ANALYSIS OF PREDICTORS OF ATTITUDE OF UPPER BASIC TEACHERS TOWARDS THE USE OF INSTRUCTIONAL TECHNOLOGY FOR TEACHING IN GOMBE STATE, NIGERIA.

Ebeatu Ugochukwu Franklin
Department of science Education,
Faculty of Education,
Federal University of Kashere, Gombe State, Nigeria

And
Ahmadu Babawuro
Department of science Education,
Faculty of Education,
Federal University of Kashere, Gombe State, Nigeria

And
Prof. A. T. Shittu
Department of science Education,
Faculty of Education,
Federal University of Kashere, Gombe State, Nigeria.

And
Dr. P. Dogo
Department of science Education,
Faculty of Education,
Federal University of Kashere, Gombe State, Nigeria

Abstract

This research analysed predictors of upper basic teachers' attitude towards the use of instructional technology for teaching in Gombe state Nigeria, the study adopted survey research design. A sample of 483 upper basic teachers drawn from a population of 3397 upper basic teachers spread across 368 upper basic schools in Gombe state was selected using multi-stage sampling technique. An Instructional Technology Usage Attitude Predictor Questionnaire (IUAPQ) which was tested for reliability using Cronbach's alpha and had an overall internal consistency of 0.82 was administered to retrieve responses for the study. Three research questions and its corresponding hypotheses were raised to guide the study. A linear regression analysis was carried out to ascertain the predictability of the following constructs: perceived usefulness, perceived ease of use on the upper basic teachers' attitude towards IT Use. The outcome of the study proved that perceived ease of use was highly predictive, while perceived usefulness, subjective norms were moderately predictive the attitude of upper basic teachers in Gombe state to use instructional technology for teaching. The researcher therefore recommended that Government through the universal basic education should organize workshops and seminars on the importance and manipulation of instructional technology for upper basic teachers in the state in order to give them a positive perception on instructional technology usage, Teachers training institutions should ensure a dynamic mode of training thereby integrating new and

emerging technology into the learning process which will result in building a positive perception toward technology use by the teacher, which will be of great benefit on the job.

Keywords: upper basic teacher, attitude, instructional technology

Introduction

In order to reduce the number of out of school children and to increase access to quality education, The Nigerian Government introduced the Universal Basic Education (UBE), in 1999 (FRN, 2021). The scheme was introduced with the aim of providing free, universal and basic education for every Nigerian child between the ages of 6 and 15. previous studies has shown that at the upper basic level, student display a higher level of creative thinking and traits of a possible career path as it awaits them in senior secondary level and the society at large (Trisnayanti, Ashadi, Sunarno, & Masykuri. 2020; Oliveira, Brown, Zhang, LeBrun, Eaton, & Yemen. 2021). the need to breed learners at this level with the prerequisite skill to adapt in a dynamic society and prowess for global competitiveness becomes of uttermost importance and a sole responsibility to the Upper Basic Teacher.

Upper Basic Teachers are expected to utilize teaching methods which supports a learner-centered education as it enhances efficient utilization of instructional technology, the adoption of instructional technology in education can transformed the teaching-learning process, offering numerous benefits, including enhanced student engagement and improved learning outcome. In concordance to the integration of a more innovative way of teaching, the Federal Government of Nigeria through her National Policy On Education, reiterated the need for embedding the use of instructional technology into the learning process at the basic level through the goals of the basic education and also put in place various ICT policies which are of immense benefit for proper utilization of instructional technology at the various levels of education. Gombe state, in particular, has made efforts to improve its education sector including the implementation of digital literacy programs for teachers (Gombe state Ministry of Education, 2020). however, a technology enabled learning environment and the teacher training alone do not ensure successful pedagogical instruction unless the teachers themselves have positive attitude and perceptions towards technology (Adebayo & Afolabi, 2018). The successful adoption of technology in classrooms relies heavily on teachers' attitudes towards its use. In Nigeria, specifically in Gombe state, there is a need to understand factors influencing upper basic teachers' attitudes towards the use of instructional technology; it is to end that this study seeks to investigate the predictors of upper basic teachers' attitudes towards the use of instructional technology for teaching in Gombe state, Nigeria. By identifying these predictors, this research would be able to provide insights for educators, policymakers, and stakeholders to develop effective strategies for promoting technology adoption and enhancing teaching practices in the region.

