

Freshmen's perspectives towards blended learning in Higher Education - A case study of the University of Colombo Institute for Agro-Technology and Rural Sciences

B. P. Siriwardena^{1*}, L. M. Abeywickrama², A. L. Sandika², N. P. Vidanapathirana¹

¹ Department of Agro Technology, University of Colombo Institute for Agro Technology and Rural Sciences, Weligatta, Sri Lanka

² Department of Agricultural Economics, Faculty of Agriculture, University of Ruhuna, Sri Lanka

Abstract

The University of Colombo Institute for Agro-Technology and Rural Sciences has employed Blended Learning (BL) with a strong emphasis on enhanced efficiency. Analyzing students' perceptions of diverse educational methods holds paramount significance. Therefore, this research aims to comprehend the students' perspectives on the blended learning environment and their levels of satisfaction with this particular approach to learning. This survey was conducted at the University of Colombo Institute for Agro-Technology and Rural Sciences, located in Weligatta, Hambantota, Sri Lanka. The sample consisted of 100 first year undergraduates who were studying their degree program selected through simple random sampling techniques. The collection of primary data involved the distribution of a pre-tested Google Form questionnaire through the Learning Management System. The gathered information was analyzed using the SPSS statistical software package (version 26). The process included correlation matrix assessment, regression, and frequency analysis to understand variable relationships. The majority favoured blended learning, especially through assignment activities, while many preferred blended-mode courses. Core hypotheses focused on positive links between student-instructor interaction, resource availability, course objective completion, and student satisfaction. All hypotheses strongly agreed ($p < 0.005$). Understanding students' viewpoints regarding various pedagogical approaches is of paramount importance within higher education.

Keywords: *Blended learning, Higher Education, satisfaction, student perceptions, survey analysis, undergraduates*


Introduction

In the face of rapidly evolving technology, virtually all systems have undergone significant transformations. This phenomenon has been particularly pronounced in higher education worldwide, where traditional instructional approaches have given way to virtual and even robotic educational models. These advancements have facilitated the adoption of blended learning practices by higher education institutions, leveraging tools such as online classes and webinars to offer enhanced learning experiences for university

students. The convergence of Online Learning (OL) and Face-to-Face (F2F) learning has paved the way for the emergence of the Blended Learning (BL) platform. This innovative educational technique blends both online and in-person instruction capabilities to provide students with a holistic and dynamic learning experience. Blended Learning provides a versatile and successful framework that accommodates varied learning styles and preferences by blending the flexibility and accessibility of online learning with the

*Corresponding author: buddhika@uciars.cmb.ac.lk

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 <https://orcid.org/0000-0002-0781-8580>

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interactive engagement of face-to-face encounters.

Blended Learning tries to capitalize on each learning mode's distinct advantages while reducing their individual limitations. Online Learning allows students to access course materials and participate in activities from anywhere, supporting self-paced learning and allowing for a worldwide reach. Face-to-face learning, on the other hand, allows for real-time interactions, enabling quick feedback, collaborative conversations, and personalized instruction from instructors.

This convergence not only improves the learning process but also promotes active engagement, critical thinking, and problem-solving abilities. Students can benefit from the asynchronous nature of online resources while still participating in dynamic in-person conversations and practical exercises that improve comprehension and retention.

This versatile approach finds applicability not only among undergraduates but also extends to specialized domains such as farmer education (Siriwardena *et al.*, 2018; Vidanapathirana *et al.*, 2012). While F2F learning has been the foundation of traditional university education for years, innovations such as the Distance Education Modernization Project (DEMP) in 2003, funded by the Asian Development Bank (ADB), brought about substantial technological resources, particularly for Online Learning in Sri Lanka

(Liyanagunawardena *et al.*, 2014). These advancements catalyzed the integration of hybrid approaches like blended learning into the Sri Lankan educational landscape (Siriwardena *et al.*, 2022). According to Allen *et al.* (2002) and Wang (2003), a strong relationship exists between student satisfaction and the effectiveness of education. Student satisfaction is closely linked to the sense of accomplishment and efficacy gained from the educational experience. Recognizing the crucial role of feedback, evaluating teaching methods becomes paramount to the effectiveness of the pedagogical process. In blended learning programs, the instructor assumes a pivotal role in organizing a cohesive learning environment. Therefore, understanding the student-instructor relationship, assessing resources within course modules, and eliciting course evaluation feedback are essential to shaping an effective learning context. The goal of this research is to explore students' perspectives and practices in the field of blended learning. Furthermore, the study aims to ascertain student satisfaction concerning the quality of the student-instructor relationship, the adequacy of course resources, and the completion of course objectives within the blended learning framework.

Theoretical framework

Based on the literature review and theoretical reinforcements, the subsequent model can be formulated.

