
Online Learning and Students' Satisfaction: A Case of state-owned Schools in Sri Lanka

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Abstract

While the COVID-19 pandemic persists, most government schools have shifted to online learning, through various digital platforms to complete their instruction, even though teaching remotely was extremely difficult for teachers. A study of online learning students' satisfaction was required to assess current performance, identify hazards, and draft online learning regulations and guidelines for a successful learning environment. As a result, this survey was conducted to ascertain the level of satisfaction with online learning among Sri Lankan government school students. It entailed determining the association between online learning and student satisfaction, and the impact of online learning on student satisfaction. Teaching quality, subject design, and technical service quality were used as independent variables to assess online learning satisfaction, while student satisfaction served as the dependent variable. Data were collected from 200 government school children reading in grades 9-13 in Galle District. According to the findings, the three independent factors used in the study, teaching quality, subject design, and technical service quality have a strong positive relationship with student satisfaction and are also significant predictors of student satisfaction. Moreover, the results revealed that subject design and technical service quality had a significant impact on student satisfaction, whereas teaching quality had no significant impact. It also confirmed that developed subject design and technical service quality can improve student satisfaction with online learning; however, students' perceptions of online learning were moderate. The results of the study advised policymakers to develop policy mechanisms to improve teaching quality through online learning as it has no significant impact on student satisfaction. Future researchers can replicate the study with different sampling techniques and a larger sample size to gain a better understanding of the phenomenon.

Keywords: Online learning, Student satisfaction, Subject design, Teaching Quality, Technical service quality

01. Introduction

Education is one of the most critical fields affected by the COVID-19 pandemic. As interruptions to education can have long-term effects on the loss of learning, schools in affected countries have ramped up their capacity to teach remotely and are taking advantage of

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asynchronous learning (Daniel, 2020). In March 2020, with the social shutdown and school closure, most Sri Lankan educational institutions transitioned from traditional face-to-face education methods to distance and online learning (Hettiarachchi et al., 2021). Even though lack of ICT skills among both teachers and students and limited access to digital resources and inequalities in online learning methods were identified, e-learning was embraced for the sake of long-term success of education (Abbott & Bernstein, 2020, Chandasiri, 2020).

The online learning environment is much different and more complicated than traditional classrooms in terms of student motivation, satisfaction, and interaction participation, as well as physical and mental health and safety (Bczek et al., 2020). Teaching online requires specialized skills, such as understanding how to conduct classes in a virtual setting. Problems with learning material transfer and difficulties with reading and absorbing content from a phone screen also create difficulties to achieve effective and relevant learning outcomes and it appears that it reinforces teacher-centered education (Abayasekara, 2020). To avoid the problems outlined above teachers and educators needed to actively participate and take decisive action to improve the delivery of fair and excellent remote learning opportunities. For that, the understanding of students' experiences and views of online learning will aid future planning and development of new strategies within the digital platform.

Many studies and surveys have been conducted to assess student satisfaction with online teaching practices in various countries around the world (Bczek et al., 2020; Lossec et al., 2021). However, contradictory arguments still exist in the literature on student satisfaction and online learning. Literature with positive directions from online learning and student satisfaction, as well as some with no positive effect between the exogenous and endogenous variables can be found (Lei & So, 2021; Ozkan & Koseler, 2009; Mohammed et al., 2020; Khan & Yaldiz, 2020). The findings of those studies cannot be generalized into the Sri Lankan context due to their inconclusiveness. Further, there is a lack of studies undertaken to disclose the effect of online learning on school children's satisfaction in Sri Lanka (Sandeepani et al., 2021; Nafree et al., 2020). Hence, it was aimed to fill out the empirical gap in the existing literature through an empirical study assessing online learning and student satisfaction in Sri Lanka based on government schools.

The study helps teachers to maintain their students' engagement and lead to discovering new dimensions to teach by experimenting with various methods to identify the factors affecting online teaching and how each of those factors affects student satisfaction. Principals and school administrators are being benefited by monitoring teaching effectiveness as well as the mental health well-being of both students and teachers. Besides, the report helps policymakers to understand how best to support the implementation of remote learning in schools and to find out which gaps exist and what actions can be taken to address them. Since this study separately measures the degree of impact on student satisfaction, professionals and parents also can be aware of each dimension that has influenced student satisfaction.