In a bid to understand factors that shapes an individual's attitude towards use or acceptance of a given technology, numerous studies have explored the attitudes of teachers towards instructional technology highlighting various predictors that influence their willingness to adopt technology in their teaching practices. (German, Valencia-Arias, Gallegos, Benjumea-Arias & Flores-Siapo. 2023).

viewed attitude towards technology acceptance through the lenses of two major antecedents; perceive usefulness which was explained as the degree to which an individual believes that using technology will improve their performance or achieve their goal, secondly attitude towards technology acceptance was viewed through perceived ease of use, which was explained as the degree to which an individual believes that using technology will be effortless and easy to use. According to the technology acceptance model (TAM), teachers' beliefs and attitudes, such as the technology self-efficacy can predict their actual technology adoption. With the exponential rate of change our world experiences and the dynamic nature of our society, (Shuaiyuo & Lei, 2024) looked at the absence of social influence as a limitation in The Technology acceptance model (TAM) , which was taken into consideration in the Theory of Reason Action (TRA) where intention towards use was captured through perceived usefulness and Ease of use while a third antecedent was added: Subjective norm, which was explained as the expectations of an important others, for a person to carry out a particular behavior. According to the TRA the combination of these antecedents is likely to produce an actual behavior, which in this study is the deployment of instructional technology for teaching

The concept of usefulness and ease of use has been around for a long time but has continue to gain more relevance in recent times in the field of education as the need for innovative pedagogy continues to be of necessity. The idea of usefulness refers to how much a specific technology, tool, or intervention is regarded as advantageous or practical in achieving a specific goal or meeting a specific need (Davis and Johnson, 2020). While (Kim & Lee, 2022) viewed usefulness as the extent to which a product, service, or system is regarded as helpful in meeting users' needs and achieving their desired outcomes, according to (Chen & Wang, 2021), usefulness is the degree to which a thing, tool, or resource is perceived as helpful and valuable in facilitating the accomplishment of tasks and goals. Davis and Johnson (2020), opined that usefulness is the extent to which a system or technology is considered practical, efficient, and effective in fulfilling users' needs and enhancing their performance. Ease of use which in most cases is used concurrently with usefulness is a term which describes how simple, user-friendly, and convenient a system, tool, or technology is thought to be. It includes aspects like how simple and intuitive the navigation is, how easy it is to complete particular tasks, and how intuitive the user interface is (Nielsen & Norman, 2022), (Smith & Johnson, 2021) defined ease of use as the extent to which a system, product, or interface is perceived as straightforward, intuitive, and easy to learn and operate, reducing cognitive load and effort required by users, usability is the degree to which users find a technological system, object, or tool to be effortless and uncomplicated in terms of navigation, interaction, and general usage. Ease of use, according to (Lee &Chen, 2020), is the degree to which a product, technology, or system can be easily understood, operated, and navigated by users, without requiring excessive mental or physical effort

Empirical evidences on Teacher's attitude towards Technology use, has not been concluded. For instance, Nur and Endy, (2024). Reported that that Perceived Usefulness has a significant positive effect on Attitude. Delvi, Humam and Indro, (2024). investigated the Influence of Perceived Ease of Use and Perceived Usefulness towards Continuance Intention, the findings of the study indicated that

Perceived Ease of Use has a significant effect on Perceived Usefulness, in another study, Puji and Lizar, (2024) opined that perceived usefulness greatly influences attitude towards technology use. Similarly, Afriza, Muhammad, Alfry, Gita, and Rini, (2024). Concurred that perceived usefulness and ease of use have a significantly positive influence on attitude towards technology use. The question is, can perceive usefulness and ease of use sufficiently predict attitude without the influence of societal norms or belief?

Societal norms otherwise called Subjective norms are a person's perception of the expectations and social pressure they feel from others regarding a particular behavior or course of action. Subjective norms are a crucial factor in determining someone's intention to engage in a specific behavior, according to Ajzen's theory of planned behavior (1991). Subjective norms in this situation are developed as a result of socialization and cultural influences. According to (Ajzen, 1991) individuals' beliefs about the expectations of significant others or reference groups regarding their behavior, and the motivation to comply with those expectations, Subjective norms are perceived social pressures and influences that individuals perceive from their social environment, such as friends, family, colleagues, and society at large, regarding their behavior and decision-making, (Smith and & Johnson, 2021). Subjective norms, according to (Kim a& Lee 2020), represent an individual's perception of social norms, including perceived expectations from others and the influence of significant individuals or groups on their behavior.

