Original Research Article

Relationship Between Teacher professional development and Use for ICT in Teaching and Learning in Primary Schools in Sabuli Sub-County, Wajir County

ABSTRACT

Information and communication technology use in education has become an indispensable aspect in the contemporary education system. This explains why many governments including Kenya government have invested in information and communication technology to foster the quality of education. However, despite efforts to avail information and communication technology resources, their use and impact on instructional delivery has been minimal, especially in primary schools in Kenya. Consequently, there has been concern on relationship between availability of information and communication technology and teacher professional development in primary schools. This situation has necessitated the proposed study which is aimed at assessing the relationship between teacher professional development and use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County, Kenya. The study used correlation research design. The target population 94 teacher comprising 30 head teachers and 64 teachers of primary schools in Sabuli sub-county, Wajir County. Given the small number of teachers in public primary schools in Sabuli sub county, the study purposively selected all teachers and head teachers as participant to avoid reducing the ambiguity of a study. Thus, the sample population was 94 respondents. The researcher gathered data using questionnaires from teachers and used semi-structured interview for head-teachers. Data was analysed using descriptive and regression statistics. The findings highlight a statistically significant positive relationship between TPD and ICT use, indicating a direct relationship between the two variables.

Key words: Availability, Information and Communication Technology, Teaching and Learning, Teacher professional development

1. INTRODUCTION

1.1 Background information

Given ICT permeating more aspects of everyday life, it has changed the world in ways that are truly remarkable in recent years. Since the advent of ICT, our daily activities, education, and learning have all changed (Çetin, 2016). Due to their increased accessibility, ICT has become more prevalent in all disciplines. It has thus profoundly impacted society and grown to be an indispensable part of our daily lives. Significantly, these shifts have affected education more than just everyday life. As indicated by Bani (2014), ICT has been embraced by educators where teaching and learning have been reconfigured, particularly with the introduction of computers into educational systems. More precisely, the use of ICT in education creates a need for teachers to upgrade their skills. When a qualified teacher is on hand to provide contextualized and feedback, students benefit more from the individualized, adaptive technology use (Major & Francis, 2022). In the event schools are to use ICT, they are given effectively, then Teacher professional development (TPD)is absolutely necessary. Simply put it straightforwardly, it is wasteful to spend limited funds on information technology hardware and software without also sustaining teacher professional development. Experience in developing, industrialized, and information-based nations throughout the world has demonstrated that the key to better student performance (in terms of both knowledge acquisition and skills development enabled by technology) is teacher training in the use and application of technology (Alharbi, 2022). Thus, ICT in education has not, and will not, change education on its own; teachers who can incorporate ICT into the curriculum and use it to enhance student learning are needed. Specifically, teachers remain the most important factor in determining the appropriate and effective use of ICT (Gokbel, 2020). Children's learning outcomes can be significantly improved by pre-service education and in-service teacher professional development, commonly referred to as teacher professional development (TPD)

(Hennessy et al., 2022). Both officially offered programs and unofficial peer-learning TPD models have ample opportunity for improvement due to technology in education. A global emphasis on enrollment rates and educational quality has brought attention to the extent educational systems have appreciated the TPD which has resulted to acknowledging that teachers are the cornerstone of an inclusive educational system and need assistance in order to acquire the necessary skills to meet the needs of every student (UNESCO, 2020). Accordingly, the 21st century has seen a shift in the way that education is delivered, with teachers being able to adapt their methods to fit the varied requirements of their students by ICT.

More precisely, basic ICT proficiency is now necessary to improve instruction (Jones, 2011). result, continuing professional development and assistance are crucial for instructors who want to use ICT tools to change the way they approach teaching and learning. To transform teaching and learning, teachers should be educated about and adept at using a variety of ICT resources. When a novel approach of presenting subject matter is adopted, the usage of ICT may pique students' curiosity and focus. Teachers are crucial in helping students prepare for and shape their career trajectories (Ghavifekr & Rosdy, 2015).

Literature on ICT integration in education emphasizes the importance of TPD in leveraging ICT for instructional purposes (Sang et al., 2010). Effective teacher training programmes have been shown to enhance teachers' confidence and competence in using ICT tools and strategies in their teaching practices (Albirini, 2006; Otieno, 2018). However, challenges such as inadequate training opportunities and resistance to change among teachers may hinder successful ICT integration initiatives in teaching and learning in primary schools (Ngome & Waliaula, 2015; Tondeur et al., 2017).