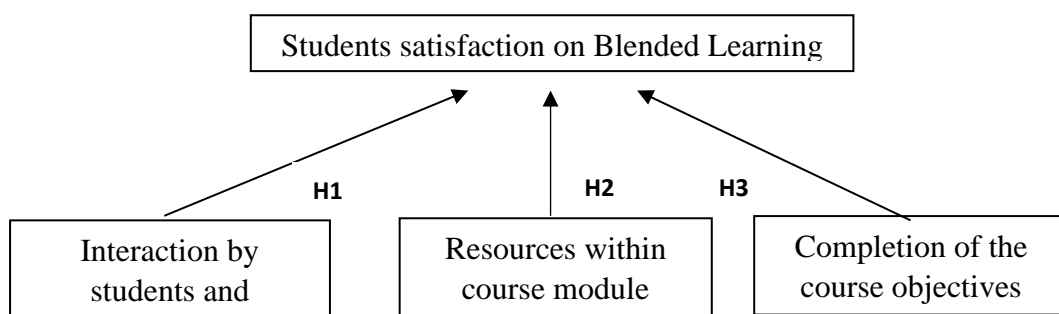


Figure 1: Conceptual model for student's satisfaction

Research hypotheses

- (H1): There will be a positive correlation between student-instructor interaction and student satisfaction.
- (H2): A positive relationship will exist between the availability of resources in the course module and student satisfaction.
- (H3): The successful accomplishment of course objectives will be positively associated with student satisfaction.

Methodology

This survey was conducted at the University of Colombo Institute for Agro-Technology and Rural Sciences in Weligatta, Hambantota, Sri Lanka. The participants in the study consisted of 100 first year undergraduate learners selected through a simple random sampling technique. These students actively engage in blended learning throughout their degree program, combining face-to-face and online learning to form an integrated blended learning system. All 100 learners were included in the data collection, representing the entire population.

Data collection for the study involved both primary and secondary sources. Primary data were gathered through a pre-tested Google Form questionnaire administered through the Learning Management System (LMS). Secondary data on the Blended Learning (BL) system were acquired from available sources. The questionnaire was designed to explore various aspects of the blended learning approach, including preferred learning methods, favoured online activities, and preferences for blended mode courses.

Additionally, the questionnaire aimed to gauge student satisfaction with distance learning and blended learning methods, focusing on variables such as student-instructor interaction, course module resources, and course objective completion. The questionnaire drew insights from existing literature, informal student

discussions, and previous research findings, encompassing diverse perceptions of blended learning backgrounds. Responses were collected *via* Google Forms and organized using Microsoft Excel. The acquired data was then analyzed with the SPSS statistical software tool (Statistics 26). The analysis involved correlation matrix assessments, regression analysis, and frequency analysis, aligning with the nature of the relationships among variables.

The study's hypotheses were tested using various parameters. For assessing student satisfaction, elements such as comprehension of subject matter, understanding of video lectures, course module organization, and encouragement for online activities were included. The measurement of student-instructor relationships encompassed cooperative instructor perceptions, increased interaction through online activities, and student-to-student engagement. Regarding web resources in the course module, factors like satisfaction with video lectures, resource availability, integration of online and offline activities, and diversity of online activities were considered. Similarly, items like coverage of objectives and improvement in access due to course experiences were utilized to assess the completion of course objectives.

Results and Discussion

Student awareness and practice towards diverse learning approaches

Various methods were employed to achieve the objective of comprehending student awareness and engagement with the distance learning environment.

As indicated in Table 1, the majority of learners (49%) expressed a preference for blended learning (BL), followed by online learning (OL) (33%). A smaller proportion (18%) opted for the face-to-face learning (F2F) platform. This shift from traditional learning to blended learning contributed to the highest percentage of learners favouring

the BL approach. The Chi-square test revealed a significant difference in learners'

references for different learning systems (P-value < 0.005).

Table 1: Frequencies for the preferred learning method

Method	Observed N (%)	Expected N	Residual
Face-to-face learning method	18	33.3	-15.3
Online learning method	33	33.3	-.3
Blended learning method	49	33.3	15.7
Total	100		

Asymp. Sig.= 0.001

Online learning constitutes a significant component within the blended learning framework and offers diverse activities to enhance student engagement. As depicted in Table 2, students' perceptions of various activities in online learning are revealed. Notably, assignments, quizzes, chat sessions, and forums emerged as the primary activities, while other activities

were categorized under a separate classification. The Chi-square test exhibited a notable significance (P-value < 0.05) in students' preferences for different activity types. Assignments held the highest favorability at 48%, closely followed by quizzes at 40%. Chat sessions garnered the least preference at 2%, while forums played a significant role in the learning system with 7% favorability.

