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Teacher Factors and Implementation of ICT Curriculum in Some Public Primary Schools in Mezam Division, North West Region of Cameroon

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Abstract

Purpose: This study investigated teacher factors and implementation of ICT curriculum in some public primary schools in Mezam Division, North West Region of Cameroon.

Methodology: The study adopted a mixed method research paradigm. The argument of the study was anchored on the Technological, Pedagogical and Content Knowledge Model and the Technology Acceptance Model. A cross-sectional descriptive survey research design was used with a sample of 375 teachers and 72 head teachers who were teaching at the public primary schools in Mezam Division. Data obtained were analyzed using descriptive and inferential tools such as frequencies counts, percentages and multiple responses set.

Findings: Findings on hypothesis one showed that teachers' level of training on ICT has a significant and positive influence on the implementation of ICT based curriculum ($R= 0.490^{**}$, p-value $0.000< 0.05$). Again, findings on hypothesis two revealed that teachers' use ICT infrastructures has a signiifcant and positive influence on the implementation of ICT curriculum ($R= 0.392^{**}$, p-value $0.000< 0.05$). Lastly, findings show that teachers' attitude towards ICT use has a signiifcant and positive influence on the implementation of ICT curriculum ($R= 0.544^{**}$, p-value $0.000< 0.05$). Therefore, the study concluded that teacher factors have a significant and a positive influence on the implementation of ICT curriculum.

Recommendations: Based on the findings, it was recommended that teacher training colleges should ensure that the period given for practical implementation of ICT curriculum should be proportionate to the period spent in class to acquire theory on the implementation of ICT curriculum. This will ensure that pre-service teachers leave the college being well prepared with ICT competency. This will result effectively implementation of ICT curriculum in schools. Also, the Ministry of Education as well as the Regional Pedagogic Inspectors for ICT should organize regular and practical in-service training with demonstration lessons that help teachers develop basic, intermediate and advanced ICT skills. Having these ICT skills will help teachers to change their teaching practices and serve as essential element for effectively implementation of ICT curriculum into the classroom.

Keywords: *Teacher factors, ICT, implementation of ICT curriculum, teacher training, ICT infrastructures and attitude.*

BACKGROUND OF THE STUDY

The improvement and incorporation of ICT in African that host most of the developing countries schools is very important if the continent is to minimize the knowledge, technological and economic divide between itself and the rest of the world (Farell & Shafika, 2007). Globally, most of the African countries identified the education sector as a frontline of the implementation of ICT curriculum to widen access to education, improve standard of educational delivered and reduce cost in the administration of the educational system as a way of increasing efficiency in the provision of education (Bank, 1999). Thus, these countries are at the threshold of investing significant resources (material and human) in new digital technologies (Hennessy, Harrison & Wamakote, 2010). However, Sutter and Kihara (2019) studies conducted in developing countries reveal that despite the introduction of ICT in education, there has been a slow uptake of technology by teachers. The low uptakes of technology by teachers may be attributed to the limited knowledge and skills of teachers on the implementation of ICT curriculum (Kafyulilo, Fisser, Pieters, & Voogt, 2015). The teachers' limited knowledge and skills on the implementation of ICT curriculum may be because ICTs are mainly used for teaching basic ICT skills and administration purposes but not as tools for instructional delivery (Anyanful & Abdulai, 2018).

That notwithstanding, Murithii (2017) opined that, the low level of ICT skills among teachers was fuelled by infrastructure related challenges like: shortage of appropriate ICT facilities such as buildings, safety concerns and availability of electricity and internet connection. In line with this, Piper, Jepkemei, Kkwayumba and Kibukho (2015) found out that there have been increased investments in ICT infrastructures for African schools. However, despite the increased investments in ICT infrastructures, globally, African countries are still affected by low investment in ICT from primary level all the way to tertiary level; thus, they still lag behind (Farell, 2007). The gaps were noted in a study by Kiptalam and Rodrigue (2010), where they found that computer to student ration in most African countries is 1:150 as compared to a ration of 1:15 in developed countries. This ratio was attributed to poor ICT infrastructure among the primary schools in the continent (Omenga, 2011). Scholars argue that challenges which accompany investing in ICT infrastructures in developing countries are many and include mainly: lack of electricity; few service providers and a presence of large geographical coverage, culture; language; poverty levels and literacy rate among citizens of countries in question (Tyler & Gopal, 2010). Wiley (2003) asserted that for African's countries to catch-up with the rest of the world, teachers need adequate and appropriate training, need to be competent enough to use ICT infrastructure and to develop positive attitude toward ICT to effectively implementation of ICT curriculum in their classroom. This was supported by Dalton (2019) confirmed that there is need for Africa institutions of learning to embrace the implementation of ICT curriculum if they are to catch-up with the rest of the world. The limited research reports that are available on developing countries and in Sub-Saharan Africa in particular, indicate that the implementation of ICT is currently increasing and has been introduced in varying degrees at all levels from preschools to university (ERNWACA, 2006). Hence, it is vital that these teacher factors be investigated to come about with techniques to get the better of them.

Although, the Global Information technology report 2009-2010 (World Economic Forum, 2010) rank Cameroon which is one of the Sub Saharan African countries at the initial level of implementing ICT curriculum, Ndenge (2013) observed that the Cameroon government is also particularly serious with the implementation of ICT curriculum in education and its role in development. With the government's strategic plan on ICT implementation in schools launched

in the past decade, Cameroon entered a very exciting period of rapid expansion and development in this area. For Cameroon to be at par with the rest of the world in ICT, in February 2001 the President of the Republic called for the orientation of education toward the knowledge-based economy in his address to the Cameroon youths thus, the official introduction of ICTs in public primary schools (République du Cameroun 2007 cited in Mbangwana, 2008).