In the Nigerian context, studies have highlighted the need for technology integration in education (Adewale & Oyediran, 2017). However, limited research has focused specifically on the predictors of upper basic teachers' attitudes towards instructional technology in Gombe state. This study aims to address this gap by investigating the predictors of upper basic teachers' attitude towards instructional technology in Gombe state, Nigeria.

Objectives of the Study

Generally, the study seeks to investigate predictors (perceived usefulness, ease of use and subjective norms,) of the attitude of upper basic teachers towards instructional technology used for teaching at the upper basic level of education in, Gombe state.

Specifically, the study seeks to:

1. Investigate the influence of perceived usefulness of instructional technology for teaching on the attitude of upper basic teachers in Gombe State.
2. Examine the influence of the ease of using instructional technology for teaching on the attitude of upper basic teachers Gombe State.

Research questions

The following research questions were raised to guide the study:

1. To what extent does upper basic teacher perceive the usefulness of instructional technology for teaching?
2. To what extent does upper basic teacher perceive the use of instructional technology as easy for teaching?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

Ho_1: There is no significant influence of perceived usefulness on upper basic teacher's attitude towards the use of instructional technology for teaching.

Ho_2: There is no significant influence of ease of use on upper basic teacher's attitude towards the use of instructional technology for teaching.

Methodology

The design adopted for this study was survey research. The population for the study is 3397 Universal Basic Education Commission (UBEC) teachers in the 368 schools within the 11 Local Government Areas in Gombe state. The population comprises of two thousand five hundred and five (2505) male teachers and eight hundred and ninety-two (892) female teachers which makes up the population of the study. The sample size is 483 UBEC teachers. The researcher adopts multi-stage sampling techniques for the study, at the first stage the researcher deploys stratified sampling technique to group the eleven (11) local governments contained in the state into three (3) strata. At the second stage sampling a simple random sampling technique was deployed to enable the researcher select one local government each from the three strata, finally a probability proportionate to size (PPS) and a circular systematic sampling technique was used to draw the following samples, ten (cluster) each from the above mentioned strata, amounting to 138 teachers drawn from ten (10) schools in shongom LGA,163 teachers drawn from ten(10) schools in Gombe LGA and 182 teachers drawn from ten(10) schools in Yamaltu/Deba LGA, giving a total sample 0f 483 teachers drawn from a total population of 3397 teachers. The Instrument used for data collection is a questionnaire. The Instructional Technology Usage Attitude Predictor Questionnaire (IUAPQ) which contains 55 structured questionnaire item statements, the questionnaire items were structured on a five-point rating scale. The response categories are: Strongly Agreed (SA)-5, Agreed (A)-4, Neutral (N)-3, Disagreed (D)-2 and Strongly Disagreed (SD)-1. The data for the study was collected through direct delivery and retrieval method otherwise known as personal method of administration. Sekarah, (2022), argues that personal method of administration provide researcher with high response rate.

Results

Research question one

To what extent do upper basic teacher perceive the usefulness of instructional technology for teaching?

Table 1: The extend of instructional technology Perceived Usefulness by upper basic teachers

Number of Valid	Median	Mode	Range	Mean
483	3.80	3.90	2.80	3.81

The table 1: shows that the median 3.80, (on a 5-point scale) is very close to the value of the mean 3.81, also the modal value 3.90, (on a 5-point scale), is close to the median value which indicates a uni-modal and a relatively symmetrical distribution