Table 2: Frequencies for the most favourite learning activity

Activity type	Observed N (%)	Expected N	Residual
Assignments	48	20.0	28.0
Quizzes	40	20.0	20.0
Forums	7	20.0	-13.0
Others	3	20.0	-17.0
Chat sessions	2	20.0	-18.0
Total	100		

Asymp. Sig.= 0.000

As shown in Table 3, a substantial majority of students (85%) express a preference for pursuing the course through the blended

learning method, whereas a smaller proportion (15%) indicates a preference for the traditional method, which involves face-to-face instruction exclusively.

Table 3: Frequency distribution for students' preference to pursue courses

Student preference	Observed N (%)	Expected N	Residual
Blended learning	85	50.0	35.0
Traditional learning	15	50.0	-35.0
Total	100		

Asymp. Sig.=0.000

Student Perspectives on the Blended Learning (BL) Environment

As per Table 4, nearly all test parameters exhibited significant differences (p -value < 0.05), except for the trouble using technology parameters (P -value > 0.05). Learners displayed significant agreement regarding course objectives coverage (P -value = 0.000). They reported an equally

strong consensus on their improved understanding of subject matters through the practice of blended learning (P -value = 0.001). Students' satisfaction with lectures and the availability of diverse resources on the Moodle site received strong affirmation (P -value = 0.000), as did the beneficial impact of video lectures in enhancing their knowledge (P -value = 0.001) within specific fields.

Table 4: Learner perceptions regarding the Blended Learning (BL) environment

Criteria	N	Mean	Sig.
Course covers the objectives	100	3.6200	.000 ^a
Ease of understanding the subject	100	3.3700	.002 ^a
Satisfaction with the lectures	100	3.6400	.000 ^a
Ease of grasping video lectures	100	3.4000	.002 ^a
Enhanced access opportunities through course experience	100	3.4900	.000 ^a
Online and Face-to-Face modes balance each other	100	3.3500	.001 ^a
Web resources provide assistance	100	4.1400	.000 ^a
Well-structured course module	100	3.6800	.000 ^a
Online activities promote study engagement	100	3.9400	.000 ^a
Online activities enhance interaction with instructors	100	3.3400	.003 ^a
Challenges with technology usage	100	3.0800	.476 ^b
Online activities foster student interaction	100	3.5000	.000 ^a
Online activities enhance subject understanding	100	3.7300	.000 ^a
Instructor is highly cooperative	100	4.2400	.000 ^a
The course demanded additional time and effort	100	3.6400	.000 ^a

Test value=3 on one-sample Wilcoxon signed ranked test, ^aSignificant, ^bNot significant

Moreover, students concurred that the combination of face-to-face (F2F) interactions with distance learning had a mutually enriching effect (P -value = 0.000). The well-organized and user-friendly layout of the course Moodle site garnered significant support (P -value = 0.000). Participants expressed heightened engagement through online activities (P value = 0.000), and a notable enhancement in interaction, both among peers and with instructors, due to the adoption of distance learning (P value = 0.000). Learners also acknowledged the instructor's positive contribution and cooperation (P -value = 0.000) to the distance learning experience.

These findings resonate with Lu *et al.*'s study in 2012, demonstrating the significant

impact of perceived usefulness and ease of use on students' satisfaction in comparison to other factors. Given the collaborative nature of this system between learners and facilitators/instructors, understanding the instructor's role is paramount for effective distance learning. Remarkably, students reported notable satisfaction with instructor cooperation (P -value = 0.000) in the distance learning process and expressed the need for additional time and effort to adapt to this system (P -value = 0.000). Notably, the parameter related to trouble using technology did not yield significant results, possibly indicating that modern students are adept with the latest technologies, mitigating technology-related challenges for blended learning processes in the contemporary world.

Reliability analysis

Table 5 shows the items and the Cronbach's alpha coefficient for each variable, both of

which are satisfactory. The reliability coefficient alpha was employed to assess the constructions' dependability.

Table 5: Means, Standard Deviations and Cronbach Alphas for the selected variables

Constructed variable	No of items	Mean	Std. Deviation	Cronbach Alpha
Student's satisfaction	04	3.56	0.773	0.633
Student-instructor interaction	03	3.69	0.859	0.780
Resources availability	04	3.71	0.725	0.728
Completion of the course objectives	02	3.55	0.852	0.662

Table 5 provides distinct mean values, standard deviation values, and Cronbach's alpha coefficients for each constructed variable. Notably, all variables exhibit mean values exceeding 3.5. This pattern of results underscores the institute's outstanding preparation for the blended learning program.

Hypothesis testing

It investigated how student satisfaction with blended learning is related to the other three predictor categories of student-instructor contact, resources within the course module, and successful completion of course objectives. The correlation analysis was performed on the data, and the findings are displayed in Table 6.