To achieve this, the Cameroon government has set a goal in what she called vision 2035. Thus the Cameroon government has seen education as one of the strategic socials means to achieve these goals as well as the platform for equipping the nation with ICT skills in order to create dynamic and sustainable economic growth. Equally, Cameroon has made remarkable progress in putting in place an ICT policy framework and implementation strategy, officially introduced and designed an ICT curriculum for primary schools (Ndenge, 2013). This implies that the implementation of ICT in education will play a major role in dissemination skills in society and creating a positive impact in the economy and a key step in bridging the digital divide. Thus, the implementation of ICT curriculum in education is emphasized on individualized and cooperative problem solving, student centered learning and flexible learning approaches as shift from the previous system that were not practicable. As such, the role of the teacher changes from a deliverer of fixed knowledge to a facilitator and supporter of student centered learning. Hence, ICT curriculum can be meaningful and effectively implemented if all stakeholders such as government, international agencies, private sectors, policy and decision makers, teachers, pupils and teachers are engaged at all levels of the education system.

The background information indicates that despite the Cameroonian government efforts together with relevant stakeholders' commitments and devised initiatives to enhance the implementation of ICT curriculum in education, increase educational access, quality and equity and at the same time make learning relevant to the dynamic society, teachers are still faced with some challenges (Ngoungouo, 2017). This has resulted to the ineffectiveness of implementation of ICT curriculum in public primary schools. Kibinkiri and Yomoseye (2020) opined that without improved human capital and provision of adequate and suitable ICT infrastructures especially in a developing country like Cameroon, the effects of the knowledge economy which include amongst others; continuing education, lifelong learning, and continual professional development will not be felt. Consequently, the country will be forced to fall behind and experience intellectual an economic marginalization and isolation.

Purpose of the Study

The main purpose of this study was to find out the influence of teacher factors on the implementation of ICT curriculum in some public primary schools in Mezam Division.

Specific Objectives of the Study

The specific objectives of the study were:

- To find out the influence of teachers' level of training on ICT on the implementation of ICT curriculum in some public primary schools in Mezam Division.
- To assess the influence of teachers' use of ICT infrastructures on the implementation of ICT curriculum in some public primary schools in Mezam Division.
- To examine the influence of teachers' attitudes towards ICT on the implementation of ICT curriculum in some public primary schools in Mezam Division.

LITERATURE REVIEW

Teaching is one of the numerous professions that are faced with challenges because of the dynamic nature of the society. Teachers need help either through pre-service or in-service teacher education programmes to develop their content knowledge, technological and pedagogical skills, or the realization of certain practices. Their success in teaching depends on their knowledge, attitude towards teaching, academic self-concept, and explicit understanding of the profession. Teacher education provide teachers' knowledge, skills, and aptitude to be familiar with the art and science of teaching that in turn gives them confidence to carry out their task (Ololube, 2007). Teachers being the pivot in the teaching- learning process require ICT knowledge and skills to use it in teaching and learning in today's classroom.

The Education and Training Commission of Europe (2010) opined that the effectiveness of the implementation of ICT curriculum depends on numerous factors which teacher factors are vital. Attempts to define teacher factors have proven to be difficult due to the multidimensional nature of who a teacher is. For this reason, no consensus has been reached on what the specific conceptualization of teacher factors should entail. Agreeing with this, Gichimu (2016) referred to teacher factors are the traits teachers possessed or issues directly touching on the teacher such as teachers' level of training on ICT, teachers' use of ICT infrastructures and teachers' attitude toward ICT use. Pelgrum (2001) found that successful implementation of ICT curriculum in schools depends mostly on teachers' competencies levels because it helps teachers in preparing their teaching, provide feedback and to effectively use ICT hardware and software for teaching and learning process.

Effective implementation of ICT curriculum is a complex multifaceted process that involves not just technology, but also curriculum and pedagogy, long-term financing as well as teacher factors such as training on ICT, use of ICT infrastructures and teachers' attitude toward use ICT among other factors. Research has demonstrated that if teacher factors are taken into consideration before designing the ICT curriculum for teacher training institutions, teachers will be able to acquire appropriate knowledge and skill for effectively implementation of ICT curriculum in the classroom thus, creating opportunities for the learners to develop 21st century skills (UNESCO, 2012).

Hennessy et al. (2010) did look at literature on teacher factors influencing classroom use of ICT in Sub-Saharan Africa. The findings identified the barriers to be shortage of qualified teachers; lack of teacher time; lack of leadership to oversee ICT integration; the optional status within the ICT curriculum; and a universal emphasis to teach basic skills (for primary schools). Other barriers were mainly extrinsic and allowed a prospective adopter to decide not to opt using the technology by virtue of their presence. The barriers include lack of electricity and frequent power cuts; poor technology infrastructure; large classes and overcrowded computer laboratories; low bandwidth; high costs of internet connectivity; software licenses and maintenance; and insufficient and inappropriate software.

Mukhari (2014) explored teacher factors influencing the use of ICT in teaching and learning. The showed that indeed ICT have the potential to revolutionize the quality of education but the availability of ICT infrastructure in schools is futile if teachers lack the knowledge and the skills on how to use these instruments to deliver their subject matter and to engage learners through ICT. Although there are various educational issues which prevent teachers from implementing ICTs in the teaching activities. Research findings (Chigona, Chigona & Kausa, 2012) reiterate that the role of the teacher is of great importance in ensuring that ICTs are used in an educational situation. All identified teacher related challenges must be overcome to ensure the successful integration of ICT in teaching and learning. It was recommended that for

the appropriation of ICTs by teachers to enhance their pedagogical activities, adequate training opportunities for all teachers must be prioritized by the Department of Education to enable teachers to get to grips with new technologies which can impact and enhance teaching and learning.

Lentilalu (2015) aimed at providing significant information on teacher factors influencing integration of information and communication technology in teaching and learning in public secondary schools. The key findings of the study indicated that training of teachers influenced an extent to which teachers accessed and used technologies in teaching and learning. The study had therefore found that training teachers on ICT integration could enhance competency and self-efficacy to utilize the new technologies. Lawless and Pellegrino (2007) claim that if training program is of high quality, the period for training lasts longer, new technologies for teaching and learning are offered, teachers are eagerly involved in important context activities, teamwork among colleagues is improved and has clear vision for students' attainment.

