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Teachers' ICT Use for Instructional Purposes in the secondary and preparatory of school South Gondar Zone, Amhara, Ethiopia

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Abstract

The purpose of this study was to explore the factors affecting teachers' information communication technology (ICT) use for instructional purposes in secondary schools of South Gondar Zone, Ethiopia. To achieve the objective, descriptive survey design was employed. Both probability and non-probability sampling methods were used to select the participant of the study. Using both methods 303 teachers, 10 principals, 5 supervisors, and 4 district education office heads were selected. Questionnaire, focus group discussion, and interview were used to collect data. To analyze the data, qualitative and quantitative methods were employed. The finding of the study revealed that there were statistically significant relationships was observed between teachers' ICT use for instructional purposes and teacher's perception ($r= 0.51$); ICT use and teacher training ($r= 0.26$); ICT use and school policy ($r= 0.56$); ICT use and access to different ICTs ($r= 0.70$); ICT use and school support ($r= 0.41$); and ICT use and school curriculum ($r= 0.51$). These factors predicted about 64.3% of the variance of the teachers ICT use for instructional purposes. Among the significant factors, teachers' perception and access to ICT facilities and materials predicted significantly teachers' ICT use for instructional purpose. Based on the findings possible recommendations were also forwarded.

Key words: Information communication technology, ICT use for instructional purposes, secondary school, preparatory school

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1. Introduction

1.1. Background of the Study

Information and communication technology (ICT) is a force that has changed many aspects of the way we live. If one was to compare such fields as medicine, tourism, travel business, law, banking, engineering and architecture, the impact of ICT across the past two or three decades has been enormous. The way these fields operate today is vastly different from the ways they operated in the past. But when one looks at education, there seems to have been an uncanny lack of influence and far less change than other fields have experienced (Collis, 2002).

Similarly, information and communication technologies (ICTs), which include radio and television, as well as newer digital technologies such as computers and the Internet etc. have been touted as potentially powerful enabling tools for educational change and reform. When used appropriately, different ICTs are said to help expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality by, among others, helping make teaching and learning into an engaging, active process connected to real life. Technologies allow students to work more productively than in the past, but the teacher's role in technology-rich classrooms is more demanding than ever (Keengwe, Onchwari & Wachir; 2008).

Consequently, ICT has affected teaching, learning and research (Yusuf, 2005), with the potential to improve the quality of education. What then, are the potential benefits of ICTs to education, particularly at secondary school level? In group research projects for instance, pupils can have an online collaborative platform where they can share information and ideas and work on the project simultaneously across space and time. This has added advantage of creating teamwork skills in the pupils which will be useful in their post high school lives. Secondly ICTs have the potential to increase learner independence and ensure pupils' active participation in school (Newhouse, 2002). This is possible where pupils can have access to learning material independent of the teacher and can have self-paced lessons not restricted by space or time. In addition, a student can have access to electronic learning resources like Encarta encyclopedia, and other scholarly articles available electronically that have the potential to increase knowledge and add value to the pupils learning process.

Teachers can also benefit from the use of ICTs in education through integrating different ICTs into the various teaching activities. They can easily prepare, modify and distribute course material to pupils through email or Content Management Systems that allow one to place documents in a pre-defined area so that pupils can access such information. Further, teachers can use multi-media such as projectors, audio-video and so on to present their lessons in different ways and have students make presentations using different multi-media. At this point, it is crystal clear that teachers play a key role in using ICT effectively in the teaching and learning process which brings about education quality.

In addition, students can benefit from ICT in schools. As Brush, Glaze ski and Hew (2008) have stated, ICT is used as a tool for students to discover learning topics, solve problems, and provide solutions to the problems in the learning process. ICT makes knowledge acquisition more accessible, and concepts in learning areas are understood while engaging students in the application of ICT.

Generally, for developing countries like Ethiopia, ICT can moreover be seen as a way to merge into a globalizing world. However, studies showed that teachers don't benefit from ICT in activities they developed in the classroom environment, and their ICT usage often remains on a personal level. They cannot transfer their ICT usage from personal purposes to professional life, especially to instructional purposes (Newhouse, 2002)

In Ethiopia, there are few researches done on the area of ICT use and integration; but they focused on, for example, Using "plasma TV" broadcasts in Ethiopian secondary schools

(Getnet,2008); access to Online Information and Knowledge (Chekol, 2009) and the like. Hence, research into the ICT barriers in Ethiopia seems so scarce; the researchers have faced difficulty in finding articles addressing factors affecting ICT utilization in the country. The purpose of this study was, therefore, to explore the factors affecting teachers' classroom ICT use in secondary schools of South Gondar Zone.