02. Literature review

2.1. Online Education

Online education has quickly gained acceptance as a viable mode of instruction. Some educators define online teaching as any teaching process that incorporates any form of technology (Ghavifekr & Rosdy, 2015). Howlett et al. (2009) defined online learning as the use

of electronic technology and media to deliver, support, and enhance both learning and teaching. When compared to traditional education, online learning has several advantages, including ease of access, flexibility, a relatively cheaper mode of education due to low transportation costs, and the elimination of time and space barriers (Lei & So, S. 2021; Miller et al., 2003). Several deprived arguments are also associated with online education, such as internet accessibility and poor internet connection quality (Bczek et al., 2020).

2.2. Student satisfaction

There were two suggestions in terms of student satisfaction with education. The first was Enache's (2011) suggestion, which presents student satisfaction as being inspired by customer satisfaction. According to Elliot and Healy (2001), students' satisfaction occurs when actual or perceived experiences meet or exceed expectations. The second factor was the "level of student satisfaction," and it was the quantitative description of "student satisfaction" (Kotler and Fox, 1995; Arambewela and Hall, 2009; Guo, 2016). However, given that the primary goal of education is the acquisition of knowledge and skills, perceived teaching quality and course experience are likely to be important factors in determining student satisfaction (Xiao and Wilkins, 2015).

2.3. Impact of Quality of Teacher to Student Satisfaction

Student satisfaction with online learning can be measured by the quality of online teaching. Lwoga (2014) used instructor quality as a separate construct and found a positive, significant relationship between instructor quality and user satisfaction. Perceived service quality for students is the quality of the teacher's work (Hammond, 2000). According to Hill et al. (2003), a teacher's quality includes subject delivery, comments to students during meetings and lessons, and connection with students.

2.4. Impact of Subject Design on Student Satisfaction

The subject design is regarded as an academic program offered to students. If a subject is well-designed, it can result in boosting satisfaction and improving the learning management system (Lei & So, 2021). On the other hand, poorly designed courses, do not result in the successful implementation of e-learning learning (Ozkan & Koseler, 2009). Putting subjects that were designed for practical skills and knowledge (e.g., aesthetic subjects, agriculture, or horticulture) online may slow down student learning. Students are more likely to be satisfied if they feel comfortable when learning a specific subject online (Mohammed et al., 2020; Khan & Yaldiz, 2020).

2.5. Impact of Technical Service Quality on Student Satisfaction

Technical issues and insufficient technical support can sour one's online learning experiences (Leidner & Jarvenpaa, 1993). Muilenburg & Berge (2005) found that students who were familiar with online learning technologies perceived fewer barriers to online learning. The Delone & McLean (2003) model assumed that technical system quality has a direct impact on use and user satisfaction. Computer self-efficacy (users' beliefs about their ability to interact with technology) and intention to use technology for learning have been found to be positive aspects of online learning (Yuen & Ma, 2008).

03. Methodology

Quantitative methods were applied to test the model and hypotheses of the study. The survey was conducted to find out the satisfaction of online learning among government school students in Sri Lanka. Since the population consisted of 4,063,685 students from 10,155 government schools throughout Sri Lanka (Ministry of Education, 2020), it was difficult to collect data from all units. Hence, the government schools in the Galle district have only been selected for the study. Galle district was considered for the study since Galle has reported the highest percentage of students qualified for G.C.E (A/L) on their first attempt in the Southern Province, high-ranking student performance, and high student density in the southern province of Sri Lanka (Ministry of Education, 2020). A convenience random sampling technique was used to select respondents for the sample. Two schools were selected from each educational zone in the Galle district (04 Zones), as a result total of eight schools were considered for the study. Responses were obtained only from Grade 9–13 students, as the study needed to complete the questionnaire from the students themselves rather the influence of parents or any other seniors. Out of those 200 respondents, 115 were female and 85 were male and the study was carried out during the period of 01st July to 12th August 2022. Five-point Likert scale questions were used to assess the students' perception of study constructs. A Google form was used to develop the questionnaire to collect primary data from students. Descriptive statistical techniques, correlation coefficient analysis, and multiple regression analysis were applied.

70.5% of students participated in the study from grade 9-11 category. Around 29.5 of students from the grade 12-13 category participated in the study. Out of the total respondents, 57.5% were represented Females while the rest (42.5%) participated from males. The majority of students log on to the internet for online classes via smartphones (48%). Further, 33.5% of students have used personal Laptop computers and desktop computer usage was 16%. Mobile data (36.5%) was the main internet mode utilized to access with internet and private Wifi facilities (31%) were the second highest internet mode used by student's majority of students (86%) logged in to the Zoom platform and 9% of students logged in to YouTube for study materials.