Tokmak and Karakus (2011) investigated how well initial teacher training in ICT prepare pre-service teachers to teaching profession. The results showed that initial teacher training courses provided several affective teaching skills such as developing awareness about the importance of being well-prepared for each class, being calm for unexpected situations, and understanding the reasons of students' misbehaviors in the class. However, according to ICT pre-service teachers, practical aspect of these courses was not enough. Most of them stated that they could not apply different strategies in different contexts. In addition, due to the lack of experience on classroom management they had difficulty in completing subjects although they left extra time for each activity in their lesson plans. Concurrently, training teachers on ICT integration helps to provide them with competencies and skills of how to incorporate ICT tools in their respective subjects in the classroom environment (Gaible, Bloome, Schwartz, Hoppes & Vota, 2011).

Nwana, Ofoegbu and Egbe (2017) investigated the availability and utilization of ICT resources in the teaching of computer education among secondary school teachers in Anambra State. The findings revealed that many of the ICT resources needed for the teaching of computer education are not available. It was also revealed that despite the availability of some ICT resources, teachers were not using them. Sibanda, Mapenduka and Furusa (2016) examined the use of ICT resources and factors that hindered maximum utilization of available ICT resources in Kwekwe, Zimbabwe. The research established that most ICTs such as interactive boards, computers and projectors were inadequate and utilization was minimal. Several factors such as insufficient resources fear of technology, ICT skills deficiency, lack of power supply, lack of interest, and poor physical ICT infrastructure were identified as hindrances to the ICT utilization in these schools. Sibanda et al. (2016) recommended a regular training and ICT skills upgrading for teachers, the schools to put in place alternative sources of power such as generators and solar energy and to engage personnel for the crucial technical support to motivate teachers' technology use. Aryatuha (2007) in his study noted that the availability of computer hardware and software should be accompanied with training of the users and constant technical support. Without this even though high quality hardware and software are available, they could be wasted or remain underutilized by the users.

Albirini (2006) examined the factors relating to the teachers' attitudes toward information and communication technologies. The finding revealed that teachers have positive attitude toward ICT use in Education. Teachers' attitudes were predicted by computer attributes, cultural perceptions, and computer competence. The results showed that a relatively high percentage of the respondents (57%) had computers at home while only 33.4% of the respondents had access to computers at school. This percentage gives a clear indication of the insufficiency of

computers at Syrian schools, particularly for teacher use. Thus, Albirini's findings substantiated this globally felt barrier that computer access has often been one of the most important obstacles to technology adoption and integration worldwide (Pelgrum, 2001). The development of teachers' positive attitudes toward ICT is a key factor not only for enhancing computer implementation but also for avoiding teachers' resistance to computer use (Watson, 1998). Ropp (2000) notes that while many teachers have positive attitudes to the use of educational technologies, they do not necessarily believe in their own ability to use technology in a classroom with students. Evidence suggests that majority of teachers who reported negative or neutral attitude towards the implementation of ICT curriculum lacked knowledge and skills that would allow them to make "informed decision" (Aloteawi, 2002 as cited in Bordbar, 2010).

METHODOLOGY

The study was a cross sectional descriptive survey and was made up of 375 teachers and 72 head teachers in public primary schools in four sub divisions (Bamenda I, Bamenda II, Bamenda III and Tubah) in Mezam Division, North West Region of Cameroon. The stratified sampling technique was used to group public primary schools in the purposively selected sub divisions within Mezam division into 4 strata. Within each stratum, the simple random sampling technique was used to select respondents for this study. The instrument used was a closed ended questionnaire to collect data on teacher factors and the implementation of ICT curriculum. Since teacher factors was the independent variable, it was further operationalized as constituting teachers' level of training on ICT, teachers' use of ICT infrastructures and teachers' attitude towards ICT use.

Table 1: Reliability analysis report for teachers

Variables	Cronbach Alpha Coefficients	Variance	No of items
Teachers' level of training on ICT	0.787	0.015	6
Teachers' use of ICT infrastructures	0.843	0.047	6
Teachers' attitude towards ICT	0.781	0.013	6
Implementation of ICT curriculum	0.861	0.034	8

The internal consistency of the teachers was satisfactory for all the variables with the coefficient values ranging from 0.781 being the lowest value to 0.861 as the highest value which is above the recommended threshold of 0.7. Based on this, it was concluded that the teachers are consistent in their responses which makes their questionnaire reliable for the study.

Table 2: Reliability analysis report for head teachers

Variables	Cronbach Alpha Coefficients	Variance	No of items
Teachers' level of training on ICT	0.804	0.004	6
Teachers' use of ICT infrastructures	0.719	0.016	7
Teachers' attitude towards ICT	0.721	0.032	6
Implementation of ICT curriculum	0.853	0.024	8

Furthermore, the internal consistency of the head teachers was satisfactory for all the variables with the coefficient values ranging from, 0.719 being the lowest value to 0.853 as the highest value which is above the recommended threshold of 0.7. Based on this, it was concluded that the head teachers are consistent in their responses which makes their questionnaire also reliable for the study.

The reliability analysis report of the instrument was not violated for any variables with Cronbach's Alpha Coefficient values all above 0.5. When the internal consistency is higher, the level of reliability will be higher too. Hence, the relatively high value of Cronbach's Alpha Coefficient for all the variables implies that the respondents were consistent and objective to their responses. However, Cohen, Manion and Morrison (2012) points that when the reliability coefficient is 0.7 and above it is considered sufficient for a research instrument in social sciences. The instruments were judged valid and reliable for analysis report for teachers and head teachers.

