

Original Research Article

Teachers' Use of Information Communication Technology in Teaching Lessons: Evidence from Selected Senior High Schools in Ghana

George Kojo Ennin^{1*}

¹PhD Candidate, Catholic University of Ghana

Article History
Received: 15.05.2026
Accepted: 03.07.2026
Published: 06.07.2026

Journal homepage:
<https://www.easpublisher.com>

Quick Response Code



Abstract: This study investigated the effect of Senior High School (SHS) teachers' perceptions of Information and Communication Technology (ICT) on their Actual Use (AU) of these tools in teaching. Guided by the Technology Acceptance Model (TAM), the study examined three primary constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Actual Use (AU) of ICT. Data were collected from 548 SHS teachers using a structured questionnaire and analyzed using descriptive statistics and multiple regression analyses. Findings revealed that teachers held high perceptions of both the usefulness and ease of use of ICT tools, with mean scores for PU and PEU consistently above the midpoint of the 7-point Likert scale. Results also showed a moderately high level of actual ICT use, although this varied across specific teaching practices and was influenced by institutional support. The regression analysis demonstrated that PU significantly influenced AU, explaining over 51% of the variance in teachers' ICT use. Similarly, PEU significantly influenced both PU and AU, accounting for nearly 50% of the variance in each case. These findings confirm the central role of teacher attitudes in determining ICT integration. The study concludes that fostering positive perceptions of ICT's value and usability is crucial for increasing its classroom application. It recommends sustained professional development, peer collaboration, and investment in digital infrastructure to enhance ICT integration. The findings provide useful implications for a contextual comprehension of technology adoption in Ghana's education system and offer practical implications for policymakers, school administrators, and teacher training institutions.

Keywords: Actual Use, Perceived Usefulness, Perceived Ease of Use, Senior High Schools, Teachers, Use of Technology.

Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

In the digital era, incorporating Information and Communication Technology (ICT) into education has moved from being a luxury to a necessity. As 21st-century learners become increasingly immersed in digital environments, teachers are expected to evolve in their pedagogical approaches to meet the demands of a technologically driven world (UNESCO, 2023). Globally, ICT is transforming the educational landscape, enabling access to diverse resources, supporting differentiated instruction, and promoting critical thinking and collaboration (World Bank, 2022). In fact, countries that have systematically adopted ICT in schools have reported improved student engagement, deeper learning outcomes, and greater instructional efficiency (OECD, 2021).

In sub-Saharan Africa, and Ghana in particular, efforts to embed ICT in teaching have been steadily gaining momentum. Ghana's Ministry of Education, through initiatives like the Ghana Accountability for Learning Outcomes Project (GALOP) and ICT in Education Policy, has emphasized the strategic function of technology in modernizing teaching and learning (MoE, 2021). Nevertheless, while infrastructure investments are being made, actual classroom integration remains inconsistent. A 2023 national education report indicated that fewer than 40% of Senior High School teachers use ICT tools regularly in their lessons, despite nearly 70% reporting access to at least one digital resource (GES, 2023).

This disconnect raises important questions: What motivates teachers to actually use ICT in their classrooms? Do they find these tools useful and easy to

*Corresponding Author: George Kojo Ennin
PhD Candidate, Catholic University of Ghana

use? The answers lie in understanding the cognitive and behavioural factors that influence technology adoption. The Technology Acceptance Model (TAM), pioneered by Davis (1989), remains one of the most widely used frameworks for examining users' acceptance of technology. It posits that *Perceived Usefulness* (PU) and *Perceived Ease of Use* (PEU) are primary drivers of actual technology usage. While several international studies have validated TAM in educational contexts (Said *et al.*, 2022; Zhou & Wang, 2024), limited research has been done to contextualize these findings within the realities of Ghanaian Senior High Schools, where disparities in infrastructure, training, and administrative support persist. It is therefore against this backdrop that, this study investigates the levels of PU, PEU, and Actual Use (AU) of ICT among Senior High School teachers in Ghana and examines the relationships among these variables. By exploring the psychological and environmental factors that underpin ICT adoption, this research seeks to bridge the gap between access and utilization and provide actionable insights for policy, training, and resource allocation.

Statement of the Problem

Although there is a growing focus on incorporating information and communication technology (ICT) into education to improve teaching and learning results, teachers' actual use of ICT in the classroom is still uneven and frequently restricted, especially in developing nations. Although many teachers acknowledge the potential benefits of ICT such as improving student engagement, fostering critical thinking, and facilitating access to diverse learning resources (Al-Mahmood, 2021; Mensah & Okyere, 2023) these perceived advantages do not always translate into widespread or effective classroom implementation.

One of the key challenges lies revolves around comprehending the elements that impact educators' use of ICT. According to Davis' (1989) Technology Acceptance Model (TAM), users' actual acceptance of technology is greatly influenced by two key determinants: perceived usefulness (PU) and perceived ease of use (PEU). While existing studies have validated TAM in various educational settings (Said *et al.*, 2022; Zhou & Wang, 2024), there remains a need for empirical evidence that explores these constructs within the specific context of Senior High Schools, particularly in regions where infrastructural and institutional support may be lacking.

Furthermore, although teachers may find ICT tools helpful and relatively easy to use, their actual integration into teaching practice is often hindered by limited access to digital resources, insufficient technical support, and a lack of collaborative professional development opportunities (Boateng *et al.*, 2021; Yeboah & Danso, 2024). These gaps suggest that positive attitudes alone are insufficient and must be supported by systemic factors to result in consistent and

effective use. Therefore, this study seeks to investigate the levels of PU, PEU, and Actual Use (AU) of ICT among Senior High School teachers, and to examine how PU and PEU influence AU, as well as how PEU affects PU. By identifying the key drivers and barriers to ICT integration, the study seeks to offer data-driven insights that can inform policies, training programs, and infrastructure development, ultimately fostering a more effective and equitable digital learning environment.

Research Objectives

1. Assess teachers' level of PU of ICT in teaching.
2. Evaluate teachers' level of PEU of ICT in teaching.
3. Assess teachers' level of AU of ICT in teaching.
4. Examine the effect of teachers' level of PU on AU of ICT in teaching.
5. Analyse the effect of teachers' level of PEU on AU of ICT in teaching.
6. Examine the effect of teachers' level of PEU on PU of ICT in teaching.

Research Questions

1. What are the teachers' level of PU of ICT in teaching?
2. What are the teachers' level of PEU of ICT in teaching?
3. What are the teachers' level of AU of ICT in teaching?

Research Hypotheses

H₁: Teachers' level of PU significantly influences their AU of ICT in teaching.

H₂: Teachers' level of PEU significantly influences their AU of ICT in teaching.

H₃: Teachers' level of PEU significantly influences their PU of ICT in teaching.

LITERATURE REVIEW

Theoretical Review

This study is grounded in the Technology Acceptance Model (TAM) developed by Davis (1989), which extensively is used to explain users' acceptance and usage of technology across various sectors, including education. According to the TAM, a person's attitude toward utilizing technology is influenced by two key beliefs: perceived usefulness (PU) and perceived ease of use (PEU). These views then have an impact on an individual's actual use (AU). As stated by Davis (1989), PEU is the degree to which a person feels that utilizing a system would be effortless, whereas PU is the degree to which a person believes that using a specific system will improve their job performance. These constructs are particularly relevant in educational settings, where teachers' willingness to adopt ICT tools is critical for effective integration in teaching (Venkatesh & Davis, 2000). The model has been extended and validated in educational technology studies globally, including in sub-Saharan Africa, where infrastructure and digital literacy gaps pose unique challenges (Teo, 2011;

Boateng *et al.*, 2022). By applying TAM, this study explores how teachers' perceptions influence their actual classroom application of ICT, considering Ghana's context of evolving digital education policies and infrastructural disparities.

Empirical Review

Empirical studies continue to demonstrate that PU and PEU are strong predictors of technology adoption in teaching. For instance, research by Buabeng-Andoh (2021) revealed that Ghanaian teachers' adoption of ICT is significantly shaped by their belief in its ability to improve student learning and streamline teaching tasks. Similarly, Alenezi (2020) found that teachers that thought ICT was helpful and simple to use were more inclined to incorporate it into their instructional practices, regardless of age or experience.

