ICT USAGE AND DEVELOPMENT OF BASIC SCHOOL TEACHER PEDAGOGY COMPETENCES FOR GLOBAL COMPETITIVENESS IN NIGERIA

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Abstract
Globalization has made the role of the teacher to expand and become more challenging in order to meet the needs of basic learners. Teachers are expected to have a wide variety of methods, skills, adequate knowledge and apply them to create positive classroom environment and work collaboratively with other stakeholders in order to provide the needed support to basic learners. The study therefore examined how basic school teacher pedagogy competences can be improved through ICT usage and development in teaching and learning. The descriptive survey design was used to assess 250 sandwich teachers at the University of Lagos. A 20 item questionnaire titled ICT Usage and Development of Basic School Teacher Pedagogy Competence Questionnaire {IUDBSTPCQ} was used to elicit data from respondents. Findings of the study revealed that, teachers do not have adequate ICT knowledge and skills for pedagogical competence and global competitiveness and inadequate availability and usage of ICT resources; there is a significant relationship between ICT usage and development and basic teacher pedagogy competence. The study equally showed the relative contributions of the independent variables (ICT knowledge and skills, school leadership, teacher quality, availability and usage) to the dependent variable (teacher pedagogy competence). It was therefore recommended that basic schools should focus attention on building teachers' interest in ICT so as to encourage its usage and development for global competiveness and that there is the need for government to improve and develop school ICT resources to facilitate ICT usage and enhance teachers' pedagogy experiences in teaching and learning.

Keywords: ICT, Usage, Development, Pedagogy and Competence.

Introduction

Teaching and learning in modern times have undergone different changes from the way it was a century ago. The introduction of information communication technology (ICT) came with enormous changes that have influence on the teaching, learning and knowledge acquired by basic learners. Basic learners in modern times have developed new abilities, perceptions and approach to learning. Therefore, it is assumed that the system of education must adapt to the new method of

information communication technology usage, and knowledge transfer approaches. The knowledge acquired in school through the established teaching and learning method is assumed to be inadequate to understand and solve the problems encountered due to complex tremendous accumulation of information in our society today. The informal teaching and learning knowledge acquired through the social media is becoming more receptive than classroom learning. Thus, Cornu (2010), in his work described basic learners which he referred to as "Digital Natives" as facing three major challenges that include; new knowledge, networks and collective intelligence.

There is the assumption that a wide gap exists between technology and pedagogy in basic school teaching and learning. However, this new trend calls for basic schools to integrate this new technologies into the existing method of learning in terms of curriculum, innovations, classroom interactions and teacher–pupil relationships in schools. Since knowledge is evolving rapidly, not only acquired in the classroom through the teachers, efforts must be made to improve teachers knowledge, skills, abilities and social competences to be able to be creative in teaching and management of basic learners.

Teaching and learning in the past and present takes place in the classroom where teachers use different approaches and materials with contents that basic learners master and apply in their everyday life. In the past materials were mostly in the form of text books and work books recommended by the appropriate authorities and the teachers were the only source of knowledge, skill, ideas and values to be imparted on the learner (Bello, 2008). Thus, there was an immense distance between people from different parts of the world and to share and exchange educational materials to a large extent were almost impossible. Thus, sharing of knowledge, experience, skills and values through educational process was limited to individual environment. With the development of ICT, the global image of educational process is continuously changing and evolving. The world has developed into a global village with so much accessibility to information and integration of knowledge and skills through collaborations. The strategic goal of any modern educational institution is to achieve globally recognised standards in its teaching and learning activities. Given the need to promote and improve our global competitiveness in basic teaching and learning, the development of teacher pedagogical competencies is expected to offer practical strategies, practices and rules to guide teachers in ways to improve instruction that improves students' performance and quality of the work experience.