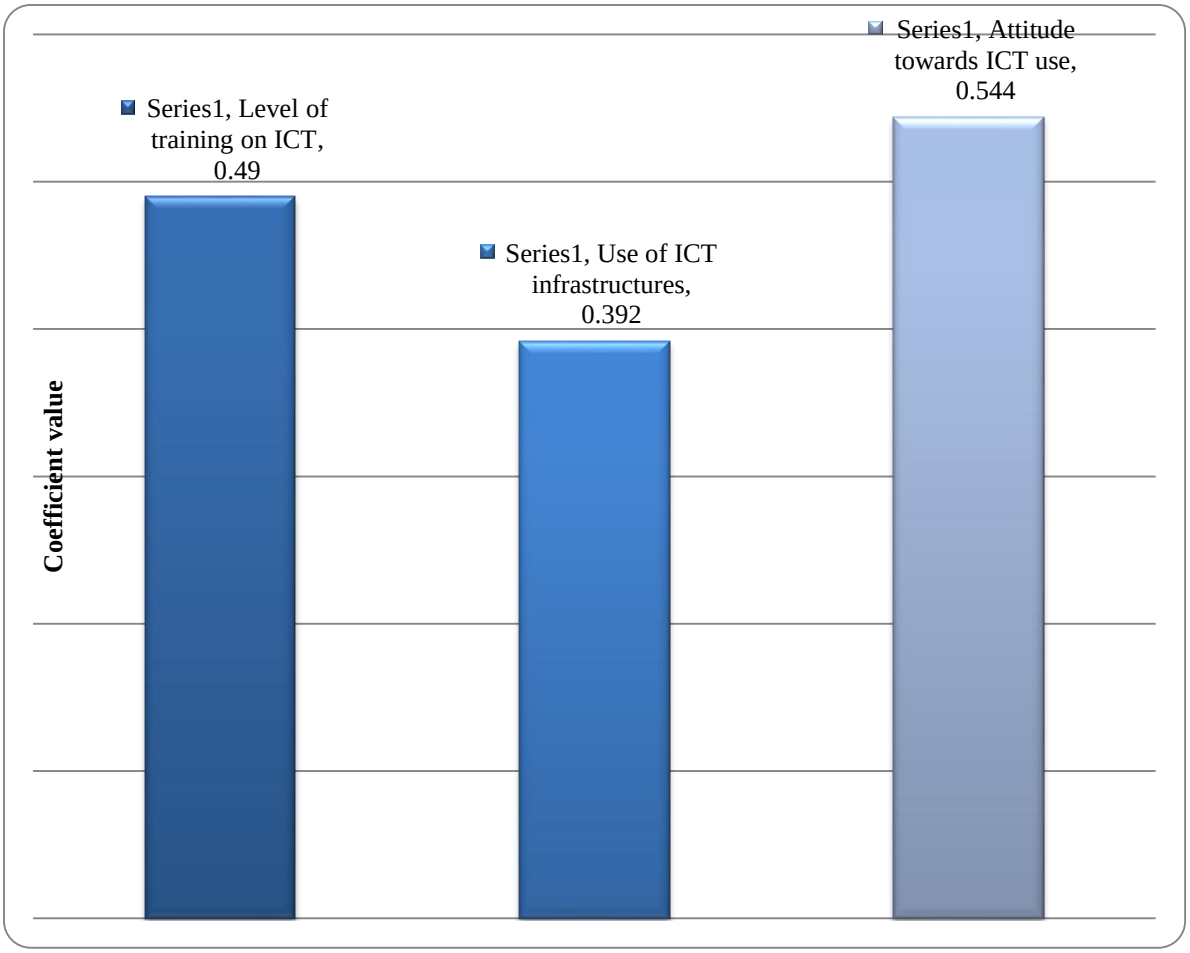

Figure 1: Comparing coefficient values of training on ict, availabilty of ict infrastructures and attitude towards ict use by teachers on implementation of ict curriculum

Comparing coefficient values of training on ICT, availabilty of ICT infrastructures and attitude towards ICT use by teachers on implementation of ICT curriculum, findings on figure 1 shows that, teachers' attitude towards ICT use influence the implementation of ICT curriculum more (0.544^{**}) followed by the level of training on ICT (0.490^{**}) and lastly availability of ICT infrastructures (0.392^{**}).