1.2 Statement of the Problem

The education system in Kenya is currently undergoing significant reforms to align with Vision 2030 and the 2010 Constitution's provisions on education. To address this gap, a taskforce recommended urgent strengthening of the institutional framework to facilitate effective incorporation of ICT for instruction at all levels of education (UNESCO, 2015). Despite commendable government funding for ICT in education programmes, studies by Kibuku, Ochieng, and Wausi (2020) indicate that there are discrepancy in use of ICT in Kenya in Kenya schools such as schools in Sabuli sub-county, Wajir County, Kenya, which has raised concerns among education policymakers. Given the notion that all instructors possess knowledge about how their pupils learn, which influences their teaching style, a deeper comprehension of how and why teachers teach in the ways that they do is necessary to make greater use of ICT (Hennessy et al., 2022). Understanding the role of teacher professional development in ICT integration is crucial for designing effective strategies to improve the utilization of ICT resources in education. This motivated the current study

1.3 Objective of the Study

To assess the relationship between teacher professional development and use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County

2. LITERATURE REVIEW

2.1 Theoretical Framework

The study was anchored ; Actor network theory (ANT) and Theory of acceptance and use of technology (UTAUT).

2.1.1 Actor Network Theory (ANT)

The ANT is a hybrid of modern and post-modern constructions that explains an association between human and non–human entities. The logic of using ANT is its rich methodology that involves the interactions of change to technical, structural, physical and human variables (Waryzynski, 2006; Law, 1990). In the context of this study, an ICT literate teacher plays an important part in the process of systemic change such as introduction of ICT use in instructions. Based on the ANT, the action of the teacher influences technological change, particularly acquisition of ICT resources (Cotton, 2001; Waryzynski, 2006). In the proposed study, teacher professional development influences use for ICT in teaching and learning Therefore, ANT helped to explain the association between teacher professional development and ICT use in instruction.

2.1.2 Theory of Acceptance and Use of Technology (UTAUT)

This theory outlines various variables influence individual behavioral intention in ICT use. Such variables include the perceived usefulness, the expected ease of use, as well as social influence (Venkatesh et al., 2003). According to Venkatesh et al. (2003), experience and voluntariness are key moderator variables in the intention to use ICT. In the context of the proposed study, teachers ought to be trained, experienced, and willing to use ICT in instructions. Teacher professional development in ICT equips teachers with relevant skills and attitude in the use of ICT. Therefore, they are also expected to influence and help the school administration in the integrate ICT in teaching and learning.

2.2 Empirical literature review

2.2.1 ICT use in Instructions in Public Primary Schools in Kenya

Research on ICT use in instructions in Kenya indicate low intake of ICT in primary schools. Isaboke, Mweru, and Wambiri (2021) cross-sectional survey on this matter that involved 237 teachers and 49 head-teachers showed that the number of teachers trained in ICT use in instructions is low hence low use of ICT in classroom. Isaboke, Mweru, and Wambiri (2021) noted that low ICT use was because the few trained teachers were supposed to train their colleagues. Charles and Mkulu (2020) made a similar observation that only few teachers have undergone professional development especially in ICT use in classroom. Thus, ICT supports that vision, and that teachers recognize the ways in which ICT enhances their students' learning. Referring back to the conversation from the previous part, the leadership of the school serves as the primary hub for transforming an expansive, theoretical goal into a workable one. These studies indicate that no single approach with limited resources will be effective for all schools. Instead, whether it was teachers employing ICT-based teaching aids or student ICT use, each school established its own techniques to provide relevant learning experiences using ICT tools. Despite the fact that a large number of metropolitan Indian schools have computer laboratories, there are still too many pupils for classes to have regular access to ICT during the school day