ICT in this context is defined as the rearrangement of the traditional system of teaching and learning, and integration of technology to facilitate learning experiences. This refers to the computers, internet connections, peripheral devices and multimedia, and the range of phone technologies available for children to facilitate and communicate information for learning purposes. The use of ICT in

the school system shifts learning approaches to a more constructivist learning that increases the activity and responsibilities of basic learners (Mikre, 2011). It is assumed that the pedagogical approach of teaching and learning in schools is basically conveyance learning. Hence this does not encourage constructivist approaches, collaborative work and collective achievement. According to Cornu (2010), networking and collaboration through the use of ICT are new ways of co-operating and developing new concepts at a collective level to achieve very complex and difficult tasks. To support the realization of the potentials of basic learners, it is important for the teachers to incorporate a range of teaching and learning resources into the teaching method. This implies the need for the teachers to act as change agents by participating actively in networking in order to direct, construct effectively relevant collective intelligence and achievements. The teacher can institutionalize and stabilize different knowledge acquired by learners through having adequate understanding of the characteristics of basic learners by being ICT compliant. This will help manage the new explosion experienced by basic learners. A competent teacher sees the value in developing and prevailing on the students by seeking opportunities for professional collaboration within and beyond the school environment. According to Makulova, Alimzhanova, Bekturganova, Umirzakova, Makulova and Karymbayeva (2015), competence is defined as the ability to perform any activity on the basis of the acquired knowledge, skills and abilities of the individual.

Ejiogu (2018) asserts that technology is the sum knowledge, tools and processes used to transform organisational input into outputs. Therefore, for there to be technological breakthrough and subsequent advancement, there must be the right idea/knowledge; the right method of it into effect through development and at the appropriate time with availability of the right materials. With modernisation trend in education, stakeholders are concerned with the place and role of teachers in teaching and learning of basic learners. The challenge therefore, is how to reposition our teachers into this era of high-tech with inadequate computer literacy as they are the major players in this act of moulding and nurturing of basic learners. Commenting further Ejiogu (2018) stated that "any teacher worth the name must have a sound theoretical knowledge about learning and human behaviour; control of technical skills for effective teaching and learning; a display of attitudes that would foster learning and appropriate human relations; and thorough mastery of the subject matter being taught". Therefore, the teacher must have acquired instrument, interpersonal and systematic competences to be able to adapt, impact and nurture basic learners. According to Sofowora and Egbedokun (2010) teachers of tomorrow will have no choice but to become web-workers, coaches and facilitators, that are not to pass on knowledge alone but to encourage the development of high ordered skills most especially the skill of time management.

A study by Ezugwu, Ofem, Rathod, Agushaka and Huruna (2016), lecturers revealed that ICT plays a vital role in promoting efficiency in the teaching process.

Sofowora and Egbedokun (2010) in a related study revealed that teachers had access to computers but did not have the pre-requisite ICT skills for usage in teaching and learning. In their study, Jingyany, Jingjing, Leiwu and Yjuan (2017), on four dimensions of ICT: frequency of use, resources content, perceived usefulness and satisfaction found out that teachers in different grades have significant differences in the aspects of resources content, perceived usefulness and satisfaction. Onyene, Oshionebo and Olisaemeka (2008) in their study using ICT for sustainable secondary school education development revealed that teachers rate of ICT usage for personal development/research, teaching purposes, knowledge acquisition and documentation is very low. ICT explosion is a challenge to practitioners. In another study by Onyene, Mbah and Madumere (2009) assert that ICT is an indispensible tool in management and very useful in packaging organisational programmes, activities and competences. Nigeria needs to meet up with the real world in the face of ICT revolution for global competitiveness. Goro (2003) stated that an assessment of the state of the computers and technology literacy should be a cause for concern for teacher education in Nigeria. To function efficiently and competitively in a world dominated by technological innovation our basic teachers and schools need to be keeping pace with technological development globally. Arundale cited in Sofowora and Egbedokun (2010) explained that children learn in two ways, orally and visually. Many basic learners however learn more rapidly when oral teaching is linked with what they can see, touch or handle. This is because a teacher cannot be certain that his/her verbal description will convey the correct impression especially if he/she finds it difficult to compare the things being described with those things the students are already familiar with. Arundale concluded that this difficulty can be removed immediately if mediated instruction is available. Learning is made more permanent and reality of experience is provided which stimulates self-creativity in the students and continuity of thoughts is developed. Several scholars in the past have supported the use of ICT by teachers to improve classroom teaching and learning (Leat & McAleavy 2010, Bull, Bell, Mason & Grofalo 2002, and Hepp, Hnostroza, Erique, Ernesta & Rehbein, 2004). It is high time we recognised that teachers deserve far more help with the development of digital learning.

