and assurance (d = -4.13) dimensions, suggesting that students perceive significant shortcomings in instructor engagement, personalized support, and a sense of security in online learning. These results align with Hollister et al. (2022), who found that students often struggle with engagement in online environments due to a lack of instructor presence and insufficient interaction. Furthermore, the findings support the argument that online learning platforms often fail to replicate the supportive and interactive elements of face-to-face education, leaving students feeling isolated and underserved (NU Editorial, 2025).

The 95% confidence intervals reinforce these findings, as none of the intervals overlap with zero, indicating that the dissatisfaction is systemic rather than an isolated concern. The notable gaps in the tangibles and reliability dimensions suggest that students find the digital infrastructure, learning materials, and technological reliability inadequate to meet their needs. These concerns are consistent with Matarneh et al. (2024), who identified technical challenges as a major barrier to effective online learning. Similarly, Sabio and Sabio (2024) highlighted how limitations in digital access and institutional support contribute to students' negative perceptions of online education.

4.7. Cross- Dimensional Synthesis

The findings from this study highlight significant gaps across all five SERVQUAL dimensions: reliability, tangibles, responsiveness, assurance, and empathy. The summary of the most urgent issues, as identified through the analysis of student expectations and satisfaction levels, is presented.

SERVQUAL Dimension	Key Findings	Urgency and Implications
Reliability	Large gap in platform performance, response times, and timely feedback.	Institutions must prioritize technological infrastructure, such as reliable platforms and timely instructor feedback, to build trust and improve student satisfaction

SERVQUAL Dimension	Key Findings	Urgency and Implications
		(Lobos et al., 2022; Giday & Perumal, 2024).
Tangibles	Students expect user-friendly interfaces, clear multimedia, and access to digital resources. Current offerings are inadequate, especially in mobile compatibility and resource access.	Enhancing platform usability and investing in digital resources (e.g., e-books, research databases) are essential for improving student engagement and satisfaction (UNESCO, 2023; Mohd Basar et al., 2021).
Responsiveness	Delays in feedback, lack of timely technical support, and insufficient instructor engagement.	Institutions should implement real-time technical support, more efficient communication strategies, and increased instructor engagement in online discussions (Li et al., 2023; Paulsen & McCormick, 2020).
Assurance	Students lack trust due to unclear institutional policies, data security concerns, and perceived lack of instructor competence with technology.	Improving instructor training on digital tools, ensuring data security, and establishing clear policies will build confidence and enhance student trust in online platforms (Sato et al., 2023; Troeglazova, 2022).
Empathy	A significant gap in personalized support, instructor approachability, and inclusivity for students with special needs.	Institutions must adopt more inclusive teaching practices, including tailored support for students with disabilities, and foster a supportive, empathetic learning environment (Hascher & Mori, 2024; Lee, 2023).

5. Conclusion

This study identified significant gaps between student expectations and satisfaction in online learning using the SERVQUAL model. Findings indicate that online learning platforms fail to meet students' expectations across all five dimensions—reliability, tangibles, responsiveness, assurance, and empathy. The largest gaps were observed in technological reliability, instructor engagement, and institutional support, revealing critical deficiencies in

online education. The significant statistical results confirmed that these gaps are not incidental but systemic, reflecting persistent shortcomings in service quality.

These findings have critical implications for online education. The lack of technological stability and instructor responsiveness hinders student engagement and learning outcomes, potentially leading to higher attrition rates. The deficiencies in assurance and empathy further indicate that students feel unsupported in virtual environments, which undermines motivation and academic performance. Addressing these gaps requires a comprehensive restructuring of online learning models to prioritize technological reliability, instructor competency, and student-centered support systems.

Based on the findings from the SERVQUAL analysis, several key areas have been identified where improvements can enhance the overall online learning experience. The following recommendations are aligned with the five SERVQUAL dimensions and provide actionable steps for higher education institutions to bridge the gap between student expectations and satisfaction. By addressing these dimensions, institutions can foster a more effective, supportive, and engaging online learning environment, ultimately improving student satisfaction and academic performance.