2.2.2 Teacher professional development and Use of ICT in Instructions

Research has shown that ICT in education creates opportunities for learners to acquire 21st century skills. However, the availability and use of ICT depends on teachers' digital literacy. Studies on the role of professional teacher development on ICT resource availability and use indicate that, in- service teachers training on ICT accelerates technology integration in education in Kenya (Stickler, Hampel, & Emke, 2020). For instance, Charles and Mkulu's (2020) study on barriers of ICT availability and integration in primary schools in Kenya found that most of the teachers lacked basic computer literacy skills. Charles and Mkulu (2020) argued that ICT illiteracy among teachers makes it difficult for school administrators to identify appropriate ICT equipment for procurement. Such views were supported by Stickler, Hampel, and Emke (2020) who added that low ICT literacy among teachers implies that even if such resources are available, they remain underutilized in most of the public primary schools. In line with these findings, Charles and Mkulu (2020) cited a case where government procured ICT devices remain in office risking damage because they are not used in their intended use or completely not being used. Daniel Light (2010) reported that instructors at every school included in the study discussed getting together in groups to develop, talk about, and share innovative techniques. Stickler, Hampel, and Emke (2020) made a unanimous observation that all the teachers with low ICT literacy blamed the government for lack of planning for TPD including funding of in-service teacher training on ICT use in instructions. Stickler, Hampel, and Emke (2020) further established that learners and teachers could practice the use of ICT in the learning and teaching of Kiswahili after training from a tutor. The researcher concluded teacher professional developed, especially training in ICT would foster not only use of ICT in instructions but also availability by encouraging and advising the administration on the appropriate ICT resources to purchase for their schools. Further results from Mynaříková and Novotný (2020) qualitative study showed that in some cases were teachers received professional development on ICT use in instruction; it was basic computer literacy on computer programs such as Excel and MS Office that did not offer them skills for technology use in classroom. Comparatively, Stickler, Hampel, and Emke (2020) opine that their analysis of some of the teachers' courses training under TPD in Machakos did not include pedagogical ICT use. As such, they could not integrate ICT in their classrooms. Mynaříková and Novotný (2020) concluded TPD customized for technology use in classroom would increase the utilization of the available

ICT resources in primary schools. These studies offer insightful information on the role of PTD on the availability and use of ICT in instructions. However, most of the studies use either qualitative or quantitative method. Given the potential biases associated with the use of one research method, the results obtained cannot be taken in totality for conclusion on this research issue. Besides, none of the studies were conducted in Wajir, particularly Sabuli Sub- County.

3. RESEARCH METHODOLOGY

3.1 Research Design

Schwardt (2006) connotes that the research design it is a theory of how an inquiry should proceed. It involves analysis of the assumptions, principles, and procedures in a particular approach to inquiry. Therefore, it outlines researcher's plan of the study from data collection to data analysis and presentation to realize research objectives (Kothari, 2014). The current study used a quantitative research approach, making it essential to develop a set of hypotheses and establish the relationship between variables that was used as a test standard for the correlation research design. Kothari's (2014) alludes that this research design allows the researcher to correlate events as they are during the particular research period. This research design suits the study because the researcher required firsthand information from the respondents to describe the role of TPD in use of ICT for teaching and learning in Sabuli Sub- County.

3.2 TargetPopulation

The targetpopulation 94 teacher comprising 30 head teachers and 64 teachers of primary schools in Sabuli sub-county, Wajir County. The researcher gathered data using questionnaires from teachers and used semi-structured interview for head-teachers.

3.3 Sampling

Sampling refers to a specific principle used to select members of the population to be included in the study. Kothari, (2011) alludes that sampling is obtaining a representative group from a pre-defined population to represent the entire population. In this research, the study using purposeful sampling selected the entire target population as respondents. The purposive sampling method was based on the assumption that the investigator wants to discover, understand, and gain insight from participants. Given the small number of teachers in public primary schools in Sabuli sub county, teachers and head teachers were included in the participant category to avoid reducing the ambiguity of a study. Thus, the sample population was 94 respondents.

3.4 Data Collection

Questionnaire was used as the tool for data collection from teachers. This survey instrument was then chosen for its effectiveness at being practical and inexpensive. Additionally, questionnaires help to collect large data within a short time. Such data is also easy to analyze (Creswell, 2014). The questionnaire for teachers consisted of four major sections. Section one is respondent's bio data, section two ICT resource availability, section three extends of ICT use in instructions, and the last part on mediating role of teacher professional development on ICT resource availability and use.

The data needed for the study was be gathered using an adapted two domain comprising of 96 items developed as the use of ICT and Availability of ICT questionnaire developed by the IEA International Computer and Information Literacy Study (2018). The use of ICT questionnaire was addressed to teachers who were asked to provide information about ICT in their schools, its use in teaching and learning, and students' development of Computer and Information Literacy (CIL). Teachers' responses were very important in helping to evaluate the questions as relevant to describing eighth-grade education in the United States.