Studies by Mtebe and Raisamo (2014) in East Africa and recent work by Kwame and Asare (2023) in Ghana have emphasized the importance of training and institutional support in enhancing teachers' comfort and competence in using ICT. These studies affirm the

central tenets of TAM, showing that without a strong foundation of perceived ease and usefulness, actual usage remains limited even when technology is available. Additionally, empirical evidence reveals that the connection between PEU and PU is particularly strong in educational settings, where initial apprehension or low digital literacy can hinder perceived usefulness (Yuen & Ma, 2008; Chigona *et al.*, 2021). This interconnection underscores the crucial significance of continuous professional development to create both competence and confidence in ICT usage.

Despite widespread acknowledgment of ICT's benefits, practical usage in many developing contexts remains inconsistent, primarily due to limited institutional support, inadequate infrastructure, and a lack of peer modelling (Tondeur *et al.*, 2017; Bervell & Umar, 2022). These findings align with the outcomes of modern research, which showed that while many teachers are motivated and willing to use ICT, they are constrained by systemic issues such as inadequate school-level support and inconsistent peer influence.

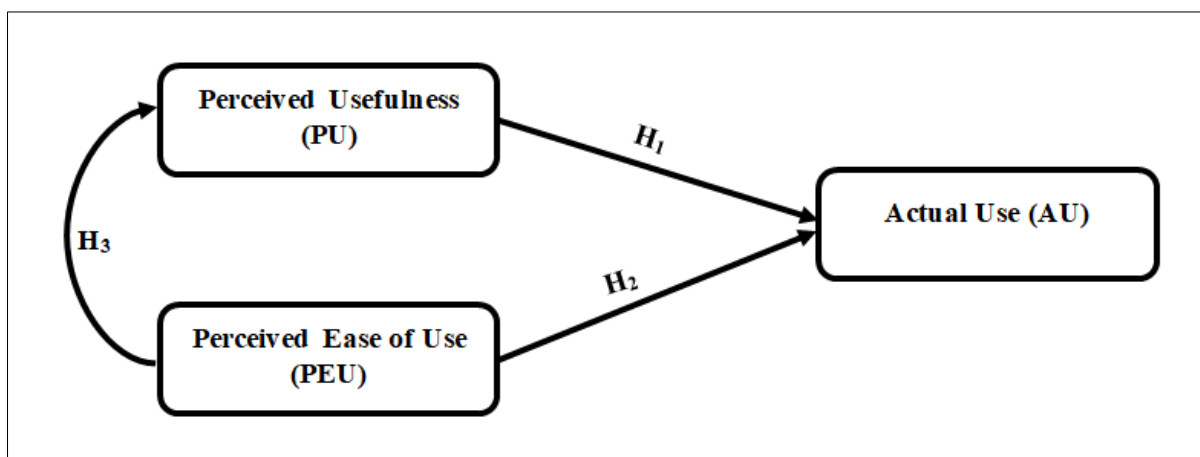


Figure 1: Conceptual Framework
 Source: Adapted from Davis's (1989) Technology Acceptance Model

The conceptual framework for the study on teachers' usage of ICT in the classroom is shown in Figure 1, which was modified from Davis's (1989) Technology Acceptance Model (TAM). It demonstrates how teachers' attitudes about ICT are influenced by perceived usefulness (PU) and perceived ease of use (PEU), which in turn influence their behavioral intentions and, eventually, actual ICT usage. External variables like training, access to ICT resources, and school support have an impact on these fundamental ideas. Teachers' opinions are crucial in affecting ICT acceptance in education, since the framework highlights that for ICT integration to be effective, teachers must find technology both helpful and simple to use.

METHODS

The target population of the study consisted of teachers teaching at the Senior High Schools in the four

selected regions (Greater Accra, Ashanti, Western and Central) in Ghana. These were chosen because their active roles in teaching and learning, and therefore have knowledge as to whether ICT is employed during teaching or not. According to the GES report 2025, the Senior High Schools in the 16 regions were 475. Those within the four selected regions under the study included Greater Accra, which constituted 118 Senior High Schools, Ashanti and Western which constituted 180 and 40 Senior High Schools respectively, with the remaining 15 Senior High Schools coming from Central region. These four regions altogether per the GES report 2025, culminate about 74 % of the total number of Senior High Schools in Ghana, thus representative of the population. The Sample size for this study was five hundred and forty-eight (548) teachers teaching at the Senior High Schools in the four selected regions (Greater Accra-183, Ashanti-279, Western-62 and Central-24). Using the

Microsoft Excel randomize function, members of the population were chosen to represent the sample using the simple random sampling technique. In order to prevent bias, this method was used to produce a representative sample and guarantee that every person of the population had an equal chance of being chosen (Alvi, 2016). Additionally, it was selected because it provided greater accuracy, making it appropriate for the study. It accurately reflected the population under study, with appropriate representation for each subgroup within the population (Kaur, Brar & Sharma, 2018). The sample size determination table by Bartlett, Kotlik, and Higgins (2001) was used for this.

RESULTS

The study surveyed 548 Senior High School teachers across four regions in Ghana (Greater Accra, Ashanti, Western, and Central) to examine their use of Information and Communication Technology (ICT) in teaching. The gender distribution was relatively balanced, with 51.1% male and 48.9% female

respondents, ensuring representation from both sexes. A majority of the respondents (59.5%) were aged between 18 and 28 years, indicating a predominantly young teaching workforce. This age profile may favour ICT adoption; as younger teachers are generally more technologically inclined. In terms of teaching experience, 30.3% had over 10 years of experience, while a combined 50.1% had less than 7 years, suggesting a mix of both seasoned and early-career teachers. Educationally, 39.8% held degree qualifications, 30.3% had completed secondary education, and 17.9% had Higher National Diplomas (HNDs), while a smaller group (9.1%) had qualifications above a degree. This variation in academic backgrounds could influence ICT competency levels. Overall, the respondents' demographic characteristics youthfulness, balanced gender representation, and a fair spread of teaching experience and education—suggest a teaching population with potential for ICT integration in classroom instruction, albeit with varying levels of readiness and access across individuals.

Table 1: Socio-demographic Characteristics of Respondents

Variable	Category	Frequency	Percent
Gender	Male	280	51.1
	Female	268	48.9
What is your age?			
	18-28 years	326	59.5
	29-39 years	160	29.2
	40-59 years	60	10.9
	60 years and above	2	0.4
How long have you been teaching?			
	Less than a year	72	13.1
	1-3 years	110	20.1
	4-6 years	100	18.2
	7-9 years	100	18.2
	10 years and above	166	30.3
What is your highest level of education?			
	Basic	16	2.9
	Secondary	166	30.3
	HND	98	17.9
	Degree	218	39.8
	Above Degree	50	9.1
Total		548	100.0

Source: Field Data, Eninn (2025)

Figure 2 shows that 66% of teachers are ICT novices, indicating low digital proficiency. Only 14% are at the intermediate level, 11% are beginners, and just 9%

are advanced users. This highlights a significant skills gap, emphasizing the need for targeted ICT training and support for effective classroom integration.

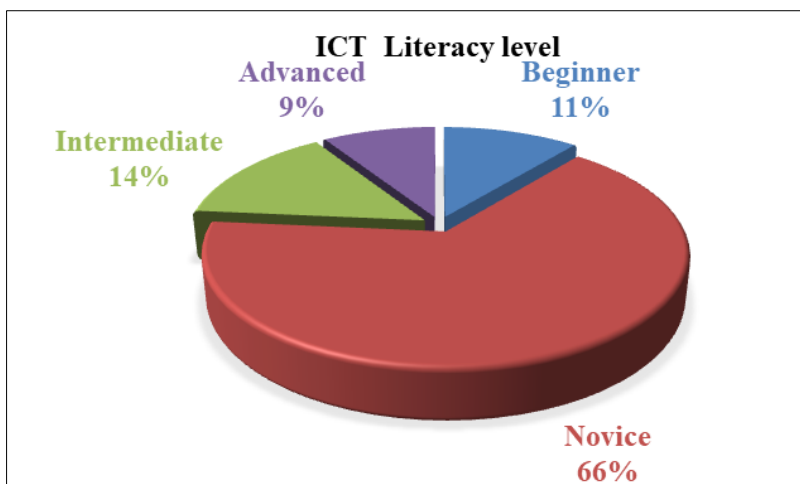


Figure 2: ICT literacy level
 Source: Field Data, Eninn (2025)

Teachers’ Level of PU of ICT in Teaching

The first objective of the study was to establish the Teachers’ level of PU of ICT in teaching. Table 2 presents descriptive statistics on teachers’ perceptions of the usefulness of ICT in their teaching practices. The results indicate a generally high level of perceived usefulness (PU) among Senior High School teachers. Across all seven indicators, mean scores are above 4.30 on a 7-point scale, suggesting strong agreement with the usefulness of ICT. The highest-rated statement was "ICT supports the development of students' critical thinking and real-world skills" with a mean of 4.80, followed closely by "ICT provides access to diverse resources and supports personalized learning" (M = 4.77) and "ICT

enhances students’ motivation, participation, and learning experience" (M = 4.73). These results reflect that teachers highly value ICT’s contribution to student engagement, learning enrichment, and skill development. The item with the lowest mean was "ICT helps me perform teaching tasks efficiently and effectively" (M = 4.37), though still relatively high. This suggests some variability in how teachers perceive ICT’s impact on their own efficiency. Negative skewness values (-0.384 to -0.807) across all items indicate a tendency toward agreement, and kurtosis values (-0.558 to -1.057) suggest relatively flat distributions, meaning responses were spread across categories rather than tightly clustered.