Globalization and modernisation are imposing huge challenges or changes on basic learners, teachers and the society at large. Successful education systems are assumed to be those that promote and encourage development of teachers and school heads at all levels. According to Schleicher (2015), the skills that students need to contribute effectively to society are changing constantly, but our education system is not keeping up with the pace. Most schools look much the same today as they are generations ago and teachers themselves are seen not developing the practice and skills required to meet the diverse needs of today's learners. The question still remains, "what are the skills that basic learners need to play a part in this rapidly changing world and how our educational system can best support the

type of teaching that develops those skills for global competitiveness. The challenge therefore is the level of teacher's competence in providing knowledge, skills and creativity related to the knowledge base and environment of basic learners; the quality of teachers and their continuous and relevant professional development programmes and being able to integrate ICT into teacher pedagogy in teaching and learning activities. This study therefore examined how basic school teacher pedagogy competences can be improved through ICT usage and development in teaching and learning.

Research Questions:

The following questions guided the study:

1. To what extent do teachers have adequate ICT knowledge and skills for pedagogy competence and global competiveness?
2. What is the level of availability of ICT resources provided by basic schools for teachers' pedagogy competence?
3. Is there any relationship between school leadership and teachers' ICT pedagogy competence for global competitiveness?
4. Is there any relationship between basic school teacher quality, professional competence and teachers' ICT pedagogy competence for global competitiveness?

Hypothesis

$H_{01:}$ There is no significant correlation between ICT usage and development and teacher pedagogy competence for global competitiveness.

Method

Descriptive survey design involving cross-sectional survey was used for the study. Data was collected from in service teachers of the Lagos State Ministry of Education. The convenient sampling technique was used to select 250 sandwich teachers at the University of Lagos. A 20 item questionnaire titled ICT Usage and Development of Basic School Teacher Pedagogy Competence Questionnaire {IUDBSTPCQ} was used to elicit data from respondents and analyzed using descriptive statistics. The section 1 of the IUDBSTPCQ (20 items) is used to assess the professional use and school ICT capacity and school leadership of basic school teachers in Lagos State. It is adapted from Evaluation of the Information and Communication Technology Knowledge and Skills Levels Survey (EICTKSLS) by Evaluation and Accountability, Department of Education and Training Western Australia (2005). The instruments were validated by five academic staff of educational administration and experts in educational management. The Cronbach alpha was used to determine the reliability of the study instruments and reliability coefficient of 0.70 was obtained. Responses to the items were adapted on the 4-point Likert type of SA- Strongly Agree, A- Agree, D-Disagree, and SD-Strongly disagree. The 4-point Likert scale was reduced to two with Strongly Agree and

Agree merged together as 'Agree' and Strongly Disagree and Disagree merged together as 'Disagree'. The criterion mean value of 2.5 was set; all items with mean score below this value are considered to be on disagreeing affirmation. In order to quantitatively estimate the contributions of school planning and leadership and teacher quality and professional competence factors of the study against the teachers' ICT pedagogy competence for global competitiveness indicators, a Multiple Regression Model was constructed and analysed.

Results:

Research Question 1: To what extent do teachers have adequate ICT knowledge and skills for pedagogical competence and global competiveness?

Table 1: Teacher Adequate ICT Knowledge and Skill and Pedagogical Competence

	N	Mean	Std. D
1. Teachers do not use ICT resources to create materials for students use	250	3.08	0.65
2. Inadequate knowledge of ICT hinders my access to information and best practices for teaching	250	3.31	0.55
3. I use computers to monitor and evaluate my students.	250	2.44	0.84
4. I communicate with my fellow teachers and otherteacherfrom another school through electronic mails.	250	2.67	0.90
5. I exchange course materials for collaborations with others teachers through mails	250	2.63	0.86
6. Lack of participation on online professional learning affects my performance	250	2.91	0.71
7. I post information online to assist other students in their work.	250	2.76	0.88

Data on table 1 show that respondents with a mean score of 3.08 agreed that teachers do not use ICT resources to create materials for students use. With a mean score of 2 and 4 respectively the table shows that inadequate knowledge of ICT hinders access to information and evaluation of students with the use of computers. Also the respondents with a mean score of 5 and 7 respectively agreed that lack of participation on online professional learning affects teacher's performance and that teachers post information online to assist other students in their work.

Research Question 2: What is the level of availability of ICT resources provided by basic schools for teachers' pedagogical competence?