3.5 Pilot testing

The field expert from Garissa University in Kenya was given the questionnaire to review, with the aim of ensuring that each item on the instrument had adequate relevance and could be clearly stated. The specialists recommended that a solitary survey be given to both head teachers and teachers, as the items assessed a comparable idea that was appropriate for the population within the sample. Four ICT domains, totaling thirty-four items, were recommended to be eliminated by the experts from the survey. That is why there were eight items on the questionnaire. The specialists recommended eliminating six domains, totaling 48 items, under the category of ICT availability from the survey. Consequently, 13 items were included in the questionnaire. In order

to take contextual variations into consideration, the experts also recommended changing specific terms and phrases.

3.6 Validity

The validity of the questionnaire can be ascertained through pre-testing. According to Hilton (2015), pre-testing is a technique used to determine whether the questions as written produce the intended outcomes, whether they should be changed in order to optimize results, whether more questions should be included, and whether the instructions provided to respondents are sufficient. The purpose of the pre-test was to assess the cost, time, and feasibility of accurately predicting the sample size and to enhance the research tool. To ascertain the questions' relevance, comprehensibility, and clarity, a questionnaire derived from the expert evaluation was distributed to three head teachers and six teachers The questionnaire was revised following each debriefing session in order to prepare for the next round of pre-trying. The procedure persisted until the investigator was certain that the questions were clear, pertinent, and acceptable to the respondent.

3.7 Reliability

Testing for reliability is the process of ensuring that research instruments consistently yield the same result after multiple tests on the same object, either within the same population or a different population (Creswell, 2014). When doing research, the quality of the instruments is crucial since the data gathered from the questionnaire will be used to reach the conclusion (Zohrabi, 2013). As an instrument of internal consistency based on the correlation between unique items, Cronbach Alpha tests were performed to analyze the items for internal consistency. A Cronbach Alpha correlation coefficient of 0.7 or higher was found in all of the questionnaire's domains, indicating acceptable data. Items in the questionnaire can be verified with reliability over 0.7, which indicates dependability (Cooper & Schindler, 2003). For the teacher questionnaire, Table 1 displays the Cronbach alpha coefficient.

Table 1: Reliability Coefficient for Teacher Questionnaire

Dimension	No of Items	Cronbach Alpha
Use of ICT	8	0.782
TPD	10	0.845

3.8 DataAnalysis

Data Sampling, classification and analysis was done in order to come up with clear, understandable, up-to-date, genuine and reliable information aimed at achieving objectives of the research study (Gupta & Rangi, 2014). The collected data was thoroughly examined and checked for errors and tabulated accordingly. The study analyse qualitative data (from interviews and open-ended questions) using qualitative data analysis methods while quantitative data (form closed ended questions) was analysed using quantitative analysis. Qualitative analysis technique was used to analyse data through coding and organising it into themes aimed at gaining real, rich and deep data that will be reported into narrative. Thus, qualitative data was analysed using themes (thematic analysis) and according to study indicators (Creswell, 2014). The study analyzed the quantitative data using quantitative analysis to produce descriptive and inferential statistics. Descriptive statistics was applied to help establish patterns, trends and relationships, and to make it easier for the researcher to understand and interpret implications of the study. The various representation of information included frequency tables, and narratives. In the analysis of the descriptive statistics, the mean and standard deviation, frequencies and percentages were used to analyze the trends of the data.

In inferential analysis, simple linear regression was done at 0.05 level of significance to establish between teacher professional development and use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County using the equation

$Y = \beta_0 + \beta_1 X_1 + e$……(i)

Where:

Y = use for ICT in teaching and learning in primary schools in Sabuli sub-county

X_1 = Teacher professional development

β_0 is a constant, the value of Y when teacher professional development is zero.

β_1 is the regression coefficients or change induced by teacher professional development

e = error term

4 DATAANALYSIS, PRESENTATIONAND DISCUSSION

4.1 Response Rate

The study targeted public primary school head teachers and teachers in Sabuli Sub- County. The researcher involved all the 30 head teachers and sampled 64 teachers totaling to 94 participants. The questionnaires were administered to teachers and while interviews were carried out among the head teachers. 78 out of 94 respondents presented full responses including questionnaires and interview schedules. This translates to a response rate of 82.98%. Such high response rate was attained following the positive rapport the researcher established with the respondents before and during the study in order to instill trusts, interests and confidence. The rest of the percentage resulted from incomplete data or some participants exiting the study before completion or due to other commitment and sometimes due to communication network challenges.