FINDINGS

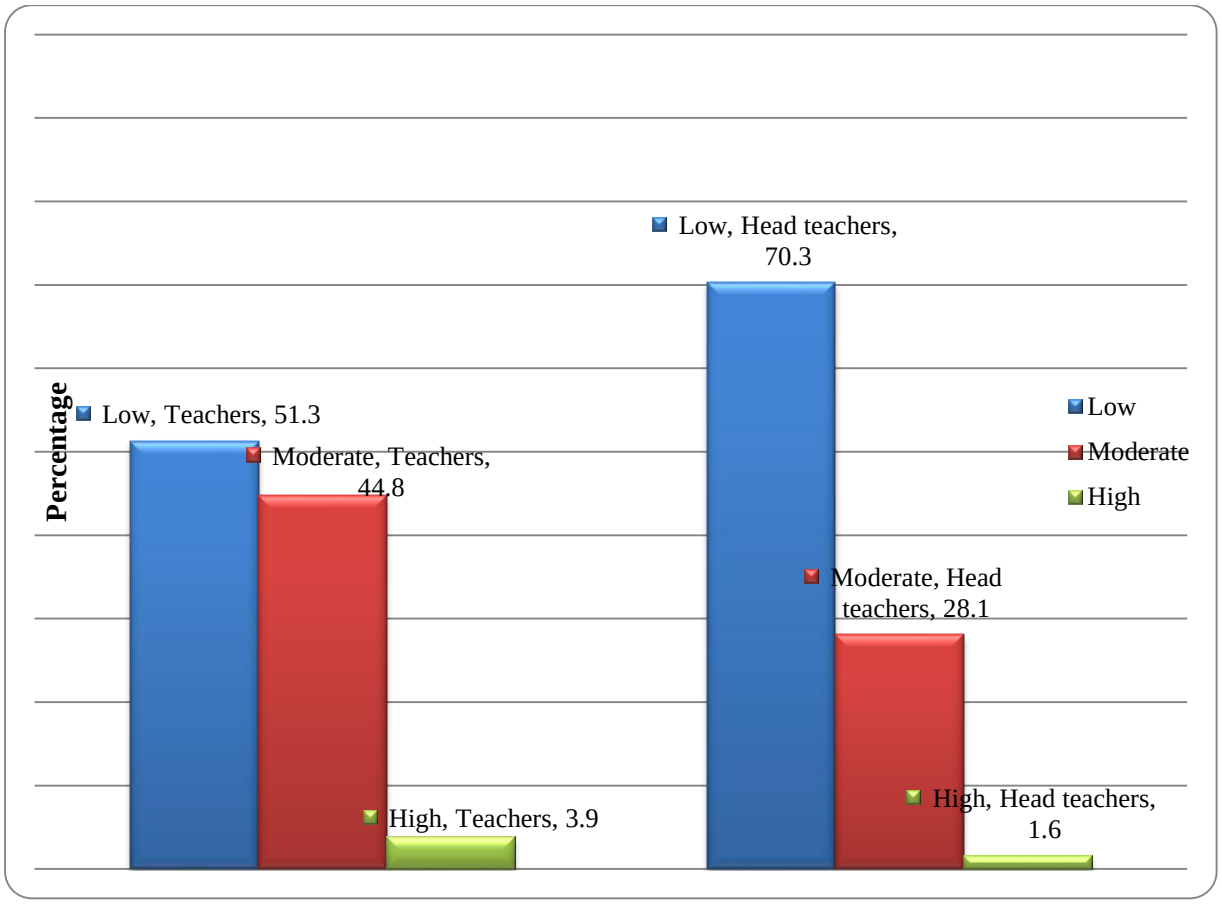

Figure 2: Comparing teachers and head teachers rating teachers' level of training on ICT

Table 3: The influence of teachers' level of training on ICT on implementation of ICT curriculum

		Teachers' level of training on ICT	Implementation of ICT curriculum	Explanatory power of influence in terms of percentage (Cox and Snell Test/Pseudo R-Square)
Spearman's rho	R-value	1.000	.490**	
	P-value	.	.000	52.6%
	N	279	279	

***. Correlation is significant at the 0.01 level (2-tailed).*

Statisitcally, findings show that teachers' level of training on ICT has a significant and positive influence on the implementation of ICT based curriculum (R= 0.490**, p-value 0.000< 0.05). The postive sign of the correlation value implies that teachers are more likely to implement ICT curriculum when they are adequately trained and this is supported with an explanatory power of 52.6%. Therefore, the null hypothesis was rejected while the alternative hypothesis that states that there is a statistically significant influence of teachers' level of ICT training on implementation of ICT curriculum was accepted.

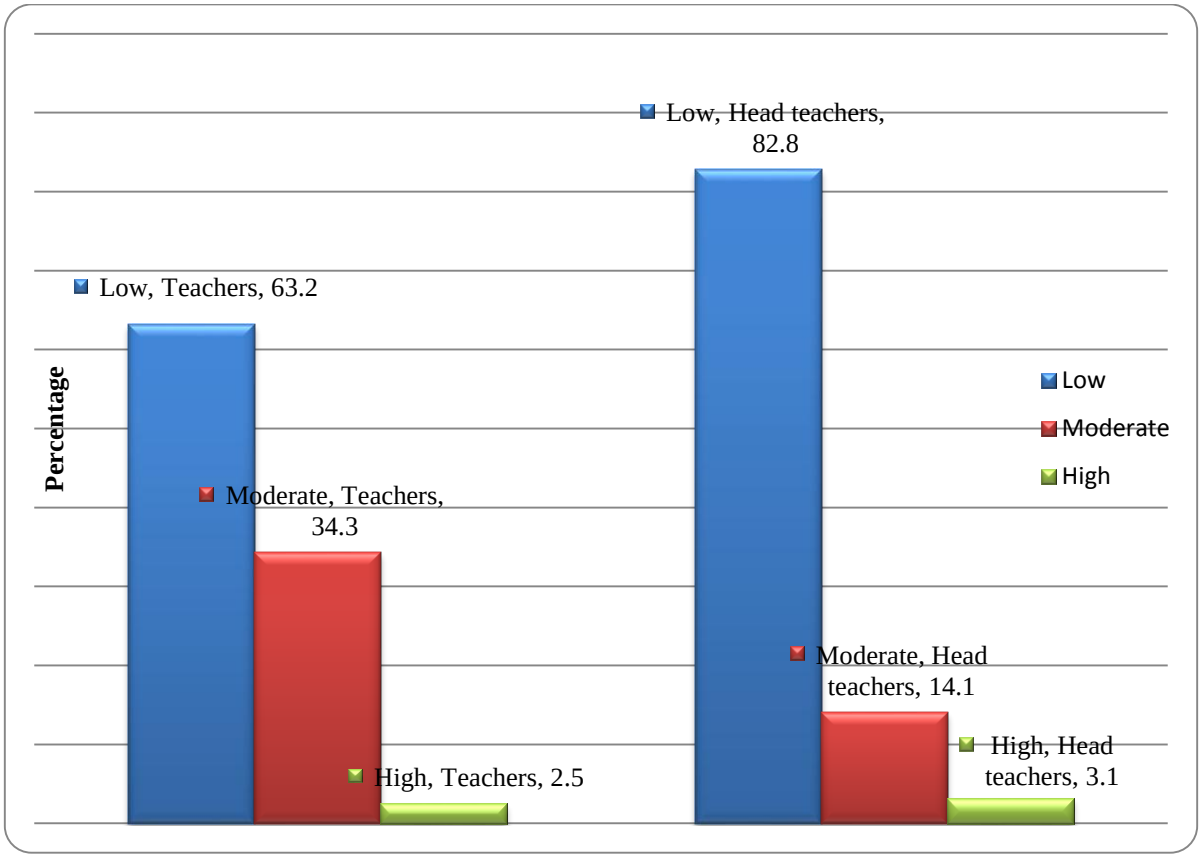

Figure 3: Comparing teachers and head teachers rating of teachers' use of ICT resources