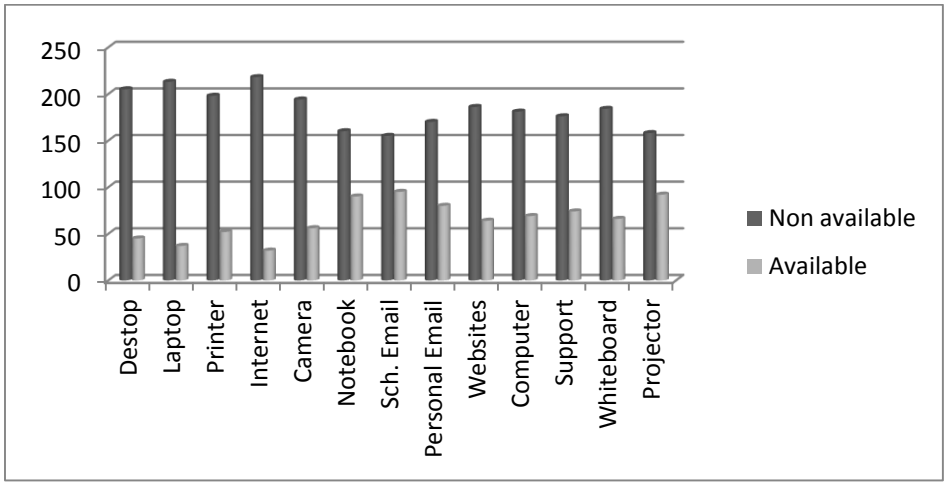

Fig 1: Availability and Usage of ICT Resources

Fig 1 shows the availability of ICT resources needed by basic school teachers to improve their pedagogical competence. The chart revealed that the respondents agreed that there is almost non availability of the required ICT resources in Basic schools to improve teachers' pedagogical competence. From the figure it is deduced that the ICT resource factors that contribute to teacher pedagogical competence for global competiveness are not available in Basic schools.

Research Question 3: Is there any relationship between school leadership and teachers' ICT pedagogical competence for global competitiveness?

Table 2: School Leadership and Teachers Pedagogical Competence

	N	Mean	Std. D.
8.My school has a clear sense of direction on how touse ICT to enhance the learning of students	250	2.48	0.70
9.My school encourages the use of ICT by all teachers	250	2.67	0.95
10.Appropriate access and support for ICT usage is provided in my school.	250	2.14	0.71
11.ICT is used to evaluate and report students' continuous assessment in my school	250	2.27	0.91
12.Sufficient ICT resources are available to meet the requirements of teachers and students.	250	2.12	0.78
13.ICT professional learning opportunities are provided for teachers for participation in my school	250	2.21	0.96
14.The use of ICT is encouraged in the teaching and learning of students in my school	250	2.56	0.87

Table 2 reveals that the respondents disagreed that Basic schools have a clear sense of direction on how to use ICT to enhance the learning of students with a mean

score of 2.8. The table equally revealed that there is lack of professional development opportunities for teachers with a mean score 2.21. However, the table revealed with a mean score of 2.56 that the respondents agreed that the use of ICT is encouraged in the teaching and learning of students in my school.

Research Question 4: Is there any relationship between basic school teacher quality, professional competence and teachers' ICT pedagogical competence for global competitiveness?

Table3. Teacher Quality and ICT pedagogical Competence

	N	Mean	Std. D
15.UBE teachers do not need any more training in ICT usage	250	1.71	0.65
16.Teachers do have adequate knowledge of ICT usage in my school	250	2.08	0.71
17.It is better for teachers to undergo six months to one year in-service re-training in ICT usage for UBE to function well.	250	2.81	0.81
18.Provision of the right type of ICT teaching and learning resources is more important than teacher re-training.	250	2.65	0.92
19.Teachers prepare their lesson notes using computers in my school	250	2.20	0.87
20.Re-training or not does not affect teachers' ICT usage performance.	250	2.23	0.75

Table 3 shows that the respondents agreed with a mean score 2.8 that it is better to undergo six months to one year in-service re-training in ICT usage to improve performance. The table equally revealed with a mean score of 2.7 that provision of the right type of ICT and learning resources is more important than teacher retraining. However, the mean score of all other items by the respondents are below the criterion mean of 2.5. It can be deduced that basic schools need to enhance professional development opportunities of teacher so as to improve ICT pedagogical competence for global competitiveness.

