



STUDENTS' PERCEPTIONS, SATISFACTION, AND CONTINUANCE INTENTION TOWARD BLENDED LEARNING: INSIGHTS FROM A GHANAIAN SENIOR HIGH TECHNICAL SCHOOL

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Abstract:

This study aimed to explore students' perceptions, satisfaction, and intention to continue using blended learning in a senior high technical education (SHTE) context in a developing country. Using a descriptive survey research design, a sample of 327 students was randomly selected from a population of 2,206. Data were collected via a questionnaire and analyzed using mean, standard deviation, average mean score, and multiple regression techniques. The findings indicate that students have positive perceptions of blended learning, are highly satisfied with it, and show a strong intention to continue using it. Additionally, students' perceptions and satisfaction significantly influence their intention to continue using blended learning for ICT instruction. The study recommends that authorities provide blended learning training for students and consider their perceptions and satisfaction when implementing such educational approaches.

Keywords: blended learning; satisfaction; perceptions; ICT instruction; senior high school

1. Introduction

Blended learning, which integrates traditional face-to-face instruction with multimedia and online learning methods, has emerged as a transformative approach in modern education. It offers numerous benefits, including enhanced access to knowledge,

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improved student engagement, social interaction, flexibility, and cost-effectiveness (Graham, 2006; Osguthorpe *et al.*, 2003). This model gained even greater relevance during the COVID-19 pandemic when educational institutions globally—including those in developing countries such as Ghana—were compelled to adopt digital platforms to ensure continuity of learning. However, this sudden transition exposed significant challenges, especially in developing contexts, such as unreliable electricity supply, limited internet connectivity, and low ICT competence among both students and educators (Aboagye, 2020; Arthur-Nyarko *et al.*, 2020).

While global research on blended learning has grown substantially, less is known about how student-related factors—such as initial perceptions, satisfaction, and acceptance—influence students' intention to continue engaging with blended learning, particularly in resource-constrained settings. Students' initial perceptions refer to the early thoughts, attitudes, and beliefs they form when first introduced to blended learning (Moon, 2021). These perceptions are shaped by their first experiences with the integration of face-to-face instruction and online components, and significantly influence their acceptance and continued use of the technology (Kurup *et al.*, 2019).

Continuance intention, in this context, refers to a student's willingness and determination to keep using blended learning approaches in the future (Ming-Chi, 2010; Platonova *et al.*, 2022). Satisfaction, on the other hand, relates to the level of contentment students derive from their engagement with blended learning platforms, which includes their experiences with the quality of course content, instructor interactions, and the usability of the digital learning environment (Delima, Ashary & Usman, 2019; Platonova *et al.*, 2022). Understanding how these interrelated factors operate among senior high technical school students in Ghana can help bridge a significant gap in the literature and inform policy and practice in similar contexts (Edem *et al.*, 2020).

Blended learning offers several advantages, including enhanced pedagogical practices, greater accessibility and engagement, and increased learning convenience; however, its implementation also poses certain challenges. Studies have highlighted potential mismatches between traditional and multimedia methods, which can hinder conceptual understanding and reduce active learning (Szadziewska & Kujawski, 2017). Additionally, technical challenges like poor connectivity and difficult-to-navigate platforms continue to hamper the user experience. In developing countries, further obstacles include low instructor motivation, limited technological skills, and insufficient access to ICT tools (Larson & Murray, 2008; Aboagye, 2020; Atkins *et al.*, 2016).

The situation in Ghana reflects these global trends but also presents unique challenges. Though the country has made strides in expanding access to education through policies like the Free Senior High School (Free SHS) initiative, which offers free secondary education to all qualified students (MoE, 2017), technology integration at the secondary school level remains underdeveloped compared to the tertiary sector. Ghana's 6-3-3-4 education system—comprising six years of primary school, three years of junior high, three years of senior high, and four years of university—remains highly competitive at the transition points, particularly for SHS admission. Even when schools are equipped

with technological resources, they are often underutilized due to a lack of training or motivation among teachers (Afful-Broni & Duodu, 2013).

Comparative studies in Europe and North America have shown that blended learning can support active and interactive learning, provided there is adequate faculty support and a conducive infrastructure (Previtali & Scarozza, 2018; Shaidullin *et al.*, 2014). However, attempts to replicate such models in developing countries often fail due to infrastructural deficits, lack of expertise, and broader socio-technical challenges (Andersson & Grönlund, 2009; Owusu, 2019). The COVID-19 pandemic further amplified these issues by exposing the inadequate digital preparedness of Ghana's educational institutions, pushing them to quickly adopt remote teaching methods without sufficient readiness or support (Agormedah *et al.*, 2020).

Given these realities, there is a pressing need to examine how students in senior high technical schools perceive and respond to blended learning. Specifically, this study sought to investigate their initial perceptions, satisfaction, and continuance intention regarding blended learning technologies. The goal is to provide practical insights to guide the effective implementation and long-term sustainability of blended learning in similar educational settings, particularly in resource-constrained environments.

2. Purpose of the Study

The purpose of the study was to examine students' perceptions, satisfaction, and continuance intention of blended learning. Specifically, the study sought to:

- 1) Assess students' perceptions of blended learning in the teaching of Information and Communications Technology (ICT).
- 2) Assess students' satisfaction with blended learning in the teaching of Information and Communications Technology.
- 3) Examine students' intention to continue using blended instruction.
- 4) Examine the relationship between students' perceptions and their intention to continue using blended learning.
- 5) Examine the relationship between students' satisfaction and their intention to continue using blended learning.

2.1 Research Questions

Based on the purpose of this study, three research questions were addressed as follows:

- 1) What are students' perceptions of the use of blended learning for studying ICT instruction?
- 2) To what extent are students satisfied with blended learning for studying ICT instruction?
- 3) What is the extent of students' continuance intention toward blended learning for ICT instruction?

