

Research Article

The Perception of Senior High School Students Towards E-Learning in Bolgatanga Municipality, Ghana

Jesse Atuah^{1*}, Domebale Joseph², David Laar Sanka³, Cletus Azaabi⁴, Solomon Atebi⁵

^{1,4,5} Department of Mathematics/ICT, St. John Boscos College of Education, Navrongo, Ghana.

² IT Department, Garu Senior High School, Garu, Ghana.

³ Department of Information Systems and Technology, C.K Tedam University of Technology and Applied Sciences, Navrongo, Ghana.

Received: January 21, 2025; Revision: February 24, 2025;

Accepted: March 4, 2025; Available Online: April 3, 2025;

Abstract

Electronic learning (e-learning) is a comparatively new phenomenon in Ghana and students are grappling with the idea of adopting e-learning. The Technology Acceptance Model (TAM) was used in this study to investigate the perception of senior high school students toward e-learning. The study employed the quantitative research approach. The probability sampling method was used to select a total of three hundred and sixty (360) students from a sample frame to constitute the sample size for the study. A closed-ended structured questionnaire was used to gather data on students' perceived usefulness of e-learning and students' perceived ease of use of e-learning which was then analyzed using SPSS. The results revealed student's strong agreement that, attitude to using an e-learning system is based on student's perception of ease of use (POEU). Similarly, the study showed that students strongly agreed that students' perception of usefulness (PU) of e-learning systems forecasts user attitudes toward using an e-learning system.

Keywords: E-learning; Perceived Usefulness; Perceived Ease of Use

How to cite: Atuah, J., Domebale, J., Sanka, D. L., Azaabi, C., & Atebi, S. The Perception of Senior High School Students Towards E-Learning in Bolgatanga Municipality, Ghana. *Informatics and Software Engineering*, 3(1). <https://doi.org/10.58777/ise.v3i1.396>

*Corresponding author: Jesse Atuah (jesseatuah@gmail.com)



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1. Introduction

According to Mas (2023), e-learning is a comparatively new phenomenon in which students are grappling with the idea of adaptation and the hurried pace of technological and economic developments and the massive penetration of technology within the educational systems has led to greater demands of making automated learning systems available to learners. In addition, e-learning is shifting the way teaching and learning are taking place on campuses.

Students from all over the world can access educational materials and communicate with teachers thanks to the rapid development of e-learning. The customary teaching and learning process transformed after adopting the development of ICT and its tools as a new way of teaching and learning. Notwithstanding, the presence of PCs and their related accessories and usage in society cannot be overemphasized. E-learning has been preferred as it allows self-spacing, decreases stress, and increases collaboration, and satisfaction of learners Ghosh, et.al (2021). Recently, e-learning technology has been in high demand in both developed and developing countries. Organizations prefer e-learning as it eliminates the barriers of employees who have the potential but have the fear of talking with other learners Mesfin, et.al, (2018).

It is therefore important to investigate the perception of e-learning by students in senior high schools, with the purpose of concertizing stakeholders about the usefulness of e-learning as well as promoting e-learning use to enhance school performance. In the year 2007, ICT was introduced as a subject in SHS in Ghana. The syllabus of ICT for SHSs in Ghana is designed to provide basic skills in ICT for SHS students. Considering the advancement of the Ministry of Education (2010), the Government of Ghana, together with its developing partners and other stakeholders of education, has over the years invested enormously in ICT in education. Despite admirable efforts by the government, developing partners, and stakeholders, nothing substantial has changed in SHSs in Ghana, students in SHSs are given many notes in manual form and usually require teachers to deliver lessons always. Hence the a need to investigate the perception of senior high school students towards e-learning. This study therefore sought to determine the degree of perceived usefulness (PU) and perceived ease of use derived from using e-learning by students in senior high schools in the Bolgatanga Municipality of the Upper East region of Ghana.

2. Literature Review

2.1 The meaning of E-learning.

Electronic Learning known as e-learning, refers to education facilitated through electronic devices and technology. It involves the use of computer-based tools and the Internet to support learning. E-learning creates opportunities for students to engage creatively and actively in understanding teaching materials (Sakkir, 2020).