Table 2: Descriptive Statistics of Teachers’ level of PU of ICT in teaching

Indicator of Teachers’ level of PU	N	Mean	Std. D	Skewness		Kurtosis	
				Stat	Std. Error	Stat	Std. Error
ICT makes my teaching more engaging and effective.	548	4.54	1.939	-.506	.104	-.898	.208
ICT provides access to diverse resources and supports personalized learning.	548	4.77	1.937	-.575	.104	-.824	.208
ICT enhances students’ motivation, participation, and learning experience.	548	4.73	2.020	-.747	.104	-.779	.208
ICT supports the development of students' critical thinking and real-world skills.	548	4.80	1.849	-.729	.104	-.631	.208
ICT helps me perform teaching tasks efficiently and effectively	548	4.37	1.961	-.494	.104	-1.057	.208
ICT improves my overall teaching capability and professional efficacy.	548	4.60	1.854	-.807	.104	-.558	.208
I consider ICT a valuable tool for my teaching practice.	548	4.39	1.917	-.384	.104	-.983	.208

Source: Field Data, Eninn (2025)

Teachers’ Level of PEU of ICT in Teaching

Another objective of the study was to establish Teachers’ level of PEU of ICT in teaching. Table 3 presents descriptive statistics on how easily teachers perceive the use of ICT tools in their teaching. Overall, the data suggest that teachers generally find ICT easy to use, with mean scores for all items above 4.60, and some

exceeding 5.00. The highest-rated item was "Using ICT in teaching does not require much effort or cause frustration" with a mean of 5.13, closely followed by "Using ICT tools makes teaching easier and more manageable" (M = 5.10) and "My existing skills allow me to use ICT without distractions from teaching" (M = 4.90). These results indicate that most teachers feel

confident in using ICT tools effectively and efficiently without undue strain. Teachers also agreed, to a slightly lesser extent, that they could independently use most ICT tools ($M = 4.72$) and that technical problems were rare during ICT use ($M = 4.73$). The statement *"ICT tools are time-efficient and convenient to use"* scored a mean of 4.64, and *"If given training, I can become proficient in*

using ICT tools" had a mean of 4.62, both indicating openness to learning and growth. All items show negative skewness (-0.593 to -1.049), pointing toward a general tendency for agreement, and kurtosis (-0.096 to -0.943) values suggest normal or moderately flat distributions, implying a spread of opinions but with most clustered toward agreement.

Table 3: Descriptive Statistics of Teachers' level of PEU of technology in teaching

Indicator of Teachers' level of PEU	N	Mean	Std. D	Skewness		Kurtosis	
				Stat	Std. Error	Stat	Std. Error
Using ICT tools makes teaching easier and more manageable.	548	5.10	1.811	-.868	.104	-.134	.208
I can independently use most ICT tools for teaching.	548	4.72	2.010	-.619	.104	-.839	.208
Using ICT in teaching does not require much effort or cause frustration.	548	5.13	2.101	-.896	.104	-.536	.208
ICT tools are time-efficient and convenient to use in teaching.	548	4.64	2.021	-.593	.104	-.943	.208
If given training, I can become proficient in using ICT tools for teaching.	548	4.62	2.015	-.662	.104	-.815	.208
Using ICT in class rarely causes technical problems.	548	4.73	2.025	-.771	.104	-.702	.208
My existing skills allow me to use ICT without distractions from teaching.	548	4.90	1.888	-1.049	.104	-.096	.208

Source: Field Data, Eninn (2025)

Teachers' Level of AU of ICT in Teaching

The third objective was to also establish Teachers' level of AU of ICT in teaching. Table 4 presents data on teachers' actual use (AU) of ICT in their classroom practices. The overall results suggest a moderately high level of ICT usage, though with some variability across specific indicators. The highest-rated items were: *"I incorporate a variety of online resources and materials into my lessons"* ($M = 5.07$), *"I encourage students to use ICT tools for independent research and presentations"* ($M = 5.07$), and *"I use ICT tools to introduce topics and create interactive learning activities"* ($M = 4.67$). These responses indicate strong teacher engagement in using ICT to enhance interactivity and student-centred learning. The statement *"Integrating ICT into my lessons is a regular and intentional part of my teaching"* also scored fairly high ($M = 4.49$), showing

a conscious effort by teachers to embed technology into lesson delivery. Similarly, *"I explore and experiment with different ICT tools for teaching"* received a mean of 4.50, suggesting willingness to innovate with digital tools. However, the lowest-rated items were: *"I adopt ICT practices after observing successful examples from colleagues"* ($M = 3.84$), and *"My school provides sufficient support and resources for using ICT in lessons"* ($M = 3.92$). These lower scores point to institutional and collaborative gaps, such as limited peer support or inadequate infrastructure, which may hinder consistent and broader ICT adoption. The negative skewness (-0.015 to -1.047) in most responses reflects a general tendency toward agreement, while kurtosis values (-0.026 to -1.523) indicate slightly flat or varied response patterns, implying differences in access, experience, or school support.

Table 4: Descriptive Statistics of Teachers' level of AU of technology in teaching

	N	Mean	Std. D	Skewness		Kurtosis	
				Stat	Std. Error	Stat	Std. Error
Integrating ICT into my lessons is a regular and intentional part of my teaching practice.	548	4.49	1.953	-.421	.105	-.915	.209
I use ICT tools to introduce topics and create interactive learning activities.	548	4.67	1.936	-.553	.106	-.887	.211
I incorporate a variety of online resources and materials into my lessons.	548	5.07	1.899	-.828	.104	-.424	.208
I encourage students to use ICT tools for independent research and presentations.	548	5.07	1.909	-1.047	.104	-.026	.208
I explore and experiment with different ICT tools for teaching.	548	4.50	2.313	-.460	.105	-1.346	.210

	N	Mean	Std. D	Skewness		Kurtosis	
				Stat	Std. Error	Stat	Std. Error
I adopt ICT practices after observing successful examples from colleagues.	548	3.84	2.107	.049	.106	-1.428	.211
My school provides sufficient support and resources for using ICT in lessons.	548	3.92	2.190	.015	.105	-1.523	.210

Source: Field Data, Eninn (2025)

H₁: Teachers’ Level of PU Significantly Influences Their AU of ICT in Teaching

The study also aimed to find out how Teachers’ level of PU influences their AU of ITC in teaching. Hypothesis 1 proposed that teachers’ perceived usefulness (PU) of ICT significantly influences their actual use (AU) of ICT in teaching. The results from the regression analysis strongly support this hypothesis. Table 5 (Model Summary) shows a high R value of

0.719, indicating a strong positive correlation between PU and AU. The Adjusted R Square value of 0.516 means that approximately 51.6% of the variance in actual ICT use is explained by perceived usefulness. This is a substantial effect size, suggesting that teachers who see ICT as useful are significantly more likely to integrate it into their teaching. The Durbin-Watson statistic (2.003) indicates no significant autocorrelation, confirming the reliability of the model.

Table 5: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.719 ^a	.517	.516	.98346	2.003

a. Predictors: (Constant), Perceived Usefulness

b. Dependent Variable: Actual Use

Source: Field Data, Eninn (2025)

Table 6 (ANOVA) confirms the model’s overall significance. The F-value of 585.158 and a p-value of

.000 show that the regression model is statistically significant and that PU is a meaningful predictor of AU.