4.2 Demographic Information of the Participants

This section outlines the demographic traits of the participants engaged in this study. The section is categorized into two subsections. That is, the head teachers and teachers. The researcher requested the participants to provide details on age, gender, highest education level attained, as well as their teaching experiences. the majority of the head-teachers 23(76.67%) were aged 40 to 49 years, 6(20%) aged above 50 years and only 1(3.33%) aged below 40 years.

On academic qualifications, 13.33% of the head teachers had a diploma, 66.67% had a bachelor's degree, and 20% had master's degree as the highest academic qualification. Based on the results, it is evident that all the head-teachers were trained and hence were capable of understanding and articulating the essence of TPD on the use of ICT in instruction in their respective schools. According to Stickler, Hampel, and Emke (2020), school heads play a leading role in procurement and use of ICT resources in learning and teaching, view also supported by Charles and Mkulu (2020). Also, school heads, who have undergone TPD can encourage teachers in their schools to enroll for TPD. most (50%) of the head-teachers in Sabuli Sub- County have taught for more than 30 years, 43.33% have taught for 20 to 29 years, and the rest have taught for less than ten years. Also, teachers' experience might influence their TPD and use of ICT resources in teaching. Stickler, Hampel, and Emke (2020) opine that teachers' experience play an important role in determining resource availability and use and whether or not they undergone further training in their professions. Given that most of the teachers involved in this study have long teaching experience, it was easy for them to relate TPD and ICT resource availability and use.

4.3 Descriptive Analysis

This study examined the relationship between teacher professional development and use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County, Kenya to obtain results in Table 2.

Table 2: MeanandStandardDeviationofVariables

	N	Minimum	Maximum	Mean	Std. Deviation
TPD	80	1	2.888	2.126	0.417
ICT USE IN INSTRUCTION	80	1.125	4	1.875	0.588

The mean scores indicated a mean of 2.89 (SD = 0.417 for teacher professional developmentand 1.88 (SD = 0.588 for ICT utilization in teaching and learning. The slightly higher mean score for teacher professional development compared to that of ICT utilization compared to may indicate that despite existing resources being somewhat limited, there is still some level of utilization occurring within the primary schools in Sabuli sub-county, Wajir County, Kenya. This suggests that teachers are making efforts to incorporate ICT into teaching and learning practices, albeit with constrained resources. However, it is important to note that both mean scores fall below the midpoint of the scale, indicating room for improvement in both resource availability and utilization. This highlights the potential for interventions aimed atpromoting effective integration strategies in primary education settings to further leverage the benefits of technology in teaching and learning processes

4.4 Inferential Analysis

The study tested the data normality using Shapiro-Wilk Since the Shapiro-Wilk Test is more appropriate for small sample sizes. The value of the Shapiro-Wilk Test is above 0.05, the data significantly shows a normal distribution as shown in Table 3.

Table 3: Normality Test Results

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
TPD	0.190	80	0.000	0.938	80	0.061
USE OF ICT	0.104	80	0.031	0.920	80	0.212

a. Lilliefors Significance Correction

Multiple regression was then carried out on the IV (teacher professional development) against the dependent variable (use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County) to estimate the model. The study carried out an Analysis of Variance (ANOVA) to estimate the model fitness, and these results are captured in Table 4

Table 4: ANOVA Results

ANOVA[a]

	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.599	1	5.599	20.111	.000[b]
Residual	21.716	78	278		
Total	27.316	79			

a. Dependent Variable: use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County

b. Predictors: (Constant), Teacher professional development

The study tested the fitness of the model guided by the hypothesis that; H_0: $\beta_1 = 0$ (that is the beta values coefficient of X_1 is zero) and the proposed alternate hypothesis was therefore that; H_α: $\beta_i \neq 0$

The testing was at 5% level of significance, where H_0 was to be accepted if probability value (p-value) was greater than 0.05 that is p-value >.05. In this case, H_α was to be rejected. Where H_0 was less than or equal to 0.0.5 (p-value < = 0.05) then H_α was accepted and H_0 was rejected. The results (p-value = 0.000, F = 20.111), show that the p-value < 0.05. Based on these results, then H_0 was rejected and H_α was accepted because p-value < 0.05. then study can conclude that the α=0.05, there exists enough evidence to conclude that at least one of the IVs; teacher professional development, is useful in estimating the use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County and hence the study can estimate a model explaining use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County in terms of; teacher professional development

The IVs and DV were then regressed to estimate the study model. The study obtained result shown in Table 5.