E-learning is anticipated to foster student independence and accountability in their learning process Stone & Logan, (2018). Maslin (2007), defines E-learning as “when we use information and communication technologies (ICTs) for knowledge seeking or delivering we refer to this method as E-learning”. Oye, et.al, (2010) defined e-learning as a unifying concept that describes the arenas of online learning, web-based training, and technology-provided instructions. Goyal (2012), declared that, utilizing the progress of information and communication technology advancement, E-learning is evolving as the paradigm of modern education.

2.2 The Benefits and Drawbacks of E-Learning.

A closer look at e-learning especially in higher institutions of which the senior high school is not left out has several benefits. Pande et al, (2016) in their study aligned some of the benefits as; time and location flexibility, easy access to huge amounts of information, eliminating barriers of fear, cost-effectiveness, taking into consideration the individual learners' differences, Self-paced learning, etc. E-learning systems provide solutions that deliver knowledge and information, facilitate learning, and increase performance by developing appropriate knowledge flow inside organizations (Menolli et al. 2020). Putting into practice and appropriately managing technological solutions, processes, and resources are necessary for the efficient utilization of e-learning in an organization (Alharthi et al. 2019).

Samsuri et.al, (2014) came out with some benefits of e-learning stating that e-learning enables learning at

any time, enables learning at any place, develops student's independence, assists in the development of study skills, students can use tools that best suit their learning styles. The study of Luaran et al. found that learners learning at their own pace was key to the research into the benefits of e-learning because among all the items "learning at any place" recorded the highest response.

The findings of (Thanji and Vasantha, 2018; Das et al, 2021), concluded that the most identified benefit of e-learning by learners is the flexibility of time and location. Also, according to Al-Adwan (2013), the adoption of e-learning gives the establishment just as learners the flexibility of time and place of conveyance or receipt as indicated by learning information.

Despite, the wavering benefits of e-learning discussed earlier, e-learning has also got some setbacks or demerits. One of the demerits of e-learning is that e-learning can lead to congestion or heavy use of some websites. This may bring about unanticipated costs both in time and money disadvantages (Arkorful, 2015).

Akhter et al. (2021), identified some disadvantages as; E-learning can lead to a lack of discipline among learners and teachers, which may result in procrastination. Traditional classroom settings promote discipline, which is essential for success. Additionally, prolonged use of screens in E-learning can cause health issues like poor eyesight. To prevent these problems, it's advised to take regular breaks, move around, and do wrist exercises.

2.3 E-Learning Initiative in Secondary Education - The Global Perspective

E-learning platforms have become a significant component of higher education globally, with distinct regional approaches and challenges emerging. The United States, a leader in educational technology, utilizes diverse e-learning tools and platforms, including MOOCs, to enhance education. In contrast, Africa's e-learning landscape is shaped by economic, infrastructural, and cultural factors, with challenges such as accessibility and connectivity issues (Adeniyi, 2024). Mamattah (2016), specified a cumulative growth rate of e-learning is 7.6% for the world. Elaborating, Mamattah outlined precise world regions that have higher growth rates of e-learning, itemizing 17.3% for Asia, followed by 16.9% for Eastern Europe, 15.2% for Africa, and 14.6% for Latin America. According to Mamattah (2016), the prospective for enhancing e-learning in Africa is projected to advance owing to the fast-growing market for mobile devices and other ICT devices.

2.4 E-Learning Initiative in Secondary Education in Ghana.

Policymakers in Ghana have realized the enormous prospective of ICT to meet the ever-increasing complexities and dynamics of education in Ghana. The policymakers are progressively incorporating ICT to enhance the concept of electronic learning in all sectors of the educational levels in Ghana. The proliferation in the interest of internet-ready mobile devices signifies a spreading out of access to devices that will support the progress of e-learning in secondary schools in Ghana.

The Government of Ghana has in the year 2003 established a national outline policy document on ICT and educational incorporation called the Information Communications Technology for Accelerated Development (ICT4AD). ICT4AD is aimed at driving the Ghanaian information and knowledge-based economy and society. Considerable efforts have been made to integrate e-learning into Ghana's educational system alongside traditional face-to-face learning. Emphasis has been made by Mamattah (2016) concerning projections made by many stakeholders of education to the effect of e-learning. Stakeholders proclaim that educational institutions in Ghana will soon carry out programs entirely through e-learning platforms.