2.2 Research Hypotheses

- 1) **HO1:** There is no statistically significant relationship between students' perceptions of blended learning and their intention to continue using it for ICT instruction.
- 2) **HO2:** There is no statistically significant relationship between students' satisfaction with blended learning and their intention to continue using it for ICT instruction.

3. Literature Review

The literature on blended learning reveals a rich and evolving field shaped by advancements in educational technology and pedagogical theory. To ground the present study, a conceptual review is first provided to clarify key ideas and terminologies related to blended learning. This is followed by an exploration of relevant theoretical foundations, particularly connectivism and the Complex Adaptive Blended Learning Systems (CABLS) framework, which underpin the study's perspective. A conceptual framework is then developed to illustrate the relationships among the key variables under investigation. Finally, an empirical review highlights findings from previous studies that relate directly to the research questions and contextualize the study within existing scholarship.

3.1 Conceptual Review

Blended learning, also known as mixed-mode or hybrid learning, combines traditional classroom teaching with online or e-learning components (Cleveland-Innes & Wilton, 2018). It offers flexibility by allowing students and teachers to interact electronically across different locations, blending in-person interactions with online learning modules (Cleveland-Innes & Wilton, 2018). This approach encompasses various models, including blended presentation and interaction, blended block model, and fully web-based models, each incorporating different levels of in-person and online learning (Cleveland-Innes & Wilton, 2018).

Blended learning enhances student satisfaction, learning outcomes, and acquisition of information, promoting holistic development (Cleveland-Innes & Wilton, 2018; Lalima & Dangwal, 2017). It fosters constructivist learning, allowing students to construct their knowledge in a guided environment, facilitating multicultural and multidimensional learning paths (Lalima & Dangwal, 2017). Moreover, it encourages collaboration, flexibility, and the acquisition of technological skills, preparing students for a digital society (Cleveland-Innes & Wilton, 2018).

Despite its benefits, blended learning faces challenges such as limited access to sustainable infrastructure and suitable technology, as well as human-related challenges, including faculty engagement and computer literacy (Namyssova *et al.*, 2019; Mirriahi *et al.*, 2015). To successfully implement blended learning, prerequisites such as well-trained

teachers, adequate facilities, flexible schedules, and parental support are essential (Lalima & Dangwal, 2017).

Theoretical reviews underpinning blended learning include connectivism and the Complex Adaptive Blended Learning Systems (CABLS) framework (Siemens, 2006; Cleveland-Innes & Wilton, 2018). Connectivism emphasizes learning as a networked process influenced by technology and socialization, advocating for flexible, learner-driven approaches to education (Siemens, 2006; Marhan, 2014). CABLS analyzes the flexible nature of hybrid learning, comprising six constituents—learners, teachers, technology, content, learning support, and institutions—that interact adaptively to facilitate learning (Cleveland-Innes & Wilton, 2018).

3.2 Conceptual Framework

A conceptual framework may comprise one or more formal theories entirely or in part, together with other ideas and empirical evidence from the literature. It is used to highlight the links between these ideas and how they relate to the subject of the investigation (Lemieux, n.d.). A conceptual framework, according to Imenda (2014), is a compilation of interconnected elements and variables that aid in resolving a practical issue. So, it serves as the ultimate lens through which the logical solution to a problem is viewed (Imenda, 2014). The conceptual framework for the study depicts the relationship among students' perception, satisfaction and continuance use intention of blended learning in ICT instruction. The framework proposes that students with positive perceptions would have a higher level of continuance use intention and vice versa. Additionally, students with high satisfaction levels with blended learning would also have a high level of continuance use intention of blended learning in teaching ICT. The relationship among the above variables is shown in Figure 1 below:

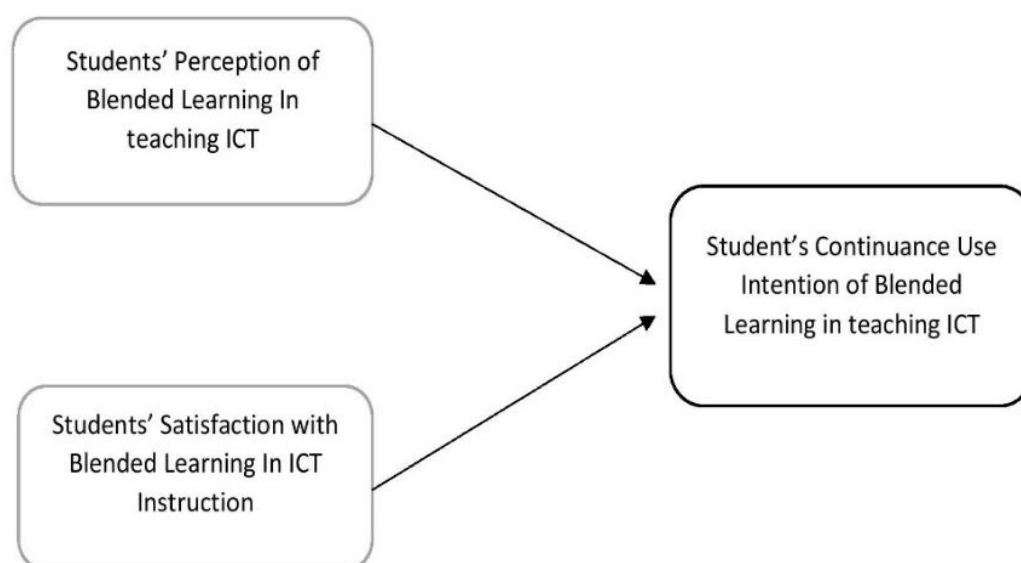


Figure 1: Conceptual framework of the study

3.3 Empirical Review

Several studies have explored students' perceptions of blended learning across different educational contexts. Akkoyunlu and Soylu (2008) found that students generally favored blended learning, particularly valuing its in-person component. Wright (2017) discovered that Malaysian undergraduate EFL students preferred in-person lessons over online ones due to better understanding and interaction. Nasution *et al.* (2021) highlighted a preference for in-person learning over hybrid and online models during the COVID-19 pandemic. Vaksalla *et al.* (2019) found mixed opinions on hybrid learning, with students appreciating online access but finding it less important than in-person lectures. Rifa'i and Sugiman (2018) reported positive student perceptions of various aspects of blended learning, including classroom activities and online learning. Owston *et al.* (2013) found that students were more satisfied with hybrid learning than traditional in-person formats, particularly commuter students. Giannousi *et al.* (2009) reported high satisfaction among students in a motor learning course with blended instruction. Ghaderizefreh and Hoover (2018) explored students' emotions towards online aspects of hybrid learning, revealing correlations between certain features and satisfaction. Al Awamleh (2020) identified factors like lecture quality, merits, and communication as significant contributors to student satisfaction with blended learning. Kurniawan *et al.* (2022) found high satisfaction among Indonesian students with blended learning post-COVID-19, with tangibles and reliability being key factors. Rahman *et al.* (2015) emphasized the importance of recognized value and ease of use in influencing student satisfaction with blended learning. Baranova *et al.* (2022) and Yang *et al.* (2022) investigated factors impacting students' continued intention to use blended learning, highlighting satisfaction, attitude, and performance expectancy as crucial. Al Maroof *et al.* (2021) explored the continuous intention to implement e-learning practices, identifying technology self-efficacy and perceived importance as key factors for students. Overall, these studies shed light on the multifaceted nature of student perceptions and satisfaction with blended learning across various educational settings and contexts.

4. Materials and Methods

4.1 Design

This study examined students' perceptions, satisfaction, and intention to continue using blended learning at Nyakrom Senior High Technical School. A descriptive survey design was employed to collect data from the research participants. The descriptive survey method offers several advantages, including the ability to gather extensive data for statistical analysis and its relative time efficiency. However, it also presents certain limitations, such as the potential inability to capture the nuanced experiences of respondents and the risk of underestimating the significance of the data collected.

The study was conducted in Ghana, West Africa, specifically in a senior high technical school in the Central Region. The Central Region is one of the sixteen administrative regions in Ghana and is home to many of the country's top senior high

schools as well as numerous tourist sites. A total of 327 Senior High Technical School students were selected from a population of 2,206, based on Krejcie and Morgan's (1960) sampling table. To ensure representativeness, proportionate stratified sampling was adopted, with sample allocations made to each year group (Form) according to their respective population sizes. Specifically, Senior High School Form One (SHS1) and Form Two (SHS2) had sample sizes of 152 and 177 students, respectively. Within each year group, simple random sampling was employed using the lottery method, ensuring that each student had an equal chance of being selected.

Table 1: Distribution of the Population and the Sample

Class	Population	Sample Size
SHS 1	1,024	152
SHS 2	1,182	175
Total	2,206	327

4.2 Data Collection Instrument

The study utilized a self-developed structured questionnaire, adapted primarily from previous research, notably Ming-Chi (2020). The instrument consisted of six sections. The first section gathered respondents' background information, while the second assessed their perceptions of blended learning for ICT at Nyakrom Senior High Technical School. The third section measured their satisfaction with blended instruction, and the fourth explored their intention to continue using blended learning. The questionnaire employed a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree" and comprised exclusively closed-ended questions, allowing for quick completion and ease of construction, coding, and analysis, making it highly suitable for the study.

4.3 Validity and Reliability of the Instrument

To ensure reliability, the questionnaire was pilot-tested at a senior high school with similar characteristics to the target research site. The resulting data were analyzed using Cronbach's alpha to assess internal consistency and reliability. Furthermore, the instrument underwent expert reviews by peers and field specialists to ensure face, construct, and content validity prior to its administration.

4.4 Data Collection Procedures

The COVID-19 pandemic brought significant changes to the educational landscape globally, and Ghana, as an emerging economy, was no exception. The increased reliance on ICT tools and digital platforms in senior high schools facilitated instruction in core subjects such as Mathematics, Science, English, and Information Technology. These tools were predominantly used during the vacation period, when students had full access to digital devices. Online platforms such as Google Classroom, WhatsApp, and YouTube were employed—Google Classroom served as a repository for course materials, while WhatsApp supported communication and discussion forums between teachers and students.

Prior to data collection, a letter of introduction from the College of Distance Education, University of Cape Coast, was submitted to the school authorities for approval. Informed consent was obtained from all participants after a clear explanation of the study's purpose and a detailed description of the activities involved. Participants were assured of the anonymity and confidentiality of their responses through a formal statement outlining their rights and the protective measures in place. Additionally, each participant signed a consent form indicating their voluntary participation and confirming their understanding of the study's objectives, ethical considerations, and data confidentiality provisions. The questionnaire was administered electronically via Google Forms, and all 327 selected students actively participated in the study.

4.5 Data Processing and Analysis

The questionnaires collected during data collection were serialized for easy identification before being coded in SPSS version 21.0. The data were scrutinized, cleaned, coded, and entered into the statistics software for analysis. Both descriptive and inferential analyses were conducted. The background data of respondents were analyzed using frequency and percentages. Mean and standard deviation were utilized for analyzing research questions 1 to 3, while a multiple regression model was employed to analyze the hypotheses.

5. Results and Discussion

The study examined students' perceptions, satisfaction, and continuance intention toward blended learning in a Senior High Technical School in Ghana. The analysis focused on participants' demographic characteristics, descriptive statistics, and the testing of hypotheses. Data were analyzed in accordance with the research questions and hypotheses that guided the investigation.

5.1 Results

The initial analysis focused on the analysis of the background information of study participants. Table 2 shows the respondents' information regarding their gender and age group.