Table 2: Frequency of Perceived usefulness

Median	Frequency	Percent	Valid Percent	Cumulative Percent
2.1	01	0.2	0.2	0.2
2.5	02	0.4	0.4	0.6
2.6	01	0.2	0.2	0.8
2.7	01	0.2	0.2	1.0
2.8	04	0.8	0.8	1.9
2.9	07	1.4	1.4	3.3
3.0	16	3.3	3.3	6.6
3.1	14	2.9	2.9	9.5
3.2	17	3.5	3.5	13.0
3.3	25	5.2	5.2	18.2
3.4	28	5.8	5.8	24.0
3.5	21	4.3	4.3	28.4
3.6	28	5.8	5.8	34.2
3.7	35	7.2	7.2	41.4
3.8	42	8.7	8.7	50.1
3.9	43	8.9	8.9	59.0
4	40	8.3	8.3	67.3
4.1	40	8.3	8.3	75.6
4.2	30	6.2	6.2	81.8
4.3	21	4.3	4.3	86.1
4.4	28	5.8	5.8	91.9
4.5	19	3.9	3.9	95.9
4.6	07	1.4	1.4	97.3
4.7	06	1.2	1.2	98.6
4.8	06	1.2	1.2	99.8
4.9	01	0.2	0.2	100.0
Total	**483**	**100.0**	**100.0**	

The median value for perceived usefulness was 3.80, (on a 5-point scale) indicating that more than an average amount of upper basic teachers in Gombe State perceived instructional technology to be useful for teaching. The mode value of 3.9 also indicates that 59% of upper basic teachers perceive instructional technology to be useful for teaching; as such the mode percentage value implies that the extent to which upper basic teacher perceives the use of instructional technology for teaching is moderate. The frequency table shows that the responses of the upper basic teachers on

their perception towards the use of instructional technology for teaching are skewed towards the higher end of the scale.

Research question two

To what extent does upper basic teacher perceive the use of instructional technology as easy for teaching?

Table 3: The extent to which upper basic teachers perceive instructional technology as Easy

Number of Valid	Median	Mode	Range	Mean
483	3.00	3.10	2.60	3.00

The table 3: shows that the median 3.00, (on a 5-point scale) is very close to the value of the mean 3.00, also the modal value 3.10, (on a 5-point scale), is close to the median value which indicates a uni-modal and a relatively symmetrical distribution

Table 4: Frequency of Perceived ease of use

Median	Frequency	Percent	Valid Percent	Cumulative Percent
1.8	02	0.4	0.4	0.4
1.9	03	0.6	0.6	1.0
2.0	02	0.4	0.4	1.4
2.1	07	1.4	1.4	2.9
2.2	09	1.9	1.9	4.8
2.3	07	1.4	1.4	6.2
2.4	22	4.6	4.6	10.8
2.5	22	4.6	4.6	15.3
2.6	37	7.7	7.7	23.0
2.7	33	6.8	6.8	29.8
2.8	35	7.2	7.2	37.1
2.9	53	11.0	11.0	48.0
3.0	33	6.8	6.8	54.9
3.1	56	11.6	11.6	66.5
3.2	31	6.4	6.4	72.9
3.3	32	6.6	6.6	79.5
3.4	27	5.6	5.6	85.1
3.5	17	3.5	3.5	88.6
3.6	08	1.7	1.7	90.3
3.7	12	2.5	2.5	92.8
3.8	09	1.9	1.9	94.6
3.9	07	1.4	1.4	96.1
4.0	08	1.7	1.7	97.7
4.1	05	1.0	1.0	98.8
4.2	03	0.6	0.6	99.4
4.3	02	0.4	0.4	99.8
4.4	01	0.2	0.2	100.0
Total	**483**	**100.0**	**100.0**	

The median value for perceived ease of use was 3.00, (on a 5-point scale) indicating that more than an average amount of upper basic teachers in Gombe State perceived instructional technology as easy to use for teaching. The mode value of 3.10 also indicates that 66.5% of upper basic teachers perceive instructional technology as easy to use for teaching; as such the mode percentage value implies that the extent to which upper basic teacher perceives the use of instructional technology for teaching as easy is high. The frequency table shows that the responses of the upper basic teachers on their perception towards the ease of using instructional technology for teaching are skewed towards the higher end of the scale.

Test of Null Hypotheses

Analysis of bivariate linear regression was used to test hypotheses 1 to 3. All the hypotheses were tested at 0.05 level of significance.

Null Hypothesis 1: There is no significant influence of perceived usefulness on upper basic teacher's attitude towards the use of instructional technology for teaching.

To test this formulated hypothesis, bivariate linear regression was used and the result presented in Table 4.11.