2.5 Perceived ease-of-use (PEOU) and Perceived usefulness (PU) Variables.

The Technology Acceptance Model is an empirically validated theoretical model known by researchers in the dome of ICT. TAM is widely accepted as a yardstick to explain and predict users' behavior regarding information technology acceptance and use. Two perceptive beliefs, namely, Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) are postulated in TAM for the use of technology. Amplification of TAM implies PEOU and PU influence positively or negatively, directly or indirectly the user's Attitude (AT) towards the use of technology. The user's Attitude towards the usage of

technology affects the user's behavioral Intention to use (IU) a technology. The variables (PEOU, PU, AT, and IU) finally affect the decision of an individual to use or not to use a given technology at a time. Figure 2 is the original Technology Acceptance Model (TAM) which is the primary study of technology adoption development. The figure emphasizes two features, namely: PEOU and PU as proposed by Davis et al. (1989) with the attitude towards usage and behavioral intention to use as output of the figure. Over a while, further study endures to reproduce the model with the number of variables, the framework of this study was limited to Figure 2 and emphasizes the two main aspects. Notable TAM is not limited to only the independent and dependent variables external variables are noted to have a place in the model. The external variables influence PEOU and PU and the influence of PEOU and PU affect the attitude to use and intention to use which leads to actual usage of a technology.

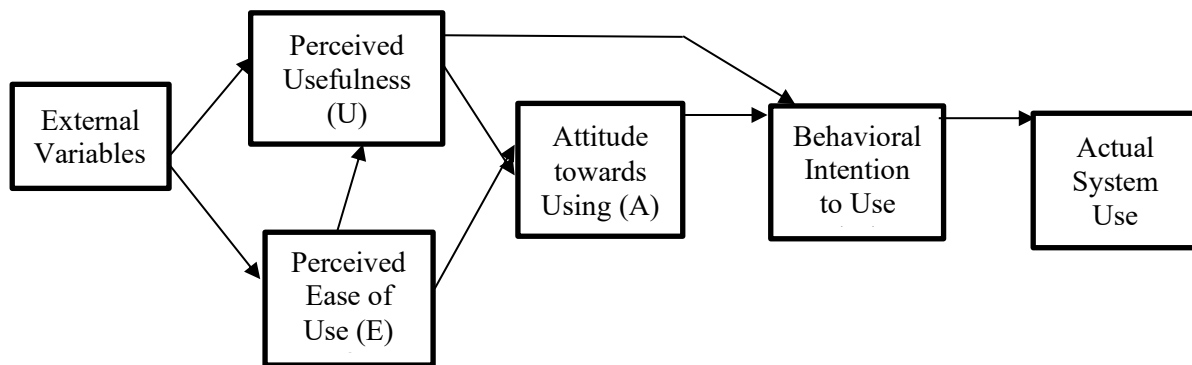


Figure 1: Original Technology Acceptance Model (TAM)

3. Methods

3.1 Research Approach and Design

The current study employs the use of descriptive research and inquiry methods through the use of a questionnaire to give a clear picture of the situation of the study.

3.2 Sample frame and sample size

The sampling frame was, students of Bolgatanga Girls Senior High School, Bolgatanga Technical Institute, and Zamse Senior/Technical School. A total of three hundred sixty (360) students were selected to form the sample size of this study, grounded on Slovin's formula rules for the selection of an acceptable sample size.

3.3 Instrument for Data Collection

A structured closed-ended questionnaire was used to gather the data from respondents. The questionnaire was chosen for the study because it was efficient and effective for the study of the TAM. The questionnaire designed for this study was divided into two (2) sections which covered the specific objectives of the study. The various sections covered are:

SECTION A: Personal information about the students known as Demographic / Bio-data

SECTION B: information on the likely usefulness of E-learning.

SECTION C: information that will reveal likely, the ease of use of E-Learning by students

For this study, a 5-point Likert scale was used. The scale was anchored by (1) strongly disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree.

3.4 Method of Data Collection

The researcher, with permission from the Headteachers of each Senior High School, collected primary data with the help of two trained assistants chosen for their fluency in English and clear handwriting. This was to ensure the accuracy and proper handling of the 360 questionnaires distributed across the schools. The students were given time to complete the questionnaires, and the researcher and his team supervised the process. Participants were assured of confidentiality, anonymity, and their right to withdraw from the study at any time.