Table 6: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	565.965	1	565.965	585.158	.000 ^b
	Residual	528.091	546	.967		
	Total	1094.056	547			

a. Dependent Variable: Actual Use

b. Predictors: (Constant), Perceived Usefulness

Source: Field Data, Eninn (2025)

Table 7 (Coefficients) provides further insight for H₁. The unstandardized coefficient ($B = 0.710$) implies that for every one-unit increase in perceived usefulness, actual use increases by 0.71 units. The t-value (24.190) and significance level ($p < .001$) reinforce

the strength and reliability of this relationship. The standardized beta coefficient ($\beta = 0.719$) confirms PU as a strong predictor of AU. Moreover, the VIF (1.000) and Tolerance values (1.000) confirm no multicollinearity issues.

Table 7: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.225	.141		8.655	.000		
	Perceived Usefulness	.710	.029	.719	24.190	.000	1.000	1.000

a. Dependent Variable: Actual Use

Source: Field Data, Eninn (2025)

H₂: Teachers’ Level of PEU Significantly Influences Their AU of ICT in Teaching

The study further sought to examine how Teachers’ level of PEU influences their AU of ICT in

teaching. Thus, Hypothesis 2 proposed that teachers’ perceived ease of use (PEU) of ICT significantly influences their actual use (AU) in classroom teaching. The results of the regression analysis support this hypothesis.

Table 8: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.711 ^a	.505	.504	.99597	1.955
a. Predictors: (Constant), Perceived Ease of use					
b. Dependent Variable: Actual Use					

Source: Field Data, Eninn (2025)

From Table 8 (Model Summary), the R value is 0.711, indicating a strong positive relationship between PEU and AU. The Adjusted R-Square value of 0.504 means that 50.4% of the variation in the actual use of ICT use explained by teachers' perceived ease of use. This

demonstrates that ease of use is a crucial determinant in encouraging ICT integration. The Durbin-Watson statistic (1.955) suggests no significant autocorrelation, ensuring the model's validity.

Table 9: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	552.444	1	552.444	556.921	.000 ^b
	Residual	541.611	546	.992		
	Total	1094.056	547			
a. Dependent Variable: Actual Use						
b. Predictors: (Constant), Perceived Ease of use						

Source: Field Data, Eninn (2025)

Table 9 (ANOVA) affirms the model's statistical significance. The F-value of 556.921 with a p-value of .000 indicates that the regression model is highly significant, and that PEU is a reliable predictor of AU. In Table 10 (Coefficients), the unstandardized coefficient ($B = 0.594$) shows that a one-unit increase in PEU leads

to a 0.594-unit increase in actual ICT use. The standardized beta coefficient ($\beta = 0.711$) and high t-value (23.599) reinforce the strength and significance of this effect ($p < .001$). Additionally, the VIF (1.0) and Tolerance values (1.0) confirm no multicollinearity issues.

Table 10: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.622	.129		12.593	.000		
	Perceived Ease of use	.594	.025	.711	23.599	.000	1.000	1.000
a. Dependent Variable: Actual Use								

Source: Field Data, Eninn (2025)

H₃: Teachers' Level of PEU Significantly Influences Their PU of ICT in Teaching

Finally, the study sought to establish how Teachers' level of PEU influences their PU of ICT in

teaching. Hypothesis 3 suggested that teachers' perceived ease of use (PEU) significantly influences their perceived usefulness (PU) of ICT tools in teaching. The regression analysis results strongly support this hypothesis.

Table 11: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.702 ^a	.492	.491	1.02129	2.401
a. Predictors: (Constant), Perceived Ease of use					
b. Dependent Variable: Perceived Usefulness					

Source: Field Data, Eninn (2025)

As shown in Table 11 (Model Summary), the R value is 0.702, indicating a strong positive correlation between PEU and PU. The Adjusted R Square of 0.492 reveals that approximately 49.2% of the variance in PU is explained by PEU. This substantial proportion

underscores the influence of ease of use on how useful teachers perceive ICT to be. The Durbin-Watson statistic of 2.401 falls within an acceptable range, indicating no autocorrelation issues in the residuals.

Table 12: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	552.430	1	552.430	529.639	.000 ^b
	Residual	569.495	546	1.043		
	Total	1121.924	547			
a. Dependent Variable: Perceived Usefulness						
b. Predictors: (Constant), Perceived Ease of use						

Source: Field Data, Eninn (2025)

Table 12 (ANOVA) demonstrates that the model is statistically significant. The F-statistic of 529.639 and p-value of .000 indicate a highly significant regression model, confirming that PEU meaningfully predicts PU. In Table 13 (Coefficients), the unstandardized coefficient (B = 0.594) means that for every one-unit increase in PEU, perceived usefulness

increases by 0.594 units. The standardized beta coefficient ($\beta = 0.702$) is high, and the corresponding t-value (23.014) is statistically significant ($p < .001$), affirming that PEU is a strong and reliable predictor of PU. No multicollinearity concerns were found ($VIF = 1.000$).

Table 13: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.731	.132		13.103	.000		
	Perceived Ease of use	.594	.026	.702	23.014	.000	1.000	1.000
a. Dependent Variable: Perceived Usefulness								

Source: Field Data, Eninn (2025)

DISCUSSION

The study aimed to explore senior high school teachers’ perceptions and usage of Information and Communication Technology (ICT) in teaching by examining their levels of Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Actual Use (AU). The findings affirm the relevance of the Technology Acceptance Model (TAM) in understanding ICT integration in educational settings, particularly within the context of Ghanaian secondary education. The results show high levels of PU and PEU among teachers, which significantly predict their actual use of ICT tools in the classroom.

Teachers reported a generally strong belief in the usefulness of ICT in enhancing teaching and learning. This was evident across several dimensions, such as improving students’ critical thinking, personalizing learning experiences, and increasing motivation and engagement. These findings reflect global trends, where ICT is increasingly recognized as a transformative force in education. Recent research affirms that when teachers perceive ICT as beneficial for student learning outcomes, they are more likely to integrate it meaningfully into their teaching practices (Eze *et al.*, 2021; Zaman *et al.*, 2023). Even though the perception of ICT enhancing teaching efficiency received slightly lower agreement than other items, it still reflected a broadly positive attitude, suggesting only minimal concern about ICT interfering with instructional tasks.

In terms of PEU, the results show that teachers found ICT tools relatively easy to use. Most participants

agreed that ICT use did not require excessive effort or cause frustration, and many felt that their existing skills were sufficient to navigate ICT tools without disrupting instructional flow. These outcomes are consistent with the findings of Ishola *et al.*, (2025), who noted that when teachers feel confident and competent in using digital tools, they are more inclined to incorporate them into their teaching. Furthermore, the willingness to become more proficient with training underscores teachers’ openness to ongoing professional development. The overall ease of use contributes significantly to the likelihood of adoption, supporting the central tenets of TAM.

Despite the high levels of perceived usefulness and ease of use, the actual use of ICT tools in classroom practices revealed some variation. Teachers actively used ICT to create interactive lessons, integrate online resources, and encourage student-driven learning activities. However, there were notable limitations in peer collaboration and institutional support. Teachers reported relatively less frequent adoption of ICT practices from colleagues and expressed concerns over inadequate school-level resources. These observations align with the literature, which emphasizes that even when individual attitudes are favourable, external barriers such as infrastructure, leadership support, and professional learning communities can hinder full-scale integration (Frontiers, 2022).

Hypothesis testing further confirms the strong influence of PU on AU. The statistical analysis revealed that a significant portion of the variance in teachers’ actual use of ICT was explained by their perceived

usefulness of the tools. This finding echoes the work of Alharbi and Drew (2022), who found that the more useful teachers perceive a technology to be for enhancing teaching outcomes, the more likely they are to adopt it in their classroom routines. The results clearly suggest that when ICT is seen as adding real pedagogical value, teachers are more willing to engage with it consistently.

Similarly, PEU was also found to be a significant predictor of AU. Teachers who found ICT tools intuitive and easy to implement were much more likely to use them regularly in their instructional practice. This supports previous findings that simplicity and user-friendliness are crucial factors in technology adoption, especially among educators who may face time or workload constraints (Zaman *et al.*, 2023). The absence of technical obstacles or steep learning curves encourages greater experimentation with digital tools, leading to richer and more dynamic learning environments.