Table 5: Bivariate Linear Regression Model Summary on the Influence of Upper Basic Teachers' Perceived Usefulness on Attitude to use Instructional Technology

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.977a	.828	.826	7.311

1. **Predictors: (Constant), PERCEIVED_USEFULNESS**
2. **Dependent Variable: ATTITUDE**

Table 5 shows the regression coefficient for the independent (predictor) variable; perceived usefulness, while the dependent or criterion variable; attitude. The result shows r (483) = 0.977, r^2 = 0.828. Indicating that 82.8% of the variance in attitude to use instructional technology can be explained by perceived usefulness among upper basic teachers in Gombe state, Nigeria. To determine whether the model was a good predictor, regression ANOVA result presented in Table 5

Table.6: Regression ANOVA on the Influence of Upper Basic Teachers' Perceived Usefulness on Attitude to use Instructional Technology

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1013.769	1	1013.769	141.655	.000a
	Residual	126.753	481	62.097		
	Total	**1140.522**	**482**			

a Predictors: (Constant), PERCEIVED_USEFULNESS

b Dependent Variable: ATTITUDE

Table 6 display ANOVA results. The findings show that there is a significant difference between the predictors (PU), and the dependent variable (AT), *F* (481) = 141.655, p (0.00) <0.05. This indicates that the model is a good predictor of the influence between respondents perceived usefulness on attitude. This implies that the model fits the data better than using the means. The regression coefficient is presented in Table 6

Table 7: Linear Regression Coefficient of Upper Basic Teachers' Perceived Usefulness on Attitude to Use Instructional Technology for Teaching

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	2.485	1.716		1.188	.023
	PU	.958	.030	.977	41.902	.000

a. Dependent Variable: ATTITUDE

Table 7 shows the regression coefficient of upper basic teachers' PU on AT to use IT for teaching. The result shows PU is a significant predictor of AT to use IT (B = .977, t = 41.902, p (0.00) < 0.05). The findings indicate that the standardized Beta coefficient for PU is positive and statistically significant. Therefore, the hypothesis is rejected. The regression coefficient indicates that for any increase in one unit of PU was cause an increase in 0.958 units of AT (when all other factors are constant) among upper basic teachers in Gombe state, Nigeria.

Null Hypothesis 2:

There is no significant influence of ease of use on upper basic teacher's attitude towards the use of instructional technology for teaching.

To test this formulated hypothesis, bivariate linear regression was used and the result presented in Table 8.

Table 8: Bivariate Linear Regression Model Summary on the Influence of Upper Basic Teachers' Perceived ease of use on Attitude to use Instructional Technology

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.985a	0.934	.932	7.348

a. Predictors: (Constant), PERCEIVED EASE OF USE
b. Dependent Variable: ATTITUDE

Table 8 shows the regression coefficient for the independent (predictor) variable; perceived ease of use, while the dependent or criterion variable; attitude. The result shows r (483) = 0.985a, r^2 = 0.934. Indicating that 93.4% of the variance in attitude to use instructional technology can be explained by perceived ease of use among upper basic teachers in Gombe state, Nigeria. To determine whether the model was a good predictor, regression ANOVA result presented in Table 9

Table.9: Regression ANOVA on the Influence of Upper Basic Teachers' Perceived Ease of use on the Attitude to use Instructional Technology

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10712.081	1	10712.081	2017.126	.000a
	Residual	10958.442	481	50.122		
	Total	**21670.523**	**482**			

a Predictors: (Constant), PERCEIVED_EASE OF USE
b Dependent Variable: ATTITUDE

Table 9 display ANOVA results. The findings show that there is a significant difference between the predictors (PE), and the dependent variable (AT), *F* (481) = 2017.126, p (0.00) <0.05. This indicates that the model is a good predictor of the influence between respondents perceived ease of use on attitude. This implies that the model fits the data better than using the means. The regression coefficient is presented in Table 4.10

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Table 4.10: Linear Regression Coefficient of Upper Basic Teachers' Perceived Ease of use on Attitude to Use Instructional Technology for Teaching

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**T**	**Sig.**
1 (Constant)	3.426	1.103		3.112	.013
PU	.941	.034	.985	43.138	.000

a. Dependent Variable: ATTITUDE

Table 4.10 shows the regression coefficient of upper basic teachers' PE on AT to use IT for teaching. The result shows PE is a significant predictor of AT to use IT (B = .985, t = 43.138, p(0.00) < 0.05). The findings indicate that the standardized Beta coefficient for PE is positive and statistically significant. Therefore, the hypothesis is rejected. The regression coefficient indicates that for any increase in one unit of PU was cause an increase in 0.94 units of AT (when all other factors are constant) among upper basic teachers in Gombe state, Nigeria.