Table 4: $H_{01:}$ There is no significant correlation among ICT usage and development and teacher pedagogy competence for global competitiveness.
In order to test the above hypothesis, the independent data collected on ICT usage and development were collated with basic school teacher pedagogy competence using Multiple Regression Analysis.

Relative Contribution of the Independent Variables of the Study to the Dependent variable teacher pedagogy competence

		Mean	St.dev	1	2	3	4	5
1	ICT KNOWLEDGE AND SKILLS	19.81	4.39	1	.703**	.304**	.261**	.049
2	SCHOOL LEADERSHIP	16.44	5.04		1	.302**	.203**	.059
3	TEACHER QUALITY	31.45	2.00			1	.013	-.077
4	AVALIABILITY AND USAGE	16.96	3.88				1	.08

Table 4 shows the relative contribution of independent variables (ICT knowledge and Skill, School Leadership, Teacher Quality and Availability and Usage) to dependent variable (Teacher Pedagogy Competence).
The results indicate that (ICT knowledge and skills with teacher pedagogy competence ($r=0.703$, $p<0.05$), $p=0.00<0.05$; School Leadership ($r=0.304$,$p<0.05$), Teacher Quality ($r=0.013$, $p<0.05$), Availability and Usage ($r=0.08$, $p<0.05$) contributed significantly to qualitative basic education delivery. This implies that there is a significant relationship between ICT usage and development and basic teacher pedagogy competence for global competitiveness. The null hypothesis is therefore not accepted.

Discussion

The result of the study revealed that teachers' inadequate knowledge of ICT and usage hinders them from accessing needed information and skills that enhances basic learning. This is because the respondents agreed that teachers' do not use ICT resources to create materials for students use, monitor and evaluate students progress report and exchange materials for collaborations with other teachers with a mean score of 3.1, 2.4 and 2.7 respectively. The consequence of this therefore, is lack of incorporating different methods of teaching and learning resources into our every day teaching and learning method. The results revealed that there is a

significant relationship between ICT knowledge and skills and teacher pedagogy competence ($r=0.703$, $p<0.05$). Teachers need to be repositioned into a high tech era with appropriate knowledge in ICT so as to be able to adapt and impact meaningfully to basic learners. This finding corroborates with Ezugwu, Ofem, Rathod, Agushaka and Huruna (2016), which revealed ICT plays a vital role in promoting efficiency in the teaching process through interaction, collaboration and innovation. Therefore it requires adequate knowledge and skill to embrace a new approach to pedagogy, curriculum, lesson planning and application of the latest educational resources to achieve the stated educational objectives for global competitiveness. The study also revealed that lack of participation on online professional learning affects their performance with a mean score of 2.9. Corroborating the findings Onyene, Oshionebo and Olisaemeka (2008) in their study revealed that teachers rate of ICT usage for teaching purposes, knowledge acquisition and documentation is very low. To ensure adequate skills and technology transfer via basic learning, the teacher level of computer knowledge and usage must be improved for effective classroom teaching and learning. However, the respondents agreed that the post information online to assist other students in their work with a mean score of 2.8. Interrogating further, it was discovered that their posting was done through only WhatsApp means of communication.

The result of the study in research question two revealed that availability of ICT resources are fundamental tool to ICT usage and development. The chart revealed that the respondents agreed that there is almost non availability of the required ICT resources in Basic schools to improve teachers' pedagogy competence hence zero usage. The study revealed that only 18% of desktops, 22% of internet facilities and 30% of technical support are available in basic schools. Provision of technical support and computers for schools will facilitate ICT usage and development of teachers and basic learners. Most of the teachers cannot navigate to known websites and do basic searches on the web. This implies that most are not familiar with word processing skills. Therefore, basic schools should be provided with all the necessary ICT resources needed to enhance teacher pedagogy competence for global competitiveness. There is the need to encourage participatory and regular usage of the available resources to enhance competence. Basic school management should endeavour to equip the schools with the 21st century resources as well as ensure maintenance of available resources, provision of an environment conducive for e-learning through communication and collaboration with both teachers and basic learners. Corroborating the findings Jingyany, Jingjing, Leiwu and Yjuan (2017), in their study revealed that teachers' effective ICT usage will enhance the efficiency and effectiveness of teaching and learning of modern day basic learners. This is because frequency of use and application of resources content enhances perceived usefulness and satisfaction derived by the teachers in teaching and learning of basic learners. However, there

is no significant relationship between availability, usage and teacher pedagogy competence.