Student satisfaction factors were determined based on the basic principles of ACSI (American Customer Satisfaction Index) and the actual situation of online education. The ACSI model evaluates the cause-and-effect relationship, which includes the customer satisfaction level (perceived quality, customer expectation, and perceived value). In this article, reference findings have been studied to identify classroom teaching satisfaction conducted by schools. The comprehensive e-learning systems success model (ELSS model) developed by Al-Fraihat et al., (2020), was also considered to measure the online learning practices.

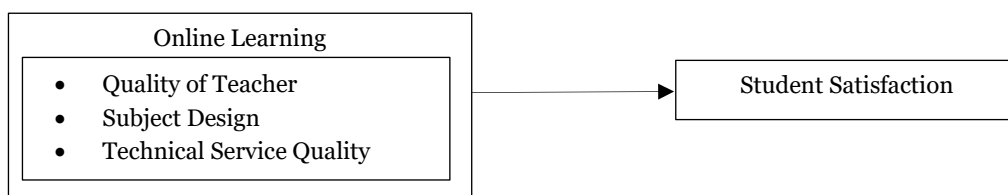


Figure 1: Conceptual Framework

3.1 Hypotheses Development

3.1.1. Quality of Teaching and Student Satisfaction

The teacher's role in student satisfaction with online learning has received attention. Sun et al. (2008) researched the relationship between teacher's dimensions, using two indicators. Lwoga (2014) utilized instructor quality as a separate construct and confirmed a positive significant relationship between instructor quality and user satisfaction. Based on the literature, the following hypotheses were proposed, if aspects related to teachers are also likely to influence student satisfaction with online learning.

H1 - There is a positive relationship between the quality of teacher and student satisfaction.

3.1.2. Subject Design and Student Satisfaction

If the subject is well designed, it results in boosting satisfaction and improving the learning management system and increasing learners' satisfaction with the system (Lei & So, 2021). Hassanzadeh et al. (2012) found that educational system quality positively and directly influences user satisfaction. It indicates that the subject's multimodal online delivery of educational features like discussion forums, chat rooms, and collaborative learning tools (e.g., PowerPoint slide sharing, audio, and videos) can maximize their usage of the e-learning systems.

H2 - There is a positive relationship between subject design and student satisfaction.

3.1.3. Technical Service Quality and Student Satisfaction

Technical system quality is related to issues like system reliability, accessibility, availability, acceptance, and experience of using system features and quality of exchanging information via technology. In the model of Delone and McLean, (2003) the researchers assumed that technical service quality directly affects use and user satisfaction. Hassanzadeh et al. (2012), assumed that "whatever the technical quality of online-learning systems is more, user satisfaction is higher" and supported this claim by empirical research. Based on these findings, assumed that the higher the technical service quality of online learning, the more satisfied the students are. Based on that, the following hypotheses have been developed:

H3 - There is a positive relationship between technical service quality and student satisfaction.

3.1.4. Online Learning and Student Satisfaction

Strong student satisfaction indicates that appropriately challenging instructional methods are helping to generate students' thinking and learning (Harsasi & Sutawijaya, 2018). It also found that students who participated in online collaborative tasks expressed higher levels of satisfaction with their learning process compared to students who didn't participate in online collaborative learning. So, with the given support from prior research, the current study proposes the following hypotheses:

H4 - There is a positive relationship between online learning and student satisfaction.

04. Results and Discussion

4.1. Reliability

Table 1 illustrates the internal reliability of questions in each dimension. Dimensions of online teaching; teaching quality, subject design, and technical service quality display their Cronbach's Alpha values of 0.784, 0.851, and 0.787, respectively. The dependent variable, students' satisfaction, also presents as 0.851. The reliability of the overall questionnaire was presented as 0.870 for Cronbach's Alpha value (Hair et al., 2019). Thus, it shows that all values meet the minimum requirement for internal consistency of reliability.