5.1.1 Demographic Profile of Respondents

Table 2: Demographic Information of Respondents

Category	Sub-Category	Frequency (F)	Percentage (%)
Gender	Male	151	46
	Female	176	54
	Total	327	100
Age	16 years and below	76	23.3
	17 to 20 years	247	75.5
	Above 20 years	4	1.2
	Total	327	100

Table 2 shows that, out of the 327 students who participated in this study, 46% were males, while 54% were females. Thus, the majority of the respondents were females. Again, concerning the age groups of the respondents, 23.3% were 16 years and below, 75.5% were between 17 and 20 years, and only 1.2% were above 20 years. Thus, the majority of the respondents were between the ages of 17 and 20 years.

5.1.2 Analysis of Research Questions

Research Question One (1): What are students' perceptions of the use of blended learning for studying ICT instruction?

The first research question aimed to explore students' perspectives on the use of blended learning in teaching ICT-related courses. The results are presented in Table 3.

Table 3: Students' Perceptions of Blended Learning for ICT Instruction

Statements	Mean (M)	Stand. Dev. (SD)
I feel blended learning helps me improve my understanding and knowledge of the course I read.	4.3	0.84
I think blended learning offers me a wide range of learning resources.	4.2	0.82
I feel blended learning enables me to get swift feedback on my performance from my teacher.	4.0	0.88
In my opinion, blended learning encourages me to interact with my peers.	4.2	0.88
I think blended learning is more effective than face-to-face teaching alone.	3.9	1.20
Average mean score	4.1	

The results from the study suggest that students hold a positive perception of blended learning in senior high school instruction. Specifically, students feel that blended learning enhances their understanding of ICT, with a mean score of 4.3. They also perceive that it provides them with a broader range of learning resources and effective feedback from teachers, reflected in mean scores of 4.2 and 4.0, respectively. Additionally, students appreciate the peer interaction that blended learning facilitates and believe it is more effective than traditional face-to-face teaching, although this last aspect has a slightly lower mean score of 3.9. Overall, with an average mean of 4.1, the data confirms that students at Nyakrom SHTS positively endorse blended learning for ICT instruction.

Research Question Two (2): To what extent are students satisfied with blended instruction in ICTs?

The second research question sought to determine the extent to which students are satisfied with blended ICT in instruction. The results are presented in Table 4.

Table 4: The Extent to which Students are Satisfied with Blended Instruction in ICT

Statements	Mean (M)	Stand. Dev. (SD)
The blended learning mode made the ICT subject more interesting and exciting.	4.5	0.77
I am satisfied with the feedback from my teacher in the blended learning mode.	4.2	0.70
I am satisfied with the ease of navigation of the course content.	3.9	0.90
I am satisfied with the fact that I can study anywhere, anytime.	4.4	0.84
I am satisfied with the peer-to-peer interaction of the course.	4.1	0.91
Average mean score	4.2	

Students' satisfaction is seen as one of the determinants of their continued use intention of a technology. As such, the study sought to establish students' satisfaction with blended instruction in ICT. The outcome of the analysis from Table 4 shows that the respondents strongly agreed that the blended learning mode of teaching made the ICT subject more interesting and exciting ($M=4.5$, $SD=.77$). Furthermore, the respondents agreed with the statement that they were satisfied with the feedback from their teacher in the blended learning mode ($M=4.2$, $SD=.70$).

Again, the respondents agreed that they were satisfied with the ease of navigation of the course content ($M=3.9$, $SD=.90$). Also, the respondents were satisfied with the fact that they could study anywhere, anytime ($M=4.4$, $SD=.84$). Lastly, the respondents reiterated their satisfaction with the peer-to-peer interaction of the blended learning course ($M=4.1$, $SD=.91$). The average mean score value (4.2) revealed that the students were highly satisfied with blended instruction in ICT at Nyakrom SHTS.

Research Question Two (3): What is the extent of students' continuance intention toward blended learning for ICT instruction? The results are presented in Table 5.

Table 5: The level of students' continuance intention of blended learning in teaching ICT

Statements	Mean (M)	Stand. Dev. (SD)
I intend to keep on using the online learning system to support my face-to-face learning.	4.5	0.71
I would continue to use the online learning system in the next academic year, in addition to face-to-face sessions, if implemented.	4.5	0.65
I plan to keep using online learning to supplement face-to-face whenever possible.	4.3	0.75
I intend to utilize the online learning system to interact with my peers as needed.	4.2	0.75
I plan to use an online learning system to send questions to my teacher on things I do not understand during face-to-face teaching.	4.3	0.90
Average mean score	4.4	

Source: Field Survey, Yalley (2023)

The evidence from Table 5 shows that the respondents intend to keep on using the online learning system to support their face-to-face learning ($M=4.5$, $SD=0.71$). Furthermore, the

respondents strongly agreed with the statement that sought to ascertain whether they would keep using the online learning system in the next academic year in addition to face-to-face sessions, if implemented ($M=4.5$, $SD=0.65$). Again, the respondents agreed that they plan to keep using online learning to supplement face-to-face instruction whenever possible ($M=4.3$, $SD=0.75$).

Moreover, the respondents intend to use the online learning system to interact with their peers if need be ($M=4.2$, $SD=0.75$). Last, the respondents agreed that they plan to use online learning systems to send questions to their teacher on things they do not understand during face-to-face teaching ($M=4.3$, $SD=0.90$). The average mean score value of 4.4 revealed that the respondents have a high level of continuance use intention of blended learning in teaching Information and Communications Technology (ICT).

5.1.3 Analysis of Research Hypotheses

To examine the predictive relationships among students' perceptions, satisfaction, and their continuance intention to use blended learning at Nyakrom Senior High Technical School, two null hypotheses were formulated:

1. H_{01} : There is no statistically significant relationship between students' perceptions of blended learning and their intention to continue using it for ICT instruction.
2. H_{02} : There is no statistically significant relationship between students' satisfaction with blended learning and their intention to continue using it for ICT instruction.