Table 6: Students satisfaction (Dependent variable)

Student-instructor interaction	Pearson Correlation	0.715**
	Sig. (2-tailed)	0.000
	N	100
Resources availability	Pearson Correlation	0.628**
	Sig. (2-tailed)	0.000
	N	100
Completion of course objectives	Pearson Correlation	0.753**
	Sig. (2-tailed)	0.000
	N	100

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

As per Table 6, There is an interesting correlation between the independent and dependent variables. Student satisfaction is strongly and favourably connected with interaction between students and instructors ($r = 0.715$, $P\text{-value} < 0.05$), confirming the acceptance of Hypothesis H1. Similarly, resources within the course module display

a positive and significant correlation with student satisfaction ($r = 0.628$, $P\text{-value} < 0.05$), further substantiating the acceptance of Hypothesis H2. Moreover, the successful completion of course objectives demonstrate a significant and positive relationship with student satisfaction ($r = 0.753$, $P\text{-value} < 0.05$), solidifying the acceptance of Hypothesis H3.

Table 7: Outcomes of regression testing involving the dependent variable of student satisfaction

Hypothesis	Description	Coefficient (β)	t-value	p-value
H1	Student-instructor interaction	0.328	4.244	0.000
H2	Resources in the course module	0.230	3.265	0.002
H3	Completion of the course objectives	0.413	5.222	0.000
N=100; R Square=0.690; Adjusted R Square=0.680; F=71.212; Significance P<0.001				

Table 7 presents the outcomes derived from the regression analysis involving the dependent variable of student satisfaction and its relationship with the independent variables: interaction by student and instructor, resources within the course module, and completion of course objectives. Notably, the dependent variable exhibits healthy influence, as evidenced by an F statistic of 71.212 (P-value < 0.001), accounting for 68% of the variation, as indicated by the adjusted R-squared value. The regression analysis confirms the affirmation of all three hypotheses pertaining to student satisfaction.

Further examination of Table 7 reveals that the independent variable of student-instructor interaction is responsible for 33% of the variance in the dependent indicator of student satisfaction (P-value < 0.05, t = 4.244). Similarly, the independent factor of resources found in the course module explains 23% of the variations in the dependent variable (P-value < 0.05, t = 3.265). Finally, the independent variable of course objective completion accounts for 41% of the variance in satisfaction by the students (P-value < 0.005, t = 5.222).

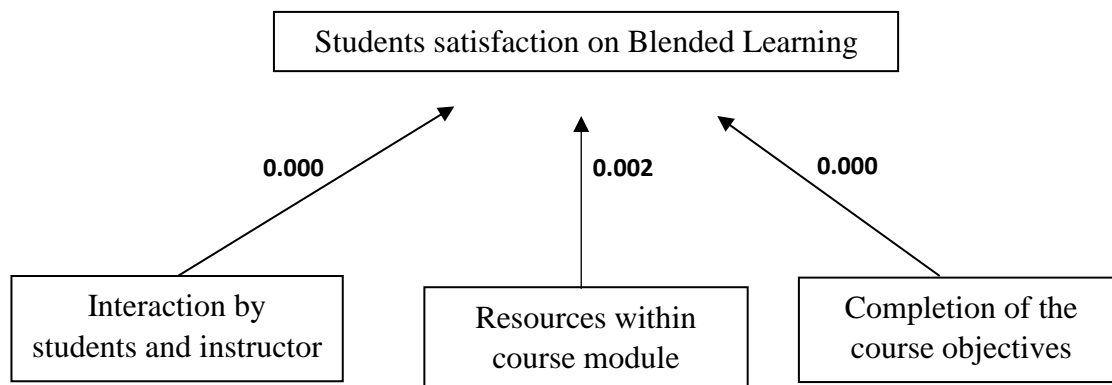


Figure 2: Significance levels of various independent variables on student satisfaction

Conclusions

The fundamental objective of this study was to assess students' perceptions of the blended learning approach and their satisfaction with this method. The study examined key parameters, including student satisfaction, interaction between students and instructors, module resources, and course objective accomplishment. Across all aspects, learners demonstrated

highly positive and encouraging perceptions and practices toward the blended learning model implemented by the institution. Regarding factors influencing student perceptions, a significant majority of learners favoured blended learning, while a smaller minority leaned towards face-to-face learning. Notably, students strongly preferred engagement in assignment activities,

followed by quizzes, whereas chat session activities were less favoured in the distance learning context. Moreover, a substantial proportion of students expressed a preference for pursuing courses through blended learning rather than solely relying on face-to-face methods. In evaluating students' perceptions towards blended learning, nearly all parameters yielded significant agreement, except for

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challenges faced using distance learning tools. The findings of the study affirmed the positive correlation between student-instructor interaction and student satisfaction. Similarly, resources available within the course module exhibited a positive relationship with student satisfaction. Moreover, the successful completion of course objectives also positively influenced student satisfaction.

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