Moreover, the influence of PEU on PU was confirmed by the regression analysis. Teachers who found ICT tools easy to use were more likely to perceive them as useful in enhancing student learning and teaching efficiency. This pathway has been widely supported in existing literature and forms a cornerstone of TAM. When ease of use is established, teachers are more inclined to attribute value and utility to digital tools, which in turn drives their intention to integrate such tools into pedagogical routines (Eze *et al.*, 2021).

While the study's findings highlight the need for policies promoting ICT training and support for teachers, demanding that schools invest in infrastructure and foster a collaborative ICT culture, because enhanced ease of use and perceived usefulness can improve teaching practices, leading to more engaging, student-centred learning environments and better technology integration in education, the study was limited to senior high school teachers, restricting generalizability to other education levels. It relied on self-reported data, which may introduce bias. Additionally, the cross-sectional design prevents causal inferences, and external factors such as infrastructure quality or administrative support were not deeply examined. Thus, future research should explore longitudinal changes in ICT use, expand to other education levels, and examine contextual factors like leadership and infrastructure. Studies could also investigate moderating variables such as gender, digital literacy, and subject area, using mixed methods to gain deeper insights into sustainable and effective ICT integration in teaching.

CONCLUSION & RECOMMENDATIONS

The findings of this study offer important insights into the integration of Information and Communication Technology (ICT) in Senior High School teaching practices. The investigation focused on three key constructs; Perceived Usefulness (PU),

Perceived Ease of Use (PEU), and Actual Use (AU) within the framework of the Technology Acceptance Model (TAM). Overall, the results indicate that teachers perceive ICT as both valuable and relatively easy to use, and these perceptions significantly influence their actual use of technology in instructional settings.

Teachers demonstrated a strong belief in the usefulness of ICT, particularly in its ability to enhance student learning, foster engagement, and support critical thinking and real-world skills. These positive perceptions were complemented by a general confidence in their ability to use ICT tools with minimal difficulty. The ease with which teachers felt they could navigate digital platforms contributed to their view that ICT made teaching more manageable and effective. Moreover, the regression analyses showed that both PU and PEU significantly predicted AU, affirming the TAM's assertion that these variables are critical determinants of technology adoption. In particular, PU was found to be a slightly stronger predictor of actual use, suggesting that when teachers perceive ICT as beneficial to their teaching goals, they are more inclined to adopt it consistently in their classrooms.

However, the study also revealed certain institutional and contextual challenges that may hinder the full integration of ICT in teaching. While individual teacher attitudes were generally positive, issues such as inadequate technical support, limited access to resources, and lack of peer collaboration were identified as barriers. These findings highlight the importance of not only fostering positive perceptions among teachers but also ensuring that systemic conditions support sustained and meaningful ICT use.

In light of these findings, several recommendations emerge. First, there is a need to improve ICT infrastructure and provide reliable technical support in schools. Access to functional digital tools and stable internet connectivity is essential for facilitating the integration of technology into teaching. Second, professional development opportunities should be expanded and made more practical, focusing on both technical skills and pedagogical strategies for ICT use. Training programs should be ongoing and tailored to the specific needs of teachers in different subject areas.

Moreover, creating a collaborative culture around ICT use is vital. Schools should encourage peer mentoring, team-based experimentation with new tools, and the sharing of best practices. Such initiatives can help build teacher confidence and foster a more innovative teaching environment. Educational policies should also reflect the importance of ICT by embedding its use into teacher evaluation frameworks and offering incentives for effective integration. Finally, particular attention must be given to equity in ICT access. Many schools, especially in rural or under-resourced areas, lack the basic infrastructure needed for technology use.

Targeted interventions such as mobile ICT labs or solar-powered digital tools can help bridge these gaps and ensure that all students benefit from digitally enhanced education.

APPENDIX- QUESTIONNAIRE

This questionnaire is part of a research-based project work required by Catholic University as a requirement for completing a term paper in an advanced statistical methods class. The questionnaire is designed to solicit your independent views on *Teachers’ Use of Information Communication Technology in teaching lessons: Evidence from selected Senior High Schools in Ghana*. All information provided here is treated as *confidential* and used strictly for Academic purpose.

Please answer the following questions free without indicating your name.

PART A: BACKGROUND DATA

1. Your Gender. a) Male [] b) Female []
2. What is your age?
a) 18-28years [] b) 29-39years [] c) 40-59years [] d) 60years and above []
3. How long have you been teaching in your organization?
a) Less than a year [] b) 1-3years [] c) 4-6years [] d) 7-9 years [] e) 10 years and above []
4. What is your highest level of education?
a) Basic [] b) Secondary [] c) HND [] d) Degree [] e) Above Degree []
5. What is your ICT literacy level? a) Beginner [] b) Novice [] c) Intermediate [] d) Advanced []

PART B: TEACHERS’ LEVEL OF PERCEIVED USEFULNESS OF ICT IN TEACHING

Kindly indicate your level of agreement on the following Digital Transformation Practices where (1=Least Agree and 7= Highly Agree).

Teachers’ level of perceived usefulness of ICT in teaching	Rating						
	1	2	3	4	5	6	7
ICT makes my teaching more engaging and effective.							
ICT provides access to diverse resources and supports personalized learning.							
ICT enhances students’ motivation, participation, and learning experience.							
ICT supports the development of students' critical thinking and real-world skills.							
ICT helps me perform teaching tasks efficiently and effectively.							
ICT improves my overall teaching capability and professional efficacy.							
I consider ICT a valuable tool for my teaching practice.							
ICT makes my teaching more engaging and effective.							

PART C: TEACHERS’ LEVEL OF PERCEIVED EASE OF USE OF ICT IN TEACHING

Kindly indicate your level of agreement on the following Impacts of Covid-19 where (1=Least Agree and 7= Highly Agree).

Teachers’ level of Perceived Ease of Use of ICT in teaching	Rating						
	1	2	3	4	5	6	7
Using ICT tools makes teaching easier and more manageable.							
I can independently use most ICT tools for teaching.							
Using ICT in teaching does not require much effort or cause frustration.							
ICT tools are time-efficient and convenient to use in teaching.							
If given training, I can become proficient in using ICT tools for teaching.							
Using ICT in class rarely causes technical problems.							
My existing skills allow me to use ICT without distractions from teaching.							

PART D: TEACHERS’ LEVEL OF ACTUAL USE OF ICT IN TEACHING

Kindly indicate your level of agreement on the following Digital Transformation Practices where (1=Least Agree and 7= Highly Agree).

Teachers’ level of Actual Use of ICT in teaching	Rating						
	1	2	3	4	5	6	7
Integrating ICT into my lessons is a regular and intentional part of my teaching practice.							
I use ICT tools to introduce topics and create interactive learning activities.							
I incorporate a variety of online resources and materials into my lessons.							
I encourage students to use ICT tools for independent research and presentations.							
I explore and experiment with different ICT tools for teaching.							
I adopt ICT practices after observing successful examples from colleagues.							
My school provides sufficient support and resources for using ICT in lessons.							

SPSS OUTPUT

First a reliability analysis was conducted to determine if the data was reliable. The Cronbach Alpha value of 0.909 indicated that the data was highly reliably as argued in Cohen's study.

Reliability Statistics	
Cronbach's Alpha	N of Items
.909	26

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
111.93	650.887	25.512	26

DESCRIPTIVE STATISTICS OF THE DEMOGRAPHIC INFORMATION

A descriptive analysis was done to analyse the demographic information of the respondents.