3.5 Reliability of Instrument

Measurement validity in terms of reliability and construct validity was evaluated. The reliability analysis was conducted to ensure the internal validity and consistency of the items used for each variable. Izah (2023) recommended that Cronbach alpha values from 0.6 to 0.7 were deemed the lower limit of acceptability. An alpha of more than 0.7 would indicate that the items are homogeneous and measure the same constant.

Table 1. Reliability Statistics

Scale of Measure	Cronbach's Alpha	Number of Items
Perceived Usefulness of E-Learning	0.783	6
Perceived Ease of Use of E-Learning	0.834	5

Source: Field survey, 2024

Table 4 shows the reliability of the measurement scales. Cronbach's alpha reliability scores were all over 0.7, which is considered very good. Hence, the results demonstrate that the questionnaire is a reliable measurement instrument. Scale Cronbach's alpha for Perceived usefulness was 0.783. Scale items appearing on the survey were adapted from scales measuring variables in Davis et al. (1989) while the questionnaires were adapted from (Maslin, 2007).

3.6 Method of Data Analysis

The collected data was reviewed, edited, and coded to ensure completeness and facilitate analysis. Variables were grouped, and a codebook was created to guide the conversion of data into a format compatible with SPSS. The data, including variables like gender, age, and course, was entered into a data file according to the codebook's format. Descriptive statistics, such as tables, frequencies, and percentages, were used to analyze the data, focusing on perceived ease of use and the perceived benefits of eLearning.

4. Results

4.1 Demographic Information of Participants

The demographic information of the participants covered Gender, Age group, Year, how to operate their devices to access the internet, and how to access educational materials using their electronic devices. The data in Table 2 shows that out of the 360 participants, Males represented 45% and females represented 54% which formed the majority. Also, 77.1% were between ages 16 and 18 and formed the majority, while 1.1% were between ages 22 and 24 years, and formed the minority. In addition, 68.3% were in Form two (2) while 31.7% were in Form one (1). However, students knowing how to use their devices to access the internet appeared encouraging as 60.3 were able to while 30.7 were not able to access the internet with their devices. Last on the list sought to find out whether students knew how to access educational materials using their electronic devices. More than half of the total number indicated a positive response representing 55.6% while a few others responded no representing 44.4%.

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Table 2. Demographic information of participants

Variable	Item	Frequency	Percent (%)
Gender	Male	164	45.6
	Female	196	54.4
Age Group	Total	360	100
	15 and below	11	3.1
	16-18	279	77.7
	19-21	66	18.1
	22-24	4	1.1
Year of Study	Total	360	100
	1 st year	114	31.7
	2 nd year	246	68.3
	Total	360	100
Knowing how to operate devices to access the internet using devices such as Smartphones, laptops, tablets, etc.	Yes	217	60.3
	No	143	39.7
	Total	360	100
Do you know how to access educational materials using an electronic device such as Smartphone, laptop, Tablet, etc.	Yes	200	55.6
	No	160	44.4
	Total	360	100

4.3. Degree of Perceived Ease of Use (PEOU) of e-learning?

Table 3 below shows the degree of perceived ease of use (PEOU) of e-learning.

Table 3. Summary Statistics of items for Perceived Ease of Use of E-Learning

Statistics	I found E-learning easy to use	Learning to use E-learning would be easy for me	My interaction with E-learning is clear and understandable	It would be easy for me to find the necessary information with E-learning	I find e-learning to be flexible	Perceived Ease of Use of E-Learning
Mean	4.0500		4.2139	4.1083	4.4139	4.2500
Std. D	1.0623		0.9595	1.0566	0.9252	1.0063
N	360		360	360	360	360