A multiple regression analysis was conducted to determine the cause-and-effect relationships among these variables. Multiple regression is a statistical technique used to assess the predictive power of independent variables—in this case, students' perceptions and satisfaction—on a dependent variable, which is their continuance intention toward blended learning. The results of the regression analysis are presented in Table 6.

Table 6: The Predictors of Continuance Intention toward Blended Learning in Teaching Information and Communications Technology at Nyakrom SHTS

Coefficients Table							
Variable	B	Beta (β)	t	p	VIF	95% Confidence Interval	
						Lower Bound	Upper Bound
(Constant)	6.501		6.846	.000		4.633	8.369
P	0.205	.217	4.535	.000	1.369	0.116	0.293
S	0.529	.537	11.218	.000	1.369	0.436	0.622

Note: Significant at .01 and .05 Alpha Levels

Source: Field Data, Yalley (2023)

H₀₁: There is no statistically significant relationship between students' perception of blended learning and their continuance use intention of blended learning for ICT instruction at Nyakrom SHTS.

The first hypothesis sought to determine whether there is a statistically significant relationship between students' perceptions and the continuance intention toward blended learning for ICT instruction. The coefficients in Table 6 show that students' perceptions significantly predicted their continuance intention toward blended learning in teaching ICT with $\beta = .217$ and $t = 4.535$ at $p = .000$, $p \leq 0.01$, a significant alpha threshold. The prediction is further validated by the one-dimensionality of the confidence interval level at lower and upper boundaries of .116 and .293, respectively. The confidence interval values imply that the prediction was valid in significance. The acceptable variance inflation factor (VIF) threshold of 1.37 also showed no collinearity effect in the measurement according to Kock's (2015) and Hair *et al.* (2017) recommendation of 3.3. Hence, the null hypothesis formulated for this predictive relationship is rejected

H₀₂: There is no statistically significant relationship between students' satisfaction with blended learning and their continuance use intention for ICT instruction at Nyakrom SHTS.

The results in Table 6 indicate that students' satisfaction with blended learning predicted students' continuance use intention of blended learning in teaching ICT with $\beta = .529$ and $t = 11.218$ at $p = .001$, $p \leq 0.01$ alpha threshold. The prediction is further validated by the one-dimensionality of the confidence interval level at 95%, with a lower boundary value of .436 and an upper boundary value of .622. The confidence interval values show that the prediction was non-spurious in significance. Additionally, the acceptable variance inflation factor (VIF) threshold of 1.37 revealed no collinearity effect in the measurement (Kock, 2015; Hair *et al.*, 2017). The null hypothesis formulated for this predictive relationship is rejected from the foregoing.

5.2 Discussion of Results

This study, conducted at Nyakrom Senior High Technical School, examined students' perceptions, satisfaction, and their intention to continue using blended learning in the teaching of Information and Communications Technology (ICT). The findings revealed several significant insights.

Firstly, students expressed positive perceptions of blended learning in ICT instruction, reflected in an overall mean score of 4.1 out of 5.0. This is an indication of students' hope in the potential of a blended approach to teaching and learning at this level. It is also not far from the claim that blended approaches encourage both individual learning and cooperation (Lim and Wang, 2016; Talan and Gulsecen, 2019). This aligns with similar findings by Akkoyunlu and Soyulu (2008) and Nasution *et al.* (2021), who also reported favourable student perceptions of blended learning. However, this result contrasts with the findings of Wright (2017), who observed a lower preference for blended learning compared to traditional face-to-face instruction.

Secondly, the level of student satisfaction with blended learning was notably high, with a mean score of 4.2. This indicates that students generally appreciated the blended approach to ICT instruction. It is also an assurance of the future use of a blended model of teaching at this level of education in a developing economy such as Ghana. These results are consistent with studies by Giannousi *et al.* (2009) and Al Awamleh (2020), both of which reported high levels of student satisfaction with blended learning formats.

Thirdly, students demonstrated a strong intention to continue using blended learning methods, with a mean score of 4.4. This underscores their positive attitude and willingness to integrate both online learning resources and traditional classroom instruction into their educational experiences (Hasanah & Malik, 2020). Students' inclination suggests a recognition of the value that blended learning brings, such as enhanced flexibility, access to diverse resources, and opportunities for self-paced study.

However, this willingness is contingent upon the existence of robust support systems, including favorable educational policies, reliable technological infrastructure, and adequate training for both students and instructors (Hasanah & Malik, 2020). The findings emphasize the need for institutional commitment to promote blended learning by addressing potential barriers such as internet access, digital literacy, and curriculum alignment, ensuring that students can seamlessly benefit from this hybrid mode of education.

The study also tested two hypotheses concerning the relationships between students' perceptions, satisfaction, and continuance intention. Contrary to the initial assumption that no significant relationships would be found, the results revealed statistically significant correlations. Positive perceptions of blended learning were a strong predictor of students' intentions to continue using it, underscoring the importance of perceptions as a critical factor. Similarly, satisfaction with blended learning significantly influenced students' continuance intentions.

These findings emphasize the pivotal roles of positive perceptions and high levels of satisfaction in promoting the continued adoption of blended learning in ICT education. They suggest that fostering favourable student experiences and ensuring satisfaction with blended learning are essential for its sustained integration into educational practices.

6. Recommendations

The study made the following recommendations:

- 1) The study recommends that the Ministry of Education, through the Ghana Education Service, should provide training programs for students on the effective use of blended learning technologies.
- 2) The Government of Ghana should ensure the provision of internet access, such as Wi-Fi, to schools, particularly those in remote areas. Additionally, Senior High Schools' ICT laboratories should be equipped with computers and other essential resources to facilitate the use of blended learning.