Table1: the influence of teachers' use of ICT infrastructures on implementation of ICT curriculum

		Teachers' use of ICT infrastructures	Implementation of ICT curriculum	Explanatory power of influence in terms of percentage (Cox and Snell Test/Pseudo R-Square)
Spearman's rho	R-value	1.000	.392**	
	P-value	.	.000	59.8%
	N	279	279	

***. Correlation is significant at the 0.01 level (2-tailed).*

Statisitcally, findings show that teachers' use ICT infrastructures has a signiifcant and positive influence on the implementation of ICT curriculum (R= 0.392**, p-value 0.000< 0.05). The postive sign of the correlation value implies that teachers are more likely to implement ICT curriculum when adequate ICT infrastructures is made at their disposal and this is supported with an explanatory power of 59.8%. Therefore, the null hypothesis stated above was rejected while the alternative hypothesis that state there is a statistically significant influence of teachers' use of ICT infrastructure on implementation of ICT curriculum was accepted.

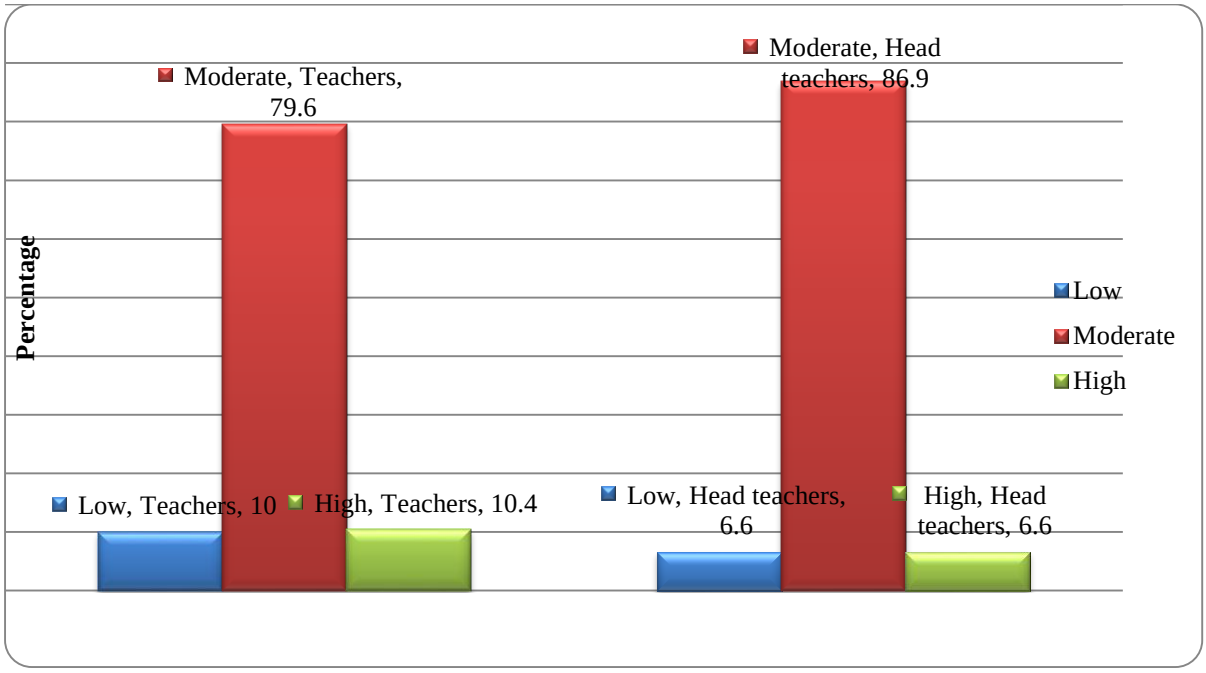

Figure 4: Comparing teachers and head teachers rating of teachers' attitude towards ICT use

Table 5: The influence of teachers' attitude towards ICT use on implementation of ict curriculum

		Teachers' attitude towards ICT use	Implementation of ICT curriculum	Explanatory power of influence in terms of percentage (Cox and Snell Test/Pseudo R-Square)
Spearman's rho	R-value	1.000	.544**	
	P-value	.	.000	76.3%
	N	279	279	

***. Correlation is significant at the 0.01 level (2-tailed).*

Statisitcally, findings show that teachers' attitude towards ICT use has a signiifcant and positive influence on the implementation of ICT curriculum (R= 0.544**, p-value 0.000< 0.05). The postive sign of the correlation value implies that teachers are more likely to implement ICT curriculum when their attitude towards ICT is positive and this is supported with a high explanatory power of 76.3%. Therefore, the null hypothesis stated above was rejected while the alternative hypothesis that state there is a statistically significant influence of teachers' attitude towards ICT use on implementation of ICT curriculum was accepted.

DISCUSSIONS

Teachers' Level of Training and Implementation of ICT Curriculum

Statisitcally, the findings revealed that teachers' level of training on ICT has a significant and positive influence on the implementation of ICT curriculum. The positive sign implied that teachers are more likely to implement ICT curriculum when they are adequately trained. This finding is in congruence with the findings of Jegede (2009) who argued that more than half of the educators had been exposed to one form of ICT training or the other, but they still do not effectively implement ICT curriculum in the teaching and learning practices because they are

not adequately trainings on the use of ICT in instruction. Also, this is line with Ugwu (2013) who postulated that educators preferred mostly the inclusion of software skills on teachers' ICT training curriculum. Thus, it was also found that training delivery has no varying effect on basic ICT skills. Teachers' training on ICT is very necessary because it helps teachers to focus on the teaching process by interacting with the subject matter, curriculum content, pedagogical creativity, and socio-cultural aspects of education.