Source: Field survey, 2024

Table 3 is a summary of all items relating to determining the degree of Perceived ease of use of e-learning which are: I found E-learning easy to use, learning to use E-learning would be easy for me, My interaction with E-learning is clear and understandable, It would be easy for me to find the necessary information with E-learning, I find e-learning to be flexible. The mean value and standard deviation values obtained for each item respectively were, 4.05 and 1.06; 4.21 and 0.95; 4.10 and 1.05; 4.41 and 0.92; and 4.25 and 1.00 with a sample size of 360. From Table 16, the final mean of 4.20 and standard deviation of (0.78) represent the students' overall perception of ease of e-learning. The final mean of 4.207 is the average response of students' perception of their ease of use of e-learning. Depicted from the 5-point scale, the student's perception of ease of use is on the agreed section (agreed and strongly agreed) of the continuum

of PEOU of e-learning. The final standard deviation of 0.78 was used to check the extent to which the data values for the PEOU variable are spread around the final mean (4.207). The standard deviation (0.78) assesses the usefulness of the mean (4.207) as a typical value for the distribution. The standard deviation affirms that a greater number of respondents of the items used to measure PEOU fell above the neutral point of three (3) on the continuum of the 5-point scale. Indicating that the mean was more typical than if the responses were varying widely on the 5-point scale.

4.4. The rate of Perceived Usefulness (PU) of e-learning?

Table 4 below shows the degree of perceived usefulness (PU) of e-learning

Table 4. Summary Statistics of Items for Perceived Usefulness of E-Learning

Statistics	Using E-learning would enhance my effectiveness in learning	E-learning would improve my course performance	Using E-learning would increase my productivity in my coursework	E-learning useful	I found E-learning can enable people to study, irrespective of where they are located in the world.	I believe e-learning content is very informative	Perceived Usefulness of E-Learning
Mean	4.0194	4.3722	4.2528	4.3583	4.3028	4.3167	4.27037
Std. Dev	1.26762	.97906	1.00417	.95114	1.02340	.91094	0.71237
N	360	360	360	360	360	360	360

Source: Field survey, 2024

Table 4 is a summary of entire items relating to determining the rate of perceived usefulness of e-learning. These are: Using E-learning would enhance my effectiveness in learning, Using E-learning would improve my course performance, Using E-learning would increase my productivity in my course work, I found E-learning useful, E-learning can enable people to study, irrespective of where they are located in the world, I believe e-learning contents are very informative. The mean value and standard deviation values obtained for each item respectively were 4.01 and 1.26, 4.37 and 0.97, 4.25 and 1.00, 4.35 and 0.95, 4.30 and 1.02, 4.31 and 0.91 with the sample size of 360. The final mean (4.27) and standard deviation (0.71.) represent students perceived usefulness of e-learning.

The final mean of 4.27 and standard deviation of (0.71) from Table 23 represent the students' overall perception of the usefulness of e-learning. The final mean of 4.27 specifies the average response of students' perception concerning the usefulness of e-learning.

5. Discussions

Using the 5-point scale as a yardstick, the student's perception of the usefulness of e-learning was on the agreed section (agreed and strongly agreed) of the continuum of PU of e-learning. Further, the final standard deviation of 0.71 was used to assess the magnitude to which the data values of the six (6) items for the PU variable are spread around the final mean of 4.27. The standard deviation (0.71) evaluated the usefulness of the mean (4.27) as a representative value for the distribution. The standard deviation of 0.71 confirms that a greater number of respondents of the items used to measure PU clear fell directly above the neutral point of three (3) on the continuum of the 5-point scale. This also signifies a more typical mean as compared to if the responses were varied widely on the 5-point scale. To further explore insightful information of this study, the researcher suggests researching to determine the relationship between PEOU and PU of E-learning.

6. Conclusion

The result of the study shows that Perceived Ease of Use is a determinant of Perceived Usefulness. The generalization is that if teachers find avenues to make e-learning easy to use by students of the three schools in the Bolgatanga municipal, students would find the usefulness of e-learning to their curriculum. The perception of students reveals that much can be achieved through the educational use of modern technology. Based on the study, putting more focus on e-learning in Ghana can provide a more suitable

solution in senior high schools' education by filling in the gap in effective and efficient teaching delivery and learning. To enhance the everyday traditional method of subject delivery of teachers and learning by students, the Ghana Education Service (GES) ought to effectively inculcate e-learning into the educational plan of SHS. Also, Systematic education on e-learning ought to be organized for SHS students to enhance the adoption and regular support of e-learning phases. The education will improve student knowledge of e-learning and persuade individuals who are far-fetched or doubtful about e-learning usage.

Acknowledgment

We express our profound thanks and gratitude to the teaching staff and students who helped in providing very important data and contributions.

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