- 3) The Ghana Education Service should reconsider the ban on mobile phones and personal computer usage in senior high schools. Allowing students and teachers to utilize mobile and e-learning tools could significantly supplement face-to-face instruction and enhance learning outcomes.
- 4) Educational stakeholders should prioritize students' perceptions and satisfaction when adopting blended learning approaches, ensuring that these factors are addressed to maximize the effectiveness of such initiatives in Senior High Schools across Ghana.

7. Conclusion

The study's findings suggest several important conclusions. Firstly, positive student perceptions of blended learning predict their intention to continue using it for ICT instruction, indicating familiarity and comfort with the required technology. Secondly, high levels of student satisfaction with blended instruction highlight its potential for teaching other challenging subjects, with the possibility of sparking interest in typically less engaging topics. Thirdly, the study identified a strong intention among students to continue using blended learning for ICT instruction, demonstrating their readiness to embrace such technology in classrooms. Finally, the primary predictors of students' intention to continue using blended learning were their perceptions and satisfaction, underscoring the need for educational stakeholders to prioritize these factors when implementing blended learning in senior high schools in Ghana.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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References

- Aboagye, E. (2020). Transitioning from face-to-face to online instruction in the COVID-19 Era: Challenges of tutors at colleges of education in Ghana. *Social Education Research*, 8-17. <https://doi.org/10.37256/ser.212021545>
- Afful-Broni, A., & Duodu, E. A. (2013). Assessing the effective utilization of educational facilities: a study of Nyakrom secondary technical school. *LAUTECH Journal of Engineering and Technology*, 7(2), 13-18. Retrieved from <https://www.laujet.com/index.php/laujet/article/view/122>
- Agormedah, E. K., Adu Henaku, E., Ayite, D. M. K. & Apori Ansah, E. (2020). Online learning in higher education during COVID-19 Pandemic: A case of Ghana. *Journal of Educational Technology and Online Learning*, 3 (3), 183-210. DOI:10.31681/jetol.726441. Retrieved from <https://eric.ed.gov/?id=EJ1293681>
- Akkoyunlu, B., & Soylu, M. Y. (2008). A study of student's perceptions in a blended learning environment based on different learning styles. *Educational Technology & Society*, 11(1), 183-193. Retrieved from https://www.researchgate.net/publication/220374869_A_Study_of_Student's_Perceptions_in_a_Blended_Learning_Environment_Based_on_Different_Learning_Syles
- Al Awamleh, A. (2020). Students' satisfaction on blended learning in the school of sports sciences. *Annals of Applied Sport Science* 8(1), 1-7. Retrieved from <https://aassjournal.com/article-1-803-en.html>
- Al-Marroof, R. S., Alhumaid, K., & Salloum, S. (2020). The continuous intention to use e-learning, from two different perspectives. *Educ. Sci.* 11(1), 6. <https://doi.org/10.3390/educsci11010006>

- Amir, Z., Ismail, K., & Hussin, S. (2011). Blogs in Language Learning: Maximizing Students' Collaborative Writing. *Procedia Social and Behavioral Sciences*, 18, 537–543. <https://doi.org/10.1016/j.sbspro.2011.05.079>
- Andersson, A., & Grönlund, Å. (2009). A conceptual framework for e-learning in developing countries: A critical review of research challenges. *The Electronic Journal of Information Systems in Developing Countries*, 38(1), 1–16. <https://doi.org/10.1002/J.1681-4835.2009.TB00271.X>
- Atkins, S., Yan, W., Meragia, E., Mahomed, H., Rosales-Klintz, S., Skinner, D., & Zwarenstein, M. (2016). Student experiences of participating in five collaborative blended learning courses in Africa and Asia: A survey. *Global Health Action*, 9(1), 28145. <https://doi.org/10.3402/gha.v9.28145>
- Baranova, T., Kobicheva, A., & Tokareva, E. (2022). Factors influencing students' continuance intention to learn in blended environments at university. *Electronics*, 11(13). <https://doi.org/10.3390/electronics11132069>
- Bonsu, N. O., Bervell, B., Armah, J. A., Aheto, S-P., & Arkorful, V. (2021) WhatsApp use in teaching and learning during covid-19 pandemic period: Investigating the initial attitudes and acceptance of students. *Library Philosophy and Practice* (e-journal). 6362. Retrieved from <https://digitalcommons.unl.edu/libphilprac/6362/>
- Buabeng-Andoh, C., & Yidana, I. (2014). *An investigation of secondary school students' attitudes toward pedagogical use of ICT in learning in Ghana*. *Interactive Technology and Smart Education*, 11(4), 302-314. <https://doi.org/10.1108/ITSE-10-2013-0024>
- Cleveland-Innes, M., & Wilton, D. (2018). *Guide to blended learning*. Retrieved from www.col.org
- Creswell, J. W., & Clark, V. L. P. (2007). *Designing and conducting mixed methods research*. Sage Publications, Inc. Retrieved from <https://collegepublishing.sagepub.com/products/designing-and-conducting-mixed-methods-research-3-241842>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of Use, and user acceptance of information technology. *MIS Quarterly* 13 (3): 319-40. Retrieved from <https://www.jstor.org/stable/249008>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35, 982-1003. Retrieved from <https://www.jstor.org/stable/2632151>
- Delima A., Ashary H. M., & Usman O. (2019). Influence of service quality, product quality, price, brand image, and promotion on consumer satisfaction affecting consumer loyalty (online shop). *SSRN Electronic Journal*. <http://dx.doi.org/10.2139/ssrn.3308707>
- Edem, D. P., Dewodo, C., & Atiglah, P. B. (2020). ICT skills, and benefits of teaching and learning animal science with blended learning at colleges of education in Ghana. *Journal of Education and Learning (EduLearn)*, 14(2), 289-300. <https://eric.ed.gov/?id=EJ1266667>