SERVQUAL Dimension	Recommendations
Reliability	Invest in more reliable digital infrastructure and improve mobile compatibility and accessibility for students. Implement clear policies regarding grading, deadlines, and instructor responsiveness to enhance trust.
Tangibles	Improve platform design, focusing on user-friendly interfaces, organized content, and mobile compatibility. Expand access to digital resources like e-books and research databases to support comprehensive learning.
Responsiveness	Establish 24/7 technical support and automated notifications to keep students informed and engaged. Encourage active instructor engagement through real-time feedback and interactive online discussions.

SERVQUAL Dimension	Recommendations
Assurance	Provide ongoing faculty training on digital pedagogy to improve online lesson delivery and confidence in tools.
	Strengthen data security and ensure transparent communication of policies regarding grading and assessments.
	Implement personalized academic support, including coaching and mentorship programs.
Empathy	Ensure instructors are approachable, providing regular feedback and support for student success.
	Foster inclusivity by addressing the diverse learning needs of students, including those with special needs.

Despite its contributions, this study has limitations. The cross-sectional design does not capture long-term changes in student perceptions, and the reliance on self-reported data introduces potential response biases. Future research should explore longitudinal trends, cross-cultural comparisons, and experimental interventions to develop more effective online learning strategies.

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References

Arumugam, V., & Chandre, Dr. A. (2023). Problems and challenges faced by the students of government schools in Elearning. *International Journal of Multidisciplinary Research & Reviews*, *2*(4), 19–28. https://doi.org/10.56815/ijmrr.v2i4.2023/19-28

Baria, K., & Gomez, D. (2022). Influence of social support to student learning and development. *International Journal of Research Studies in Education*, *11*(2). https://doi.org/10.5861/ijrse.2022.112

Binder, M. (2024, April 3). *7 top challenges with online learning for students (and solutions)*. Thinkific. https://www.thinkific.com/blog/challenges-with-online-learning/

Bird, K. A., Castleman, B. L., & Lohner, G. (2022). Negative impacts from the shift to online learning during the COVID-19 crisis: Evidence from a statewide Community College System. *AERA Open*, *8*. https://doi.org/10.1177/23328584221081220

Dangaiso, P., Makudza, F., & Hogo, H. (2022). Modelling perceived e-learning service quality, student satisfaction and loyalty. A higher education perspective. *Cogent Education*, *9*(1). https://doi.org/10.1080/2331186x.2022.2145805

De Souza, R., Parveen, R., Chupradit, S., Velasco, L. G., Arcinas, M., Tabuena, A. C., Pentang, J. T., & Ventayen, R. J. M. (2021). Language teachers' pedagogical orientations in integrating technology in the online classroom: Its effect on students motivation and engagement. *Turkish Journal of Computer and Mathematics Education*, *12*(10), 5001-5014. https://dx.doi.org/10.2139/ssrn.3844678

Dugenio-Nadela, C., Cañeda, D. M., Tirol, S. L., Samillano, J. H., Pantuan, D. J., Piañar, J. C., Tinapay, A. O., Casas, H. M., Cometa, R. A., Conson, S. O., Urot, M. V., Ancot, J. M., Nadela, R. L., Dugenio-Terol, I., Baluyot, A. M., Pevida, K., Olivar, J. I., & Decena, E. (2023). Service quality and student's satisfaction in Higher Education Institution. *Journal of Human Resource and Sustainability Studies*, *11*(04), 858–870. https://doi.org/10.4236/jhrss.2023.114049

Dyer, T. D. (2024, December 6). *Enhancing access, engagement, and inclusion in online education*. Faculty Focus | Higher Ed Teaching & Learning. https://www.facultyfocus.com/articles/blended-flipped-learning/enhancing-access-engagement-and-inclusion-in-online-education/

Fabia, J. N. (2024). Students' satisfaction, self-efficacy and achievement in an emergency online learning course. *Research in Learning Technology*, *32*. https://doi.org/10.25304/rlt.v32.3179

Fabriz, S., Mendzheritskaya, J., & Stehle, S. (2021). Impact of synchronous and asynchronous settings of online teaching and learning in Higher Education on students' learning experience during COVID-19. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.733554

Firdaus, I., Farikhin, & Surarso, B. (2020). Application of fuzzy servqual method to measure user satisfaction of MOOC service quality. *E3S Web of Conferences*, *202*, 14007. https://doi.org/10.1051/e3sconf/202020214007