Statistics						
		Your Gender	What is your age?	How long have you been teaching	What is your highest level of education?	Computer or Technology literacy level
N	Valid	548	548	548	548	548
	Missing	0	0	0	0	0
Mean		1.49	1.52	3.32	3.22	2.22
Std. Deviation		.500	.701	1.421	1.066	.757
Skewness		.044	1.041	-.226	-.137	.887
Std. Error of Skewness		.104	.104	.104	.104	.104
Kurtosis		-2.005	.003	-1.306	-1.101	.747
Std. Error of Kurtosis		.208	.208	.208	.208	.208

Frequency Table

Your Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	280	51.1	51.1	51.1
	Female	268	48.9	48.9	100.0
	Total	548	100.0	100.0	

What is your age?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-28 years	326	59.5	59.5	59.5
	29-39 years	160	29.2	29.2	88.7
	40-59 years	60	10.9	10.9	99.6
	60 years and above	2	.4	.4	100.0
	Total	548	100.0	100.0	

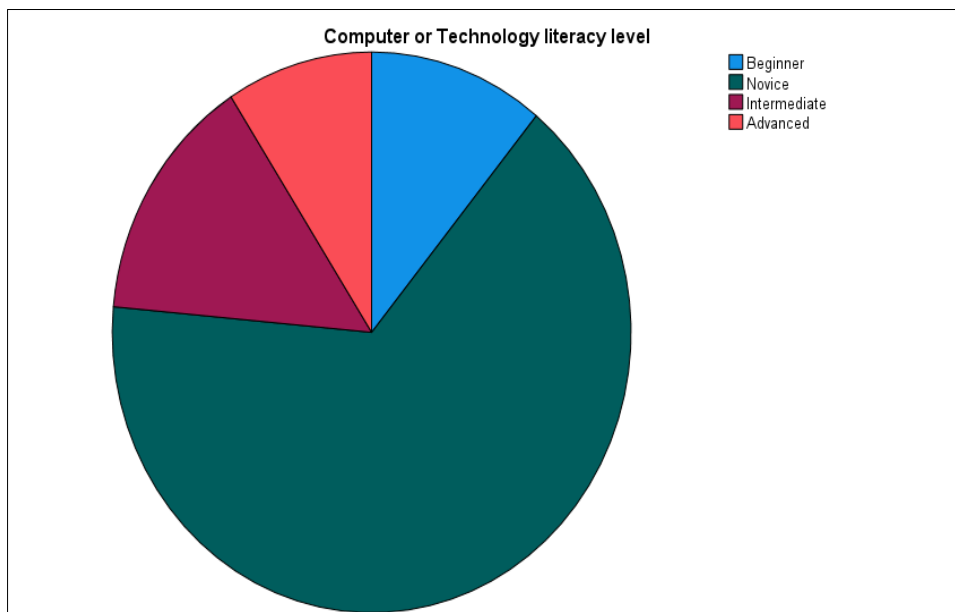
How long have you been teaching					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than a year	72	13.1	13.1	13.1
	1-3 years	110	20.1	20.1	33.2
	4-6 years	100	18.2	18.2	51.5
	7-9 years	100	18.2	18.2	69.7
	10 years and above	166	30.3	30.3	100.0
	Total	548	100.0	100.0	

What is your highest level of education?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Basic	16	2.9	2.9	2.9
	Secondary	166	30.3	30.3	33.2
	HND	98	17.9	17.9	51.1
	Degree	218	39.8	39.8	90.9
	Above Degree	50	9.1	9.1	100.0
	Total	548	100.0	100.0	

Computer or Technology literacy level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Beginner	60	10.9	10.9	10.9
	Novice	359	65.5	65.5	76.5
	Intermediate	79	14.4	14.4	90.9
	Advanced	50	9.1	9.1	100.0
	Total	548	100.0	100.0	

In order to create variation in the results outputs, the output from the descriptive statistics from the SPSS output on the computer literacy levels was

further used to generate pie charts in MS excel to correspond with the SPSS pie chart output below and discussed accordingly.



DESCRIPTIVE STATISTICS OF VARIABLES

Descriptive Statistics of Perceived Usefulness

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ICT makes my teaching more engaging and effective.	548	1	7	4.54	1.939	-.506	.104	-.898	.208
ICT provides access to diverse resources and supports personalized learning.	548	1	7	4.77	1.937	-.575	.104	-.824	.208
ICT enhances students' motivation, participation, and learning experience.	548	1	7	4.73	2.020	-.747	.104	-.779	.208
ICT supports the development of	548	1	7	4.80	1.849	-.729	.104	-.631	.208

students' critical thinking and real-world skills.									
ICT helps me perform teaching tasks efficiently and effectively	548	1	7	4.37	1.961	-.494	.104	-1.057	.208
ICT improves my overall teaching capability and professional efficacy.	548	1	7	4.60	1.854	-.807	.104	-.558	.208
I consider ICT a valuable tool for my teaching practice.	548	1	7	4.39	1.917	-.384	.104	-.983	.208
Valid N (listwise)	548								

Descriptive statistics of perceived ease of use

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Using ICT tools makes teaching easier and more manageable.	548	1	7	5.10	1.811	-.868	.104	-.134	.208
I can independently use most ICT tools for teaching.	548	1	7	4.72	2.010	-.619	.104	-.839	.208
Using ICT in teaching does not require much effort or cause frustration.	548	1	7	5.13	2.101	-.896	.104	-.536	.208
ICT tools are time-efficient and convenient to use in teaching.	548	1	7	4.64	2.021	-.593	.104	-.943	.208
If given training, I can become proficient in using ICT tools for teaching.	548	1	7	4.62	2.015	-.662	.104	-.815	.208
Using ICT in class rarely causes technical problems.	548	1	7	4.73	2.025	-.771	.104	-.702	.208
My existing skills allow me to use ICT without distractions from teaching.	548	1	7	4.90	1.888	-1.049	.104	-.096	.208
Valid N (listwise)	548								

Descriptive statistics of actual use

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Integrating ICT into my lessons is a regular and intentional part of my teaching practice.	544	1	7	4.49	1.953	-.421	.105	-.915	.209
I use ICT tools to introduce topics and create interactive learning activities.	534	1	7	4.67	1.936	-.553	.106	-.887	.211
I incorporate a variety of online resources and materials into my lessons.	548	1	7	5.07	1.899	-.828	.104	-.424	.208
I encourage students to use ICT tools for independent research and presentations.	548	1	7	5.07	1.909	-1.047	.104	-.026	.208
I explore and experiment with different ICT tools for teaching.	540	1	7	4.50	2.313	-.460	.105	-1.346	.210
I adopt ICT practices after observing successful examples from colleagues.	536	1	7	3.84	2.107	.049	.106	-1.428	.211
My school provides sufficient support and resources for using ICT in lessons.	540	1	7	3.92	2.190	.015	.105	-1.523	.210
Valid N (listwise)	502								

RELIABILITY OF VARIABLES ITEM INDICATORS BEFORE FACTOR ANALYSIS

Reliability of the variable perceived usefulness item indicators before factor analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
.865	7

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
32.21	100.501	10.025	7

Reliability of the variable perceived ease of use item indicators before factor analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
.938	7

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
33.84	140.432	11.850	7

Reliability of the variable actual use item indicators before factor analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
.756	7

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
32.36	79.464	8.914	7

FACTOR ANALYSIS OF THE VARIABLES

A factor analysis was done for the variables using Varimax rotation

Factor Analysis of perceived usefulness

Correlation Matrix ^a								
		ICT makes my teaching more engaging and effective.	ICT provides access to diverse resources and supports personalized learning.	ICT enhances students' motivation, participation, and learning experience.	ICT supports the development of students' critical thinking and real-world skills.	ICT helps me perform teaching tasks efficiently and effectively	ICT improves my overall teaching capability and professional efficacy.	I consider ICT a valuable tool for my teaching practice.
Correlation	ICT makes my teaching more engaging and effective.	1.000	.735	.633	.708	.302	.484	.455
	ICT provides access to diverse resources and supports personalized learning.	.735	1.000	.573	.657	.332	.392	.478
	ICT enhances students' motivation, participation, and learning experience.	.633	.573	1.000	.641	.307	.394	.496
	ICT supports the development of students' critical thinking and real-world skills.	.708	.657	.641	1.000	.246	.454	.341
	ICT helps me perform teaching tasks efficiently and effectively	.302	.332	.307	.246	1.000	.563	.461
	ICT improves my overall teaching	.484	.392	.394	.454	.563	1.000	.402

	capability and professional efficacy.							
	I consider ICT a valuable tool for my teaching practice.	.455	.478	.496	.341	.461	.402	1.000
Sig. (1-tailed)	ICT makes my teaching more engaging and effective.		.000	.000	.000	.000	.000	.000
	ICT provides access to diverse resources and supports personalized learning.	.000		.000	.000	.000	.000	.000
	ICT enhances students' motivation, participation, and learning experience.	.000	.000		.000	.000	.000	.000
	ICT supports the development of students' critical thinking and real-world skills.	.000	.000	.000		.000	.000	.000
	ICT helps me perform teaching tasks efficiently and effectively	.000	.000	.000	.000		.000	.000
	ICT improves my overall teaching capability and professional efficacy.	.000	.000	.000	.000	.000		.000
	I consider ICT a valuable tool for my teaching practice.	.000	.000	.000	.000	.000	.000	
a. Determinant = .032								