Table 1: Reliability

Construct	Dimensions	Cronbach's Alpha	No of Items
Online teaching	Teaching quality	.784	6
	Subject Design	.851	5
	Technical Service	.787	7
	Quality		
Student Satisfaction	Overall online teaching	.851	8

4.2. Online Learning and student satisfaction

According to Table 2, the Pearson correlation coefficient for the first dimension of online learning, i.e., teaching quality is 0.616 with a p-value of 0.000. Thus, hypothesis H1 is accepted, which suggests there is a strong positive relationship between teaching quality and student satisfaction. Acceptance of hypotheses H2 and H3, proposing a strong positive relationship between subject design and student satisfaction as well as a positive relationship between technical service quality and student satisfaction, is supported by correlation coefficients of 0.753 ($p < 0.05$) and 0.653 ($p < 0.05$). The Pearson Coefficient of Correlation for the overall online learning and student satisfaction is 0.797 ($r > 0.5$) with a 0.000 ($p < 0.05$) significant level and leads to accepting the hypothesis H4 – that there is a strong positive relationship between online learning and student satisfaction.

Table 2: Correlation of Online learning and Student satisfaction

Variable		Student satisfaction
Online learning	Pearson Correlation	.797**
	Sig. (2-tailed)	.000
Teaching quality	Pearson Correlation	.616**
	Sig. (2-tailed)	.000
Subject quality	Pearson Correlation	.753**
	Sig. (2-tailed)	.000
Technical support	Pearson Correlation	.653**
	Sig. (2-tailed)	.000

** . Correlation is significant at the 0.01 level (2-tailed).

The Correlation of Online Learning and Student Satisfaction examines the statistical relationship between the quality of online learning, teaching quality, subject design, and

technical service quality, and student satisfaction. The H1, H2, H3, and H4 hypotheses were supported.

According to Table 3, unstandardized coefficients, the B value shows for teaching quality is 0.110, where the P-value is 0.085. There is a positive, but not strong, relationship between teaching quality and student satisfaction, as a P value $0.085 > 0.05$. Thus, the proposed H5 hypothesis that teaching quality positively impacts student satisfaction is rejected. However, all the other variables have a positive impact on student satisfaction. The regression coefficients (B values) for other variables, i.e., subject design and technical service quality, are illustrated at 0.444 and 0.303, respectively.

Table 3: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.80 ^a	.65	.64	.45	.65	123.36	.00

a. Predictors: (Constant), Grand technical support, Grand teaching quality, Grand subject quality

The study found that instructor quality does influence student satisfaction, but the impact of teaching quality was less than the other online learning factors. Well-designed subjects and coherent and structured learning materials, such as learning materials with multimedia elements or hypertext structures, have influenced students' online practice. Technical support and technical knowledge can have a great impact on student satisfaction with online learning. The value of the explanatory power (R^2) shows 65.4% (0.654) of the variance of student satisfaction is explained by teaching quality, subject design, and technical service quality via 0.000 significant values. Analysis of the Variance test shows that the regression model is significant in the 95% confidence level.

Table 4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	76.602	3	25.534	123.363	.000 ^b
	Residual	40.568	196	.207		
	Total	117.170	199			

a. Dependent Variable: Grand Student satisfaction

b. Predictors: (Constant), Grand Technical support, Grand teaching quality, Grand Subject quality

Table 5: Coefficient - Online learning and student satisfaction

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	.329	.158		2.082	.039
Teaching quality	.110	.063	.104	1.733	.085
Subject Design	.444	.055	.501	8.025	.000
Technical Service quality	.303	.048	.325	6.342	.000

a. Dependent Variable: Grand Student satisfaction

05. Discussion, Conclusion, and Recommendations

This study will create a new model for assessing student online learning satisfaction. It will allow an experimental study of the developed model in conjunction with the online learning determinants that influence student satisfaction. The developed model demonstrated strong predictive power for student satisfaction in terms of teaching quality, subject design, and technical service quality. A study carried out by Muthuprasad et al. (2020) indicated that the majority of students have a positive attitude toward online classes in the wake of the Covid-19 period. Meanwhile, the current study results implied that there is a positive relationship between students' satisfaction with online learning. This finding is consistent with the studies carried out by Sandeepani et al. (2021), Nafree et al. (2020), and Harsasi and Sutawijaya (2018). The study has shown that there is a strong positive relationship between teaching quality and student satisfaction (Sun et al., 2008; Lwoga, 2014). The indicators of a teacher's teaching quality, such as interaction, communication, motivation, and friendliness, have a significant impact on students' satisfaction with the subject they are taught. Student satisfaction with subject design has a strong positive relationship with its measurements, such as achieving learning objectives, subject knowledge, and skills, as well as evaluation and assessments. These findings are compatible with the findings of the studies carried out by Lei & So, 2021; Ozkan & Koseler, 2009; Mohammed et al., 2020; Khan & Yaldiz, 2020. Device availability, internet availability, minimal technical problems, technological adaptability, learning platform, and technological usage for teaching also influence student online learning satisfaction, as the quality of technical service has a strong relationship with student satisfaction. Students are familiar with their teachers' teaching methods and personalities in their regular classes, so they may not notice significant differences in teachers' quality in online classes. The effect of teacher quality on student satisfaction in an online class may be negligible.