Firdousi, S. F., Yong, C., Amir, B., & Waqar, A. (2024). The influence of student learning, student expectation and quality of instructor on student perceived satisfaction and student academic performance: Under online, hybrid and physical classrooms. *Open Education Studies*, *6*(1). https://doi.org/10.1515/edu-2024-0016

Fricker, R. D. (2017). Sampling methods for online surveys. *The SAGE Handbook of Online Research Methods*, 162–183. https://doi.org/10.4135/9781473957992.n10

General, E., Valle, L., Batican, I., Baclayon, J., Colina, S. J., & Graham-Wilberforce, L. (2023). Online learning satisfaction in Philippine Higher Education: A structural equation modeling. *Jurnal Pendidikan Progresif*, *13*(3), 1394–1409. https://doi.org/10.23960/jpp.v13.i3.202337

Giday, D. G., & Perumal, E. (2024). Students' perception of attending online learning sessions post-pandemic. *Social Sciences & Humanities Open*, *9*, 100755. https://doi.org/10.1016/j.ssaho.2023.100755

Gocotano, T. E., Jerodiaz, M. A., Banggay, J. C., Nasibog, H. B., & Go, M. B. (2021). Higher education students' challenges on flexible online learning implementation in the rural areas: A Philippine case. *International Journal of Learning, Teaching and Educational Research*, *20*(7), 262–290. https://doi.org/10.26803/ijlter.20.7.15

Hassen, Q. K., & Aliakbari, M. (2022). The expectations and reality of e-learning. *Mediterranean Journal of Social & Behavioral Research*, *6*(2), 61–66. https://doi.org/10.30935/mjosbr/11926

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). *The difference between emergency remote teaching and online learning*. EDUCAUSE Review.

https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Hollister, B., Nair, P., Hill-Lindsay, S., & Chukoskie, L. (2022). Engagement in online learning: Student attitudes and behavior during COVID-19. *Frontiers in Education, 7*. https://doi.org/10.3389/feduc.2022.851019

Li, X., Odhiambo, F. A., & Ocansey, D. K. (2023). The effect of students' online learning experience on their satisfaction during the COVID-19 pandemic: The mediating role of preference. *Frontiers in Psychology, 14*. https://doi.org/10.3389/fpsyg.2023.1095073

Lobos, K., Cobo-Rendón, R., Mella-Norambuena, J., Maldonado-Trapp, A., Fernández Branada, C., & Bruna Jofré, C. (2022). Expectations and experiences with online education during the COVID-19 pandemic in University Students. *Frontiers in Psychology, 12*. https://doi.org/10.3389/fpsyg.2021.815564

Magayon, Ma. V., Saccuan, R., & Carbonell, A. (2021). Expectation vs. reality: A sentiment analysis of students' experience on Distance Learning. *International Journal of Learning and Teaching*, *13*(4), 260–275. https://doi.org/10.18844/ijlt.v13i4.5979

Matarneh, S., AlQaraleh, L., Alkhrissat, T., & Abdel-Jaber, M. (2024). An analysis of e-learning system challenges in engineering education: An empirical study. *Cogent Education*, *12*(1). https://doi.org/10.1080/2331186x.2024.2445967

Mohd Basar, Z., Mansor, A. N., Jamaludin, K. A., & Alias, B. S. (2021). The effectiveness and challenges of online learning for secondary school students – A case study. *Asian Journal of University Education*, *17*(3), 119. https://doi.org/10.24191/ajue.v17i3.14514

NUEditorial. (2025, January 10). *Challenges of distance learning for students*. National University. https://www.nu.edu/blog/challenges-of-distance-learning-for-students/

Nunez, J. L., Nabayra, J. N., & Urbano, J. M. (2024). The satisfaction of the students on home-based distance learning in the Philippines. *Journal of Education in Black Sea Region*, *9*(2), 27–38. https://doi.org/10.31578/jebs.v9i2.315

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL instrument. *PsycTESTS Dataset*. https://doi.org/10.1037/t09264-000

Paulsen, J., & McCormick, A. C. (2020). Reassessing disparities in online learner student engagement in Higher Education. *Educational Researcher*, *49*(1), 20–29. https://doi.org/10.3102/0013189x19898690