- Gay, L. R. (1987). *Educational research: Competencies for analysis and application*. (3rd ed.). Columbus, Ohio: Merrill Publications. Retrieved from https://yuli-elearning.com/pluginfile.php/4831/mod_resource/content/1/Gay-E%20Book%20Educational%20Research-2012.pdf
- Ghaderizafreh, S., & Michael L. H. (2018). Student satisfaction with online learning in a blended course. *International Journal of Digital Society*, 9(3), 1393-1398. Retrieved from <https://infonomics-society.org/wp-content/uploads/ijds/published-papers/volume-9-2018-2/Student-Satisfaction-with-Online-Learning-in-a-Blended-Course.pdf>
- Giannousi, M., Vernadakis, N., Derri, V., Michalopoulos, M. & Kioumourtzoglou, E. (2009). Students' Satisfaction from Blended Learning Instruction. In *Proceedings of TCC 2009* (pp. 61-68). TCC Hawaii. Retrieved March 8, 2023, from <https://www.learntechlib.org/p/43782/>
- Graham, C. R., Allen, S., Ure, D., Graham, C. R., Allen, S., & Ure, D. (1 C.E., January 1). *Benefits and Challenges of Blended Learning Environments* (benefits-challenges-blended-learning-environments) [Chapter]. <https://Services.Igi-Global.Com/Resolvedoi/Resolve.Asp?Doi=10.4018/978-1-59140-553-5.Ch047>; IGI Global. <https://www.igi-global.com/gateway/chapter/www.igi-global.com/gateway/chapter/14246>
- Graham, C.R. (2006). Blended learning systems: Definition, current trends, and future directions. In: Bonk, C.J. and Graham, C.R., Eds., *Handbook of Blended Learning: Global Perspectives, Local Designs*, Pfeiffer Publishing, San Francisco, 3-21. Retrieved from https://www.researchgate.net/publication/258834966_Blended_learning_systems_Definition_current_trends_and_future_directions
- Hamidi, F., Meshkat, M., Rezaee, M., & Jafari, M. (2011). Information technology in education. *Procedia Computer Science*, 3, 369–373. <https://doi.org/10.1016/j.procs.2010.12.062>, <https://academicguides.waldenu.edu/library/theory/introduction>
- Imenda, S. (2014). Is There a Conceptual Difference between Theoretical and Conceptual Frameworks? *Sosyal Bilimler Dergisi/Journal of Social Sciences*, 38(2), 185. Retrieved from <http://dx.doi.org/10.1080/09718923.2014.11893249>
- Kelley, K., Clarke, B., Brown, V. and Sitzia, J. (2003). Good Practice in the Conduct and Reporting of Survey Research. *International Journal for Quality in Health Care*, 15, 261-266. <https://doi.org/10.1093/intqhc/mzg031>
- Krejcie, R. V. & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610. Retrieved from <https://journals.sagepub.com/doi/10.1177/001316447003000308>
- Krieger, N. (2012). Who and what is a "population"? Historical debates, current controversies, and implications for understanding "population health" and rectifying health inequities. *The Milbank Quarterly*, 90(4), 634–681. <https://doi.org/10.1111/j.1468-0009.2012.00678.x>

- Kurniawan, S. J., Wangid, M. N., & Supriyanto, A. (2022). Students' satisfaction in college: implementation of the blended learning method. *European Journal of Education Studies*, 9(5). <https://doi.org/10.46827/ejes.v9i5.4300>
- Lalima, & Dangwal, K. L. (2017). Blended Learning: An Innovative Approach. *Universal Journal of Educational Research*, 5(1), 129–136. <https://doi.org/10.13189/ujer.2017.050116>
- Larson, R. C., & Murray, M. E. (2008). Open educational resources for blended learning in high schools: overcoming impediments in developing countries. *Overcoming Impediments in Developing Countries. Journal of Asynchronous Learning Networks*, 12(1). Retrieved from <https://files.eric.ed.gov/fulltext/EJ837471.pdf>
- Lynn, P. (2019). The Advantage and Disadvantage of Implicitly Stratified Sampling. *Methods, data, analyses: a journal for quantitative methods and survey methodology*, 13(2), 253-266. <https://doi.org/10.12758/mda.2018.02>
- Malhotra, N. K., & Birks, D. F. (2007). *Marketing Research: Applied Approach*. (3rd ed). London: Prentice Hall. Retrieved from <https://nibmehub.com/opac-service/pdf/read/Marketing%20Research%20An%20Applied%20Approach-%20Malhotra-%20N.K-%202ed.pdf>
- Marhan, A. M. (2014). Connectivism: Concepts and Principles for Emerging Learning Networks. *Institute of Philosophy and Psychology of the Romanian Academy*, 13 (13), 1-8
- Mirriahi, N., Alonzo, D., & Fox, B. (2015). A blended learning framework for curriculum design and professional development. *Research in Learning Technology*, 23, 1-24. Retrieved from <http://dx.doi.org/10.3402/rlt.v23.28451>
- Namyssova, G., Tussupbekova, G., Helmer, J., Malone, K., Afzal, M., & Jonbekova, D. (2019). Challenges and benefits of blended learning in higher education. *International Journal of Technology in Education (IJTE)*, 2(1), 22-31. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1264247.pdf>
- Narh, N., Boateng, R., Afful-Dadzie, E., & Owusu, A. (2019). *Virtual platforms: assessing the challenges of e-learning in Ghana*. Retrieved from <http://ugspace.ug.edu.gh:8080/handle/123456789/34216>
- Nasution, A. K. P., Surbakti, A. H., Zakaria, R., Wahyuningsih, S. K., & Daulay, L. A. (2021). Face-to-face learning vs blended learning vs online learning (Student Perception of Learning). *Journal of Physics: Conference Series*, 1783(1). <https://doi.org/10.1088/1742-6596/1783/1/012112>
- Osguthorpe, R. T., & Graham, C. R. (2003). Blended Learning Environments: Definitions and Directions. *Quarterly Review of Distance Education*, 4(3), 227–233. Retrieved from https://www.researchgate.net/publication/234598856_Blended_Learning_Environments_Definitions_and_Directions
- Owston, R., York, D., & Murtha, S. (2013). Student perceptions and achievement in a university blended learning strategic initiative. *The internet and higher education*, 18, 38-46. <https://doi.org/10.1016/j.iheduc.2012.12.003>