Subject design, subject knowledge and skills, and evaluation and assessments within the e-learning platform can all have a significant impact on student satisfaction. Measures of technical service quality, device availability, internet availability, and minimal technical problems can also improve student satisfaction with online learning and have a significant impact (Delone and McLean, 2003; Hassanzadeh et al., 2012). Students in grades 9-11 are more prepared to learn in the school's online classes than students in grades 12-13. Even before the pandemic, advanced-level students' school attendance was irregular and typically lower than that of other students; their participation, interaction, and completion of the syllabus within the online classes were much more critical. Most students log in to online smartphones using mobile data or data provided by private companies rather than that provided by the government. Learning platforms such as Zoom, where teachers and students meet face-to-face, are more popular than YouTube or any other asynchronous platform. The findings of this study provide learners' attitudes and perceptions of online learning based on their experiences within the distance learning system. Educational practitioners are benefiting from this study in their decision-making procedures, such as preparing study schedules, monitoring students' learning processes and progress, and so on. The study's findings have piqued the interest of both public and private technical and technological service providers. The study's findings have facilitated their involvement in subject design, curricular development, infrastructure and facility development, teacher training, and policy improvements to improve educational sustainability. Aside from the teachers, parents should monitor students' learning activities, assist them in selecting the most relevant tools and technologies, examine their practices for effectively using digital devices, and ensure their learning satisfaction.

Even though online learning had a strong positive relationship with student satisfaction, students' perception of online learning was moderate. To build a satisfied student within the online class, relevant educational authorities can monitor the student's learning progress and improve the effectiveness of online modalities. Based on the study findings, the following strategies can be proposed to uplift the effect of online teaching on students' satisfaction. Policymakers and relevant responsible authorities should encourage school leaders to take an active role and ensure teachers' continued engagement. Teachers, principals and administrators should plan the schedule based on the pandemic situation. Regularly updating subject content will increase student satisfaction with the system. Teachers can use live streaming of lessons through applications such as Zoom and Google Teams to meet teachers and students face-to-face. Teachers' use of online login devices, internet access, and computer skills are key to student satisfaction with Ed-tech.

The quality of technical service is another important factor that influences student satisfaction. School IT teachers, principals, the government, and other relevant authorities should encourage and support their use of digital tools. Government and relevant authorities can provide internet access for free or at an affordable rate to boost student satisfaction. Data facilities for online learning can be accommodated by the government and other internet service providers. As a result, relevant authorities must be concerned about keeping students within the school structure. Student attendance, interaction with teachers, and feedback from them are important factors for success in online education.

06. Limitations and future research

Some limitations have been identified based on the purpose of this research. This study focuses solely on the online teaching determinants that have an impact on student satisfaction with online learning. Other factors, such as economic, socio-cultural, geographical, political, demographical, and behavioral factors, were ignored in this study. It is difficult to assess the overall effectiveness or success of the online learning system. It is necessary to involve both teachers and students collectively to properly measure the entire online system. Given the limited time frame and the COVID-19 pandemic, it is hard to expand such an investigation to measure the success of online learning.

This study discusses the satisfaction of state-owned schools in Sri Lanka. The research has collected samples only from the Galle district considering its high-ranking student performance. Since various educational, economic, and technological discrepancies can be seen regional-wise, the results are inequitable to consider as student satisfaction of the entire Sri Lankan population. The validity and reliability of the data is not 100% since data collection was done by human beings. Human errors may be done, and misunderstandings and misinterpretations also will mislead the exact points needed to be addressed. At the same time, teaching quality might be depending on many other determinants such as the technological adequacy of teachers.

Researchers see several potential areas for future research in the relationship between online learning and student satisfaction. Future researchers can replicate the study with different sampling techniques and a larger sample size to gain a better understanding of the phenomenon. This study is based on a quantitative analysis method, but researchers can

expand on it using both qualitative and quantitative methods. Future researchers can broaden their studies regionally to produce unrivaled overall results for Sri Lanka.

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