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.836
Bartlett's Test of Sphericity	Approx. Chi-Square	1879.754
	df	21
	Sig.	.000

Factor Analysis of perceived ease of use

Correlation Matrix^a		Using ICT tools makes teaching easier and more manageable.	I can independently use most ICT tools for teaching.	Using ICT in teaching does not require much effort or cause frustration.	ICT tools are time-efficient and convenient to use in teaching.	If given training, I can become proficient in using ICT tools for teaching.	Using ICT in class rarely causes technical problems.	My existing skills allow me to use ICT without distractions from teaching.
Correlation	Using ICT tools makes teaching easier and more manageable.	1.000	.637	.566	.657	.631	.574	.587
	I can independently use most ICT tools for teaching.	.637	1.000	.766	.692	.780	.679	.662
	Using ICT in teaching does not require much effort or cause frustration.	.566	.766	1.000	.599	.602	.606	.682
	ICT tools are time-efficient and convenient to use in teaching.	.657	.692	.599	1.000	.803	.711	.749
	If given training, I can become proficient in using ICT tools for teaching.	.631	.780	.602	.803	1.000	.830	.762
	Using ICT in class rarely causes technical problems.	.574	.679	.606	.711	.830	1.000	.775
	My existing skills allow me to use ICT without distractions from teaching.	.587	.662	.682	.749	.762	.775	1.000
Sig. (1-tailed)	Using ICT tools makes teaching easier and more manageable.		.000	.000	.000	.000	.000	.000
	I can independently use most ICT tools for teaching.	.000		.000	.000	.000	.000	.000
	Using ICT in teaching does	.000	.000		.000	.000	.000	.000

not require much effort or cause frustration.								
ICT tools are time-efficient and convenient to use in teaching.	.000	.000	.000		.000	.000	.000	
If given training, I can become proficient in using ICT tools for teaching.	.000	.000	.000	.000		.000	.000	
Using ICT in class rarely causes technical problems.	.000	.000	.000	.000	.000		.000	
My existing skills allow me to use ICT without distractions from teaching.	.000	.000	.000	.000	.000	.000		

a. Determinant = .002

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.882
Bartlett's Test of Sphericity	Approx. Chi-Square	3343.488
	df	21
	Sig.	.000

Communalities		
	Initial	Extraction
Using ICT tools makes teaching easier and more manageable.	1.000	.594
I can independently use most ICT tools for teaching.	1.000	.762
Using ICT in teaching does not require much effort or cause frustration.	1.000	.644
ICT tools are time-efficient and convenient to use in teaching.	1.000	.765
If given training, I can become proficient in using ICT tools for teaching.	1.000	.827
Using ICT in class rarely causes technical problems.	1.000	.756
My existing skills allow me to use ICT without distractions from teaching.	1.000	.765
Extraction Method: Principal Component Analysis.		

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.113	73.039	73.039	5.113	73.039	73.039
2	.538	7.689	80.728			
3	.480	6.860	87.588			
4	.318	4.547	92.135			
5	.271	3.867	96.002			
6	.168	2.404	98.406			
7	.112	1.594	100.000			
Extraction Method: Principal Component Analysis.						

Component Matrix^a	
	Component
	1
Using ICT tools makes teaching easier and more manageable.	.771
I can independently use most ICT tools for teaching.	.873
Using ICT in teaching does not require much effort or cause frustration.	.802
ICT tools are time-efficient and convenient to use in teaching.	.874
If given training, I can become proficient in using ICT tools for teaching.	.910
Using ICT in class rarely causes technical problems.	.869
My existing skills allow me to use ICT without distractions from teaching.	.875
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

Rotated Component Matrix^a
a. Only one component was extracted. The solution cannot be rotated.

Factor Analysis of Actual Use

Correlation Matrix^a								
		Integrating ICT into my lessons is a regular and intentional part of my teaching practice.	I use ICT tools to introduce topics and create interactive learning activities.	I incorporate a variety of online resources and materials into my lessons.	I encourage students to use ICT tools for independent research and presentations.	I explore and experiment with different ICT tools for teaching.	I adopt ICT practices after observing successful examples from colleagues.	My school provides sufficient support and resources for using ICT in lessons.
Correlation	Integrating ICT into my lessons is a regular and intentional part of my teaching practice.	1.000	.705	.647	.636	.303	-.013	.243
	I use ICT tools to introduce topics and create interactive learning activities.	.705	1.000	.752	.675	.148	-.056	.278
	I incorporate a variety of online resources and materials into my lessons.	.647	.752	1.000	.755	.431	.011	.495
	I encourage students to use ICT tools for independent research and presentations.	.636	.675	.755	1.000	.310	-.058	.326
	I explore and experiment with different ICT tools for teaching.	.303	.148	.431	.310	1.000	.517	.339

	I adopt ICT practices after observing successful examples from colleagues.	-.013	-.056	.011	-.058	.517	1.000	.455	
	My school provides sufficient support and resources for using ICT in lessons.	.243	.278	.495	.326	.339	.455	1.000	
Sig. (1-tailed)	Integrating ICT into my lessons is a regular and intentional part of my teaching practice.		.000	.000	.000	.000	.385	.000	
	I use ICT tools to introduce topics and create interactive learning activities.	.000		.000	.000	.000	.100	.000	
	I incorporate a variety of online resources and materials into my lessons.	.000	.000		.000	.000	.402	.000	
	I encourage students to use ICT tools for independent research and presentations.	.000	.000	.000		.000	.088	.000	
	I explore and experiment with different ICT tools for teaching.	.000	.000	.000	.000		.000	.000	
	I adopt ICT practices after observing successful examples from colleagues.	.385	.100	.402	.088	.000		.000	
	My school provides sufficient support and resources for using ICT in lessons.	.000	.000	.000	.000	.000	.000		
a. Determinant = .019									

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.666
Bartlett's Test of Sphericity	Approx. Chi-Square	2056.232
	df	21
	Sig.	.000

Communalities		
	Initial	Extraction
Integrating ICT into my lessons is a regular and intentional part of my teaching practice.	1.000	.703
I use ICT tools to introduce topics and create interactive learning activities.	1.000	.791
I incorporate a variety of online resources and materials into my lessons.	1.000	.848
I encourage students to use ICT tools for independent research and presentations.	1.000	.762
I explore and experiment with different ICT tools for teaching.	1.000	.639
I adopt ICT practices after observing successful examples from colleagues.	1.000	.820
My school provides sufficient support and resources for using ICT in lessons.	1.000	.579
Extraction Method: Principal Component Analysis.		

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.490	49.856	49.856	3.490	49.856	49.856	3.202	45.736	45.736
2	1.652	23.598	73.454	1.652	23.598	73.454	1.940	27.718	73.454
3	.685	9.779	83.232						
4	.466	6.660	89.892						
5	.309	4.421	94.314						
6	.280	3.994	98.308						
7	.118	1.692	100.000						
Extraction Method: Principal Component Analysis.									

Component Matrix^a		
	Component	
	1	2
Integrating ICT into my lessons is a regular and intentional part of my teaching practice.	.803	-.239
I use ICT tools to introduce topics and create interactive learning activities.	.822	-.338
I incorporate a variety of online resources and materials into my lessons.	.916	-.099
I encourage students to use ICT tools for independent research and presentations.	.841	-.235
I explore and experiment with different ICT tools for teaching.	.523	.605
I adopt ICT practices after observing successful examples from colleagues.	.174	.889
My school provides sufficient support and resources for using ICT in lessons.	.565	.509
Extraction Method: Principal Component Analysis.		
a. 2 components extracted.		
Rotated Component Matrix^a		
	Component	
	1	2
Integrating ICT into my lessons is a regular and intentional part of my teaching practice.	.832	.099
I use ICT tools to introduce topics and create interactive learning activities.	.889	.015
I incorporate a variety of online resources and materials into my lessons.	.880	.272
I encourage students to use ICT tools for independent research and presentations.	.865	.117
I explore and experiment with different ICT tools for teaching.	.241	.762
I adopt ICT practices after observing successful examples from colleagues.	-.193	.885
My school provides sufficient support and resources for using ICT in lessons.	.317	.692
Extraction Method: Principal Component Analysis.		
Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Component Transformation Matrix		
Component	1	2
1	.918	.396
2	-.396	.918