Discussion

The study revealed that perceived usefulness moderately predicts the attitude of upper basic teachers towards the use of instructional technology for teaching in Gombe state, Nigeria and has a significant influence on the attitude of upper basic teachers towards the use of instructional technology for teaching. The finding is inconsistent with Nur and Endy, (2024), who reported that Perceived Usefulness predicts attitude towards technology use. In a related study Wijnen, Van der Molten and Voogt, (2024), confirmed that perceived usefulness was highly predictive at influencing attitude of teachers towards new technology use for teaching in Netherland. The study further revealed that perceived ease of use was significantly and positively related to attitude of upper basic teachers towards the use of instructional technology for teaching in Gombe state, Nigeria. The findings concurred with arguments in the existing literature, such as the study conducted by Delvi *et al.,* (2024) on the Influence of Perceived Ease of Use and Perceived Usefulness towards Continuance Intention with Customer Satisfaction as Intervening Variable: a study of Startup Companies Using e-Wallet, the study established that perceived ease of use has influence on the use of a given technology. In another study consistent with the current study by NurSaskia, and EndyGunanto, (2024) revealed that the teacher's perceived ease of using an instructional technology predicts the teacher's attitude towards the use of that instructional technology for teaching. The study revealed that perceived ease of use and perceived usefulness were not significant predictors of teachers' attitudes towards technology use. Instead, other factors such as teacher beliefs, pedagogical practices, and school culture as more influential in shaping teachers' technology adoption decisions. Venkatesh

and Bala, (2008). Which revealed that perceived ease of use and perceived usefulness are not sufficient to predict technology adoption. Teo, (2009), revealed that perceived ease of use and perceived usefulness are not strong predictors of pre-service teachers' technology acceptance. Teo, (2009), further opined that attitude towards technology and subjective norms are significant predictors

Conclusions

This research work examined predictors of upper basic teachers' attitude towards instructional technology use for teaching in Gombe state Nigeria. The study proved empirically that perceived usefulness, perceived ease of use significantly related to predicting the attitude of upper basic teachers towards the use of instructional technology for teaching in Gombe state Nigeria, the study further proved empirically that subjective norms was not a good predictor of upper basic teachers' attitude towards the use of instructional technology for teaching, in Gombe state Nigeria. More importantly, the study discovered that ease of use and perceived usefulness were high predictors of the upper basic teachers' attitude towards technology use for teaching in Gombe state Nigeria. Therefore, the mind of upper basic teachers in Gombe state, Nigeria could be changed from the use of the conventional method of teaching to a more advanced method through the adequate use of instructional technology therefore equipping learners with the prerequisite knowledge needed to adapt in our dynamic environment and fit for global competitiveness with their counterpart around the globe as emphasized in the sustainable development goals (SDGs). This could be achieved when upper basic teachers are properly geared towards having a positive perception towards instructional technology use which can be facilitated through a proper perceived usefulness and ease of use which best encourages the upper basic teacher to willingly use instructional technology for teaching in Gombe state Nigeria.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The regulatory body such as the universal basic education commission should ensure that upper basic teachers in Gombe state are well exposed to current and emerging instructional technology which facilitates an advance teaching method.
2. The regulatory body should put more emphasis on the use instructional technology in the delivery of the curriculum document at the universal basic level of education in Gombe state, to acquaint upper basic teachers with the use of instructional technology and make learning less abstract and more concrete to the students.
3. Workshops and seminars should be organized by the universal basic education commission for upper basic teachers on the importance of the use of instructional technology to reform their perception on having a positive attitude towards the use of instructional technology for teaching.
4. School management should through the appropriate channel request for the necessary instructional technology facilities lacking in the school and ensure that upper basic teachers utilizes the available facilities
5. Teachers training institutions should ensure a dynamic mode of training thereby integrating new and emerging technology into the

learning process which will result in building a positive perception toward technology use by the teacher, which will be of great benefit on the job.

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