- Previtali, P. and Scarozza, D. (2019). Blended learning adoption: a case study of one of the oldest universities in Europe. *International Journal of Educational Management*, 33(5), 990-998. <https://doi.org/10.1108/IJEM-07-2018-0197>
- Puriwat, W., & Tripopsakul, S. (2021). The impact of e-learning quality on student satisfaction and continuance usage intentions during COVID-19. *International Journal of Information and Education Technology*, 11(8), 368–374. <https://doi.org/10.18178/ijiet.2021.11.8.1536>
- Rahman, N. A. A., Hussein, N., & Aluwi, A. H. (2015). Satisfaction with blended learning in a public higher education institution: What factors matter? *Procedia - Social and Behavioral Sciences*, 211, 768–775. <https://doi.org/10.1016/j.sbspro.2015.11.107>
- Raja, R., & Nagasubramani, P. C. (2018). Recent Trend of Teaching Methods in Education" Organised by Sri Sai Bharath College of Education Dindigul-624710. *India Journal of Applied and Advanced Research*, 2018(3), 33–35. <https://doi.org/10.21839/jaar.2018.v3S1.165>
- Rifa'i, A. (2018). Students' perceptions of mathematics mobile blended learning using a smartphone. In *Journal of Physics: Conference Series*, 1097(1), 012153. IOP Publishing, 2018. <http://dx.doi.org/10.1088/1742-6596/1097/1/012153>
- Sarfo, F. K., & Ansong-Gyimah, K. (2010). The perceptions of students, teachers, and educational officers in Ghana on the role of computers and the teacher in promoting the first five principles of instruction. *Turkish Online Journal of Educational Technology-TOJET*, 9(3), 85-95. Retrieved from https://www.researchgate.net/publication/260941999_The_perceptions_of_students_teachers_and_educational_officers_in_Ghana_on_the_role_of_computer_and_the_teacher_in_promoting_the_first_five_principles_of_instruction
- Shaidullin, R. N., Safiullin, L. N., Gafurov, I. R., & Safiullin, N. Z. (2014). Selection and peer review under the responsibility of the Organizing Committee of WCETR 2013. Blended Learning: Leading Modern Educational Technologies. *Procedia-Social and Behavioral Sciences*, 131, 105–110. <https://doi.org/10.1016/j.sbspro.2014.04.087>
- Sharma, P. (2010). Blended learning. *ELT Journal*, 64(4), 456-458. Retrieved from <https://academic.oup.com/eltj/article/64/4/456/390082>
- Sileyew, K. J. (2019). Research Design and Methodology. In E. Abu-Taieh, A. E. Mouatasim, & I. H. A. Hadid (Eds.), *Cyberspace. IntechOpen*. <https://doi.org/10.5772/intechopen.85731>
- Smith, K., & Hill, J. (2019). Defining the Nature of Blended Learning through Its Depiction in Current Research. *Higher Education Research & Development*, 38, 383-397. <https://doi.org/10.1080/07294360.2018.1517732>
- Srite, M. (2006). Culture as an explanation of technology acceptance differences: an empirical investigation of Chinese and US Users. *Australasian Journal of Information Systems*, 14(1). <https://doi.org/10.3127/ajis.v14i1.4>
- Szadziewska, A., & Kujawski, J. (2017). *Advantages and disadvantages of the blended-learning method used in the educational process at the faculty of management at the University of*

- Gdansk, in the opinion of undergrad... "badanie znajomości marek organizacji zrzeszających biegłych rewidentów" view project multiple transfer prices view project advantages and disadvantages of the blended-learning method used in the educational process at the faculty of management at the University of Gdansk, in the opinion of undergraduate students. 978–984. <https://doi.org/10.21125/iceri.2017.1051>
- Taherdoost, H. (2016). Sampling Methods in Research Methodology: How to Choose a Sampling Technique for Research. *International Journal of Academic Research in Management (IJARM)*, 5. <https://dx.doi.org/10.2139/ssrn.3205035>
- Vaksalla A, Mohd Saat N. Z, Ishak I, Hanawi S. A, Mohd Amin H, Kamsan S. S, Zulkifli N. N, John D.N.S. (2019). The students' perceptions and attitudes towards blended learning among undergraduate students in Kuala Lumpur. *Education in Medicine Journal*, 11 (4):19–28. <https://doi.org/10.21315/eimj2019.11.4.2>
- Wang, Y., Han, X., & Yang, J. (2015). International forum of educational technology & society: revisiting the blended learning literature: using a complex adaptive systems framework. source: *Journal of Educational Technology & Society*, 18(2), 380–393. <https://doi.org/10.2307/jeductechsoci.18.2.380>
- Wright, B. M. (2017). Blended learning: student perception of face-to-face and online EFL lessons. *Indonesian Journal of Applied Linguistics*, 7(1), 64–71. <https://doi.org/10.17509/ijal.v7i1.6859>
- Yam, L. H. S., & Rossini, P. E. T. E. R. (2010). Effectiveness of project-based learning as a strategy for property education. *Pacific Rim Property Research Journal*, 16(3), 291–313. Retrieved from <https://www.prres.org/uploads/1350/1072/14445921.2010.11104306.pdf>
- Yang, H., Cai, J., Yang, H. H., & Wang, X. (2023). Examining key factors of beginner's continuance intention in blended learning in higher education. *Journal of Computing in Higher Education*, 35(1), 126–143. <https://doi.org/10.1007/s12528-022-09322-5>

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