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

**REGRESSION ANALYSIS
HYPOTHESIS 1**

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.719 ^a	.517	.516	.98346	2.003

a. Predictors: (Constant), Perceived Usefulness
b. Dependent Variable: Actual Use

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	565.965	1	565.965	585.158	.000 ^b
	Residual	528.091	546	.967		
	Total	1094.056	547			

a. Dependent Variable: Actual Use
b. Predictors: (Constant), Perceived Usefulness

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.225	.141		8.655	.000		
	Perceived Usefulness	.710	.029	.719	24.190	.000	1.000	1.000

a. Dependent Variable: Actual Use

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Perceived Usefulness
1	1	1.955	1.000	.02	.02
	2	.045	6.583	.98	.98

a. Dependent Variable: Actual Use

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.9348	6.0949	4.4925	1.01719	548
Residual	-2.16703	1.97583	.00000	.98256	548
Std. Predicted Value	-2.515	1.575	.000	1.000	548
Std. Residual	-2.203	2.009	.000	.999	548

a. Dependent Variable: Actual Use

HYPOTHESIS 2

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.711 ^a	.505	.504	.99597	1.955

a. Predictors: (Constant), Perceived Ease of use
b. Dependent Variable: Actual Use

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	552.444	1	552.444	556.921	.000 ^b
	Residual	541.611	546	.992		

Total	1094.056	547			
a. Dependent Variable: Actual Use					
b. Predictors: (Constant), Perceived Ease of use					

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.622	.129		12.593	.000		
	Perceived Ease of use	.594	.025	.711	23.599	.000	1.000	1.000

a. Dependent Variable: Actual Use

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Perceived Ease of use
1	1	1.944	1.000	.03	.03
	2	.056	5.887	.97	.97

a. Dependent Variable: Actual Use

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.2161	5.7779	4.4925	1.00496	548
Residual	-3.38063	2.56077	.00000	.99506	548
Std. Predicted Value	-2.265	1.279	.000	1.000	548
Std. Residual	-3.394	2.571	.000	.999	548

a. Dependent Variable: Actual Use

HYPOTHESIS 3

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.702 ^a	.492	.491	1.02129	2.401

a. Predictors: (Constant), Perceived Ease of use
b. Dependent Variable: Perceived Usefulness

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	552.430	1	552.430	529.639	.000 ^b
	Residual	569.495	546	1.043		
	Total	1121.924	547			

a. Dependent Variable: Perceived Usefulness
b. Predictors: (Constant), Perceived Ease of use

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.731	.132		13.103	.000		
	Perceived Ease of use	.594	.026	.702	23.014	.000	1.000	1.000

a. Dependent Variable: Perceived Usefulness

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Perceived Ease of use
1	1	1.944	1.000	.03	.03
	2	.056	5.887	.97	.97

a. Dependent Variable: Perceived Usefulness

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.3248	5.8865	4.6011	1.00495	548
Residual	-2.97586	2.44757	.00000	1.02035	548
Std. Predicted Value	-2.265	1.279	.000	1.000	548
Std. Residual	-2.914	2.397	.000	.999	548
a. Dependent Variable: Perceived Usefulness					

REFERENCES

- Alenezi, A. (2020). The role of perceived ease of use and perceived usefulness in the acceptance of learning management systems: A study among instructors in Saudi Arabia. *The Turkish Online Journal of Educational Technology*, 19(3), 122–135.
- Alharbi, S. & Drew, S. (2022). The relationship between educators' attitudes, perceived ease of use and perceived usefulness of LMS. *International Journal of Technology in Education*.
- Al-Mahmood, R. (2021). Teachers' perceptions of the benefits and challenges of ICT integration in classrooms. *International Journal of Educational Technology*, 18(3), 45–58.
- Alvi, M. (2016). A manual for selecting sampling techniques in research. *Business and Economic Research*, 5(1), 322-336.
- Bartlett, J., Kotrlik, J., Higgins, C., & Williams, H. (2001). Exploring factors associated with research productivity of business faculty at National Association of Business Teacher Education. *Published Report*.
- Bervell, B., & Umar, I. N. (2022). ICT infrastructure and the integration of e-learning in higher education: The mediating role of instructors' attitude. *Education and Information Technologies*, 27(2), 1691–1712.
- Boateng, E. A., Koomson, I., & Asante, K. (2021). Barriers to ICT use among high school teachers in Ghana. *Journal of Education and Development*, 7(2), 101–115.
- Boateng, R., Mbrokroh, A. S., & Boateng, S. L. (2022). ICT adoption in sub-Saharan Africa: A systematic review and research agenda. *African Journal of Information Systems*, 14(1), Article 3.
- Buabeng-Andoh, C. (2021). Factors influencing teachers' integration of ICT in teaching: A review of the literature. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 17(1), 1–14.
- Chigona, A., Afolabi, B., & Yekinni, C. O. (2021). Teachers' readiness for ICT integration in teaching in Nigerian secondary schools. *Education and Information Technologies*, 26(1), 829–846.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 37-42.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- Eze, N. U., Obichukwu, P. U., & Kesharwani, S. (2021). Perceived usefulness, perceived ease of use in ICT support and use for teachers. *IETE Journal of Education*.
- Frontiers (2022). Teachers' perceptions of technology integration in teaching. *Frontiers in Psychology*.
- Ghana Education Service (GES). (2023). *Annual Education Performance Review Report*. Accra: Ministry of Education.
- Ishola, A. M., et al. (2025). Perceived usefulness, ease of use, and intention to utilize online tools for learning. *Indonesian Journal of Multidisciplinary Research*.
- Kaur, H., Brar, S. S., & Sharma, M. K. (2018). Efficient Ratio Type Estimators of Population Variance through Linear Transformation in Simple and Stratified Random Sampling. *International Journal of Statistics and Reliability Engineering*, 4(2), 144-153.
- Kwame, A. Y., & Asare, R. K. (2023). Teachers' readiness and barriers to ICT integration in basic schools: Evidence from Ghana. *African Educational Research Journal*, 11(2), 157–165.
- Mensah, K. A., & Okyere, D. (2023). ICT in education: A Ghanaian perspective on secondary school readiness. *African Journal of Educational Studies*, 12(1), 77–89.
- Ministry of Education (MoE). (2021). *ICT in Education Policy Framework*. Accra: Government of Ghana.
- Mtebe, J. S., & Raisamo, R. (2014). Challenges and instructors' intention to adopt and use open educational resources in higher education in Tanzania. *The International Review of Research in Open and Distributed Learning*, 15(1), 249–271.
- OECD. (2021). *21st-Century Readers: Developing Literacy Skills in a Digital World*. OECD Publishing.
- Said, M., Abdullah, R., & Hamid, S. (2022). Revisiting the Technology Acceptance Model in the context of digital learning. *Education and Information Technologies*, 27, 583–601.
- Teo, T. (2011). Factors influencing teachers' intention to use technology: Model development and test. *Computers & Education*, 57(4), 2432–2440.
- Tondeur, J., Scherer, R., Siddiq, F., & Baran, E. (2017). A comprehensive analysis of TPACK within

preservice teachers: The added value of mixed-methods research. *Computers & Education*, 104, 174–193.

- UNESCO. (2023). *Technology in Education: A Tool on Whose Terms?* Global Education Monitoring Report. Paris: UNESCO.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science*, 46(2), 186–204.
- World Bank. (2022). *World Development Report: Digital Dividends*. Washington, DC: The World Bank.
- Yeboah, S., & Danso, R. (2024). Institutional support and teacher ICT integration in West African high schools. *International Journal of Digital Learning*, 5(1), 33–49.
- Yuen, A. H. K., & Ma, W. W. K. (2008). Exploring teacher acceptance of e-learning technology. *Asia-Pacific Journal of Teacher Education*, 36(3), 229–243.
- Zaman, R. A., Raqib, A. B. M. A., & Sadek, M. A. (2023). Teachers' perceived usefulness and ease of use of technology in primary school classrooms in Bangladesh. *Teacher's World*.
- Zhou, X., & Wang, L. (2024). The role of perceived ease of use in educational technology adoption among teachers. *Journal of Contemporary Educational Research*, 8(2), 123–136.

Cite This Article: George Kojo Ennin (2026). Teachers' Use of Information Communication Technology in Teaching Lessons: Evidence from Selected Senior High Schools in Ghana. *East African Scholars J Edu Humanit Lit*, 9(7), 328-353.