The finding of the study in research question 3 indicated that basic schools do not have a clear sense of direction on how to use ICT to enhance learning with a mean score of 2.4760. This implies access and support of ICT usage is not being provided for teachers to enhance their pedagogy competence. Therefore, they teachers' will not be able to provide and implement alternative instructional strategies in the classroom to enhance learning. The result revealed that this is the next most influential factor in teacher pedagogy competence. Hence, there is a significant relationship between school leadership and teacher pedagogy competence ($r=0.304$, $p<0.05$). There is the need to use variety of assessment strategy in monitoring and evaluating student's progress. Teacher attitude and motivation is very important in integrating ICT into learning process. The school leadership is expected to motivate the teachers and provide an environment conducive and resources for ICT usage and development. This will challenge the teachers to explore technology and its potential to make learning exciting for basic learners. The result shows that the respondents disagreed with a mean score of 2.1 that sufficient ICT resources are available to meet the requirements of teachers and students. To achieve global competiveness in education for basic learners, school leadership should make provision for networking and collaboration among teachers through ICT usage and development to improve traditional pedagogy process in terms of acquisition of complex skills and abilities to enhance teaching and learning. The findings is corroborated by Onyene, Mbah and Madumere (2009) that ICT is an indispensible tool in management and very useful in packaging organisational programmes, activities and competences for global competitiveness. Therefore, access to knowledge has become a powerful force for transforming education, social, economic and political life globally with the advent of ICT. The result shows that the respondents disagreed with a mean score of 2.2 that ICT professional learning opportunities are provided for teachers' participation in their schools. Basic teachers need to have comprehensive knowledge of both academic and social approaches to learning due to the influence of ICT on basic learners.

The result of the study in research question 4 revealed that the respondent disagreed that basic school teachers do not need any more training in ICT usage and teachers do have adequate knowledge of ICT usage in their schools with a mean score of 1.7 and 2.1 respectively. The quality of teachers and ICT pedagogy competence is dependent on the frequency and relevance of the professional development programmes organised for basic teachers. Integrating ICT usage and development into teacher traditional pedagogy process can be achieved through awareness, capacity building and provision of the necessary resources and practice. The findings show that the respondents agreed that provision of the right type of ICT teaching and learning resources is more important than teacher re-training with

a mean score of 2.7. The extent to which teachers will integrate ICT in classrooms is subject to adequate knowledge and skills acquired in training and availability of the resources needed in teaching and learning. The finding is corroborated by Hepp, Hnostroza, Erique, Ernesta and Rehbein, (2004), in their study that revealed that teachers deserve far more help with the development of digital learning.

However, the study revealed that of lesser, but still have significant influence on teacher ICT pedagogy competence is teacher quality ($r=0.013$, $p<0.05$).

Conclusion:

The study was carried out to establish the extent to which ICT usage and development influence teacher pedagogy competence for global competitiveness. Hence, there is the need to assess the integration of ICT knowledge and skills in the teaching and learning of basic learners. Also the study identified the relative contributions of the variables of the study that include; ICT knowledge and skills, school leadership, teacher quality and availability and usage of ICT resources. Based on the findings, it has been highlighted the need for basic schools to improve on their ICT usage and development in order to enhance teacher pedagogy competence for global competiveness. School leadership should provide an enabling environment, appropriate resources and technical support to facilitate teachers to explore and embrace technology so as to make learning exciting for basic learners. Given the availability of adequate professional development programmes by the schools, it will enhance development of the right attitude and motivation of the teachers towards improving their pedagogy competence for global competiveness.

Recommendations:

Based on the finding of the study, the following recommendations were made to include:

1. Basic schools should focus attention on building teachers' interest in ICT so as to encourage its usage and development for global competiveness.
2. There is the need for government to improve and develop school ICT resources to facilitate ICT usage and enhance teachers' pedagogy experiences in teaching and learning.
3. Basic schools head teachers should develop teacher attitude and motivation towards ICT through information and communication so as to achieve commitment.
4. The government need to provide adequate and relevant professional development programmes for teachers to enhance their pedagogy competence.

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