Table 5: Regression Results of Dependent Variable against Predictor Variables

Coefficientsa

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.231	.308		5.219	0.000
Teacher professional	.638	.142	.453	4.485	.000

development

a. Dependent Variable: use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County

The study used the following hypotheses to test for effects of teacher professional development;

H_0: Teacher professional development has no significant influence on use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County.

H_1: Teacher professional development has significant influence on use for ICT in teaching and learning in primary schools in Sabuli sub-county, WajirCounty..

The results in Table 5 show that at 0.05 significance level, p-value <0.01 and T= 4.485. Then the H_0 is rejected and H_1 Since the p-value does not exceed 0.05. Accordingly, the study concludes that at $\alpha = 0.05$ level of significance, there is enough evidence that the teacher professional development is not zero and therefore teacher professional development is useful as an estimator of use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County. The coefficient for teacher professional development (β_1= 0.638), was used to estimated model fitted as;

$Y = 3.231 + 0.638X_1$ ……. (iii)

The fitted regression equation is in the form of:

use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County = 3.231 + 0.638 (Teacher professional development).

Based on table 5, it is inferred that the constant levels of use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County before incorporating the Teacher professional developmentis 3.231. Teacher professional development had positive impact on NPLs having a coefficient of 0.638which implies one unit change in teacher professional development can result a change on use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County rate by 0.638 units in the same Table 6 shows that the coefficients of; teacher professional development is positive, indicating that they are directly proportional to the use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County. So, an increase in any of these variables; teacher professional development leads to an increase in use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County and vice versa.

Lastly, the study model was obtained as shown in table 6.

Table 6: Model Summary for use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.453[a]	.205	.195	.527

a. Predictors: (Constant), Teacher professional development

Table 6 shows the coefficient of determination was .205, an indication that 20.5% of variation in use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County is explained by change in teacher professional development.Therefore, teacher professional development is a strong determinant of use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County**.**

The conclusions based on the study objectives is teacher professional development has positive significant influence on use for ICT in teaching and learning in primary schools in Sabuli sub-county, Wajir County; offering valuable insights into their interplay within the primary school context. The statistically significant positive correlation between TPD and ICT use suggests a direct relationship, albeit weak, underscoring the importance of ongoing professional development in enhancing teachers' capacity to effectively integrate technology into their instructional practices (Ertmer, 2005; Tondeur et al., 2013). This aligns with socio-cultural theories such as Vygotsky's Zone of Proximal Development, which emphasize the role of social interactions and scaffolding in fostering learning and development (Vygotsky, 1978). The regression analysis further supports these findings, indicating that as the use of ICT increases, there is a tendency for TPD to also increase, albeit modestly. The significant negative relationship observed in the unstandardized coefficients suggests that while TPD may enhance teachers' competencies, excessive focus on professional development may inadvertently lead to a decrease in ICT use, possibly due to implementation challenges or resistance to change (Cuban, 2001; Pelgrum & Law, 2003). These results underscore the complex dynamics at play in the integration of ICT in education and highlight the need for comprehensive approaches that address both professional development and instructional practices to maximize the benefits of technology in teaching and learning

5 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study has also provided valuable insights into the relationship between teacher professional development and the use of ICT in teaching and learning within primary schools. The findings highlight a statistically significant positive realtionship between TPD and ICT use, indicating a direct relationship between the two variables. These results align with ANT emphasizing the importance of social interactions and scaffolding in fostering learning and development. However, the observed weak correlation suggests that other factors may also influence the integration of ICT into instructional practices.

5.2 Recommendations for Practice

Based on the findings of this study recommend that primary schools in Sabuli sub-county, Wajir County, Kenya should

- Prioritize ongoing professional development initiatives aimed at enhancing teachers' competencies in ICT integration.
- Provide ongoing support and mentorship opportunities can help teachers effectively navigate challenges associated with ICT implementation and foster a culture of Schools
- Foster a positive attitude towards technology and create a supportive learning environment that enhance teachers' confidence and willingness to integrate ICT into their teaching practices.

5.3 Suggestions for Further Research

The study suggests that;

- More research is necessary to investigate additional factors that explain ICT utilization and to assess the long-term impact of ICT integration on teaching and learning outcomes in primary schools.
- Future research is suggested to study the underlying mechanisms driving the relationship between TPD in and technological advancements.
- Investigating teachers' attitudes, beliefs, and perceptions towards technology adoption, as well as examining contextual factors such as school culture and leadership support, could provide valuable insights into effective strategies for promoting ICT integration in education.

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