Quinn, A., Lemay, G., Larsen, P., & Johnson, D. M. (2009). Service quality in Higher Education. *Total Quality Management & Business Excellence*, *20*(2), 139–152. https://doi.org/10.1080/14783360802622805

Quist Okronipa, A., Asampana, I., & Yeboah Nyame, J. (2024). Exploring e-learning system loyalty: The role of system quality and satisfaction. *The Scientific Temper*, *15*(04), 3205–3213. https://doi.org/10.58414/scientifictemper.2024.15.4.30

Rasheed, H. M., He, Y., Khalid, J., Khizar, H. M., & Sharif, S. (2020). The relationship between e-learning and academic performance of students. *Journal of Public Affairs*, *22*(3). https://doi.org/10.1002/pa.2492

Reyes, J. I., Meneses, J., & Xavier, M. (2022). Suitability of online higher education for learners with disabilities: The students' voices. *Journal of Special Education Technology*, *38*(3), 370–383. https://doi.org/10.1177/01626434221131772

Sabio, R. A., & Sabio, C. J. (2024). Challenges in implementing online learning in Philippine Higher Education: Business Students' Perspective. *International Journal of Learning and Teaching*, *10*(3). https://doi.org/10.18178/ijlt.10.3.348-353

Sanasi, M. (2023, March 8). *Online learning: Expectations vs reality*. Archy Learning. https://archylearning.com/blog/online-learning-expectations-vs-reality/

Sato, S. N., Condes Moreno, E., Rubio-Zarapuz, A., Dalamitros, A. A., Yañez-Sepulveda, R., Tornero-Aguilera, J. F., & Clemente-Suárez, V. J. (2023). Navigating the new normal: Adapting online and distance learning in the post-pandemic era. *Education Sciences*, *14*(1), 19. https://doi.org/10.3390/educsci14010019

Stodnick, M., & Rogers, P. (2008). Using servqual to measure the quality of the classroom experience. *Decision Sciences Journal of Innovative Education*, *6*(1), 115–133. https://doi.org/10.1111/j.1540-4609.2007.00162.x

Streiner, D. L., Norman, G. R., & Cairney, J. (2015). Ethical considerations. *Oxford Medicine Online*. https://doi.org/10.1093/med/9780199685219.003.0014

Tanguihan, L. (2024). Evaluating student satisfaction and preferences in Higher Education Online Learning: A post-pandemic exploration. *Journal of Interdisciplinary Perspectives*, *2*(9). https://doi.org/10.69569/jip.2024.0368

Troeglazova, A. V. (2022). Analysis of digital literacy of teachers on the use of Distance Learning Technologies. *Actual Problems of Education*, (1), 204–207. https://doi.org/10.33764/2618-8031-2022-1-204-207

UNESCO. (2023). *Global Education Monitoring Report 2023: Technology in Education: A Tool on Whose Terms?* https://doi.org/10.54676/uzqv8501

UNESCO. (2024). *Global Report on Teachers: Addressing Teacher Shortages and Transforming the Profession*. https://doi.org/10.54675/figu8035

Wider, W., Tan, F. P., Tan, Y. P., Lin, J., Fauzi, M. A., Wong, L. S., Tanucan, J. C., & Hossain, S. F. (2024). Service quality (SERVQUAL) model in private higher education institutions: A bibliometric analysis of past, present, and future prospects. *Social Sciences & Humanities Open*, *9*, 100805. https://doi.org/10.1016/j.ssaho.2024.100805

Williams, B. (2024, September 21). *Analytical Research Methods explained with examples - insight7 - AI tool for interview analysis & market research*. Insight7. https://insight7.io/analytical-research-methods-explained-with-examples/

Xu, T., & Xue, L. (2023). Satisfaction with online education among students, faculty, and parents before and after the covid-19 outbreak: Evidence from a meta-analysis. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1128034

Yan, M., & Pourdavood, R. G. (2024). Faculty and student perspectives on online learning in higher education. *Education Sciences*, *14*(8), 801. https://doi.org/10.3390/educsci14080801

Yidana, Bawa, Gariba, & Adabuga. (2023). Service quality in higher education based on students' perspectives. *British Journal of Education, Learning and Development Psychology*, *6*(2), 22–41. https://doi.org/10.52589/bjeldp-9fykugfi