The findings further showed that teachers have not undergone appropriate initial training on ICT in teacher training colleges. The findings indicated that the period given for practical during initial training is not proportionate to the period spent in class to acquire theory. This is because most teachers training courses are focusing on ICT theory than practical. This finding is at variance with the findings of Tokmak and Karakus (2011) who postulated that, ICT pre-service teachers; practical aspect of these courses was not enough. Most of them stated that they could not apply different strategies in different contexts. In addition, due to the lack of experience on classroom management they had difficulty in completing subjects although they left extra time for each activity in their lesson plans. Conversely, the result is like the findings of Kiwonde (2018) who found out that that ICT training programmes faced challenges related to few training opportunities for teachers' shortages of ICT facilities in schools, and training was done with less practical components.

Moreover, the findings showed that teachers do not frequently attend ICT seminars because they are not frequently organizing seminars due to inadequate resources. The findings designated that after seminars demonstration lessons that help teachers to develop basic, intermediate, and advanced ICT skills are not often organized. This finding is at dispute with neither the findings of Daidai (2014) that teacher educators were neither given ICT in-service courses nor indoor training at college levels. This is line with the study of Agyei and Voogt (2012) that that after the pre-service programme, teachers were able to combine the TCK and TPK in their lessons. Teachers were able to use the knowledge they were taught about spreadsheet coupled with the various ways spreadsheet can be used to design a lesson to teach mathematics.

Finally, the findings specified that teachers do not use knowledge and skills acquired during training to incorporate ICTs in their teaching and learning processes. Also, the findings stipulated that teachers do not often use software applications in planning and teaching their lessons because they have not acquired appropriate ICT skills from their training, outdated hardware and lack of appropriate software. The use of software applications in planning and teaching their lessons enables teachers to match what subject content and pedagogy with suitable application software. This is study disagrees with Kiwonde (2018) who posited that teachers were trained and oriented on ICT basic skills and how to integrate ICT in the teaching of EE in the study for a period of four weeks. Also, this is study in congruence with Apanpa and Lawal (2009) who argued that the teachers' competencies were very low and there were limited ICT facilities for ICT integration in Lagos schools.

The finding of this study is related to the TPACK in that, the technology, pedagogy, and content knowledge of teacher is critical because they influence implementation of ICT curriculum. It is the quality and adequacy of teachers training on the technology, pedagogy and content of ICT that framed how effectively they can implement the ICT curriculum in the teaching and learning process in the classroom. Consequently, teachers must be sufficiently trained on how to integrate ICT in the classroom practices. Mishra and Koehler (2007) explained that through pre-service and in-service training, teachers gain technological experience, content and

pedagogical knowledge through lessons that require them to define, design and solve learning problems in classroom scenarios.

Teachers' use ICT Infrastructures and Implementation of ICT \Curriculum

Statisitcally, the findings showed that teachers' use ICT infrastructures has a significant and positive influence on the implementation of ICT curriculum. This impied that teachers are more likely to implement ICT curriculum when adequate ICT infrastructures is made at their disposal. This result was in congruence with the findings of Marong (2021) which revealed that there were not enough ICT resources, access was generally not very good and there were outdated computers, few software applications, and power supply not frequently in the classroom to encourage the use ICT. Despite a great deal of recent progress and optimism that many more learners can benefit from access to ICT, the infrastructures necessary for deploying technological resources are lacking in low-income countries (Hennessy, Harrison & Wamakote, 2010). Schools must be equipped with the necessary ICT infrastructure to provide the next generations with the needed tools and resources for access and use and to attain the expected skills (Gulbahar & Guven 2008).

The findings also stipulated that ICT infrastructures such as well-equipped computer laboratory were virtually unavailable in schools. The use of ICT infrastructures is very necessary because learners get grater encouragement and participation in classroom when ICT is use. This is because in many schools in Mezam Division, there is seldom free room and, in some schools, no suitable building at all. This is in line with Nwana, Ofoegbu and Egbe (2017) and Ademiluyi (2019) who revealed that many of the ICT resources needed for the teaching of computer education are barely or not available.

Interestingly, the findings indicated that schools do not have adequate ICT resources for them to use and integrate in other subject areas because in public primary schools no budget has been allotted to them to support ICT-related activities in schools as such the few available cannot be adequate for teachers and pupils use except for private schools. This is in congruence with Albirini (2006) who indicated the insufficiency of computers at Syrian schools, particularly for teacher use. This finding is in line with Sibanda, Mapenduka and Furusa (2016) established that most ICTs such as interactive boards, computers and projectors were inadequate. Further, it was observed that even in schools that have computers, the student-computer ratio is 150:1 (Kenya data profile, 2006). The other major problem pointed out by the Data and Statistics (2006) was that Kenya lacked adequate connectivity and network infrastructure.

In the same trend, findings indicated that teachers do not have access to ICT resources such as internet connectivity. They postulated that access to internet connectivity is difficult because of high cost of data affordability. This is in line with Marong (2021) that access was generally not very good. Becta (2005) opined that the lack of access to ICT infrastructures could be due to inadequate facilities or in some instances poor planning, making it difficult for both teachers and learners to have access.

The findings further designated that teachers do not use appropriate software for specific applications in classroom activities because of lack of ICT skills because in Teacher's Training Colleges the ICTs infrastructure is very poor and most of the ICT resources like computers are obsolete and outdated. This is congruence with Marong (2021) findings which ascertained that ICT resources were outdated computers, few software applications, and power supply not frequently in the classroom adequate resources to encourage the ICT use. According to Hennessy et al. (2010) insufficient and inappropriate software influence the implementation of ICT based curriculum.

The findings also stipulated that teachers were are unable to use computer based programs in presenting concepts in non-ICT subjects because in Teacher's Training Colleges most teachers do not receive adequate training in the use of various ICTs for Education and they lack the capability to use computer based programs in presenting concepts in non-ICT subjects. In line with the study of Orinda (2015) who argued that the usability of ICT facilities within selected Universities is moderate. Also, this is in line with Nwana et al. (2017) findings that revealed that despite the availability of some ICT resources, teachers were not using them. According to Lau and Sim (2008) despite the apparent benefits of the use of ICT for educational purposes, the learning potential of ICT is deprived as many teachers are still not fully ICT-literate and do not use it in their teaching.

The findings showed that teachers do not regularly utilize ICT in carrying out instructional delivery such as the use of multimedia projectors in lesson presentation. Also, findings of the pedagogic inspectors revealed that teachers do not regularly utilize ICT in carrying out instructional delivery and the main challenges they face include lack of ICT skills electricity supply, lack of ICT resources and access to internet connection to use these resources. This is in congruence with Sibanda et al. (2016) who affirmed that there was insufficient utilization of the available ICTs. According to this author several factors such as insufficient resources, fear of technology, ICT skills deficiency, lack of power supply, lack of interest, and poor physical ICT infrastructure were identified as hindrances to the ICT utilization in these schools. These findings are in line with Ademiluyi (2019) whose findings revealed that ICT facilities are barely available, grossly inadequate, and largely unutilized in teaching.

The findings of this study are related to the TAM in that when technology is perceived to be useful and easy for teachers, this will enclose how effectively they can implement the ICT curriculum in the teaching and learning process in the classroom.

Teachers' Attitude towards the ICT use and Implementation of ICT Curriculum

Statisitcally, the findings indicated that teachers' attitude towards ICT use has a significant and positive influence on the implementation of ICT curriculum. This implied that teachers are more likely to implement ICT curriculum when their attitude towards ICT is positive. This finding is at variance with the finding of Lufungulo (2015) who ascertained that primary school teachers in Lusaka and Katete held positive views towards the integration of ICT in the teaching and learning of SS. This finding is also in line with Albirini (2006) findings which revealed that teachers have positive attitude toward ICT use in Education. According to this author, teachers' attitudes were predicted by computer attributes, cultural perceptions, and computer competence.

The findings equally showed that teachers believe that ICT helps them to find information that enriches their lessons quickly and easily. Also, the findings showed that teachers are encouraged to learn the skills necessary for the implementation of ICT-based activities in the classroom. It is very necessary for teachers to develop the right attitudes and ICT skills and to help teachers adopt the right attitude, there should plan and implement practices with technologies that reflect their beliefs about teaching and learning and a forum should be open to help teachers develop the ICT skills. This is line with Teo et al. (2007) who noted that computer attitudes are determined by the beliefs about perceived usefulness and perceived ease of use, while factors such as subjective norm have both direct and indirect impact on computer attitudes. The findings also agree with Lufungulo (2015) who opined that primary school teachers in Lusaka and Katete perceive ICT as being very productive in teaching and learning, hence making the teaching and learning process easier.

Also, the findings revealed that teachers are not sufficiently comfortable when incorporating ICTs into their teaching. The findings further specified that teachers are aware of the benefits of ICT in the teaching and learning process. This is because during seminars, refresher courses, workshops and conferences teachers are often sensitized on the benefits of ICT in the teaching and learning process. This is in conformity with Beri and Sharma (2019) who stated that though teachers believed use of ICT could have more benefits to the learners, lack their self-efficacy led to de-motivation as well as low passion regarding the use of ICT devices in teacher-training.

On the one hand, the findings disclosed that teachers perceive that using ICT in the teaching and learning process would enhance their job performance. The findings indicated that some teachers believe that they require a lot of effort before they would learn how to use ICT. This result agrees with the findings of Hadji (2015) that teachers perceive ICT as being very productive in teaching and learning since it makes the process easier. This finding is in match with the findings of Beri and Sharma (2019) who noted that job relevance significantly influenced perceived usefulness though teachers believed use of ICT could have more benefits to the learners.

The finding of this study is related to the TAM in that when technology is perceived to be useful and easy to use, these perceptions result in positive attitude towards the acceptance and use of the technology thus, effective implementation of ICT curriculum in the teaching and learning process in the classroom.

CONCLUSION

It is therefore concluded that teacher factors have a significant and positive influence on implementation of ICT curriculum in Mezam Division. Hence, teacher factors are crucial for effective and efficient implementation of ICT curriculum in primary school. This has been recognized in UNESCO ICT Competency Framework for Teachers (2011) which pointed out that teachers need ICT competencies and use to integrate ICT resources into teaching. They establish a framework that shapes the subsets of ICT competence (technological and pedagogical) at all levels of education, including primary, secondary, and higher education, and determine how different personal and contextual factors influence these subdivisions. The need for this came after having recognized that teacher factors may be contributing to the ineffectiveness of the implementation of ICT curriculum in schools despite the benefits in education.

RECOMMENDATIONS

Based on the findings obtained, the study proposes the following recommendations.

Teacher training colleges should ensure that the period given for practical implementation of ICT curriculum should be proportionate to the period spent in class to acquire theory on the implementation of ICT curriculum so that pre-service teachers leave the college being well prepared with ICT competency uniformly. Also, the Ministry of Education as well as the Regional Pedagogic Inspectors for ICT should organize regular and practical in-service training with demonstration lessons that help teachers develop basic ICT skills. Having these ICT skills will help teachers to change their teaching practices and serve as essential element for effectively implementation of ICT curriculum into the classroom.

Also, a collaborative effort should be made among government, international agencies, private sectors and other stakeholders to supporting the schools to acquire the requisite and up to date ICT infrastructure. The availability and adequacy of ICT infrastructures will increase teacher

readiness, confidence and provide teachers with up-to date knowledge and skills in the new world of technology thus, effective implementation of ICT curriculum in the classrooms.

Equally, the Government of Cameroon should sensitize teachers on how useful and how easy it is to use ICT facilities in the classroom; intensify continuous professional development opportunities for practicing teachers and motivate teachers with allowances. Thus, teachers' will be aware of the benefits of implementing ICT curriculum as a result they will find information that enriches their lessons easily and quickly. Regarding this, they will accept and cultivate the right attitude towards ICT use and they will feel comfortable when implementing ICT curriculum in their classrooms.

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