1.2. Statement of the Problem

Though there have been many significant developments in ICT-based teaching techniques and materials, some studies show that in both developed and developing countries, serious difficulties are being experienced during the integration of ICT-based techniques and approaches in education.

As noted in the World Education Report(UNESCO, 2005), education worldwide is facing a significant challenge in preparing students and teachers for “our future ‘knowledge-based’ society” during a time when most teachers are not prepared to use ICT and “the majority of existing school buildings, even in the most developed countries, are not equipped to integrate the new information and communication technologies.”

Teo, Chai, Hung, & Lee, (2008) investigated a quantitative study examining the possible relationship between Singaporean teachers' beliefs about teaching and technology use. The outcome of the study implies that even though technology can foster interactive, self-directed learning and higher order thinking, technology integration is not effectively used to improve quality teaching and learning.

In addition, in the US, a survey by UNESCO(2005) showed that only half of the teachers who had access to computers used them in their lessons. Likewise, about half of British secondary schools reported ‘substantial use’ and half reported ‘little use’.

According to UNESCO (2005), again, only 35% of already trained teachers in secondary schools in Europe, Asia and Africa, have basic skills in ICT, which leaves the remaining 65% of the teaching work force on the three continents still in need of computer skills. Thus, national governments are globally realizing the need to fill the gap in the teaching force and are seeking new strategies and programs to enhance the integration of ICT in education.

Similarly, Berhane (2012) pointed out that in many African Countries, particularly in East Africa, most teachers do not integrate ICT into their instruction as it should be, because of several interrelated factors, such as manipulative, non-manipulative and teacher factors. Manipulative factors include beliefs, skills and commitment of teachers, ICT knowledge, availability of ICT resources, whereas non manipulative factors include age, gender, religion, educational experience, computer experience, national policy and external supports. This implies that ICT integration is not dependent on one factor, but to several interrelated factors that directly or indirectly affects the use of ICT into classroom instructions.

Ethiopia has currently embarked upon the use of ICT in a bid to raise the quality of education of secondary schools. At this level, the effort is not merely an inclusion of a media dimension to the teaching-learning process, but also to overcome the pressing problem of the supply of qualified teachers. The Growth and Transformation Plan of the country identifies Information and Communication Technology development as an essential component in achieving the objectives in all sectors. The Government has approved, in principle, the national ICT for development policy as a framework for facilitating Ethiopia's ICT-led socio-economic development program, targeting the development of information and a knowledge-based society and economy (FDRE, 2009).

Eventhough ICT has become an integral part of Ethiopia's development programs over the last decade, the country faces a substantial gap between interest in the ICTs and the implementation of the policy (Adam, 2010). Furthermore, Jaway (2003) observed that in Uganda and Ethiopia,

the education system is still heavily relying on traditional systems and severely lagging behind as far as new technologies are concerned; as a result, students' academic achievement is greatly affected. This scholar, moreover, asserted that students who are taught by ICT users tend to have better achievement.

Therefore, this paper was designed to assess factors affecting teachers' classroom ICT use in secondary schools of south Gondar zone, Ethiopia, there by recommended solutions for appropriate intervention for stakeholders. In view of this, the present research tried to answer the following basic research questions.

1. What are the relationships between teachers' ICT use and the identified factors?
2. What are the factors affecting teachers' classroom ICT use (ICT use for instructional purposes)?
3. To what extent is teachers ICT use affected by the identified variables?

1.3. Objective of the study

The current study generally aimed to explore the factors affecting teachers' classroom ICT use in secondary schools. Thus the study specifically aimed to:

- Identify the factors that affect teachers ICT use for instructional purposes
- Identify the relationships among the factors affecting teachers' use for instructional purpose.
- Examine the extent to which teachers' ICT use is affected by different variables.

2. Materials and Methods

2.1. Study Design

The purpose of this study was to explore the factors affecting teachers' classroom ICT use for teaching learning process in promoting quality education in secondary schools of South Gondar Zone, and to do so descriptive survey method was employed. Thus, the methodological approach used was mixed design, both qualitative and quantitative. This design is supported by Dorneyi, (2007) as cited in Addisu, Abraham & Ayehunie (2011), as an appropriate methodological approach for the problem under investigation.

2.2. Study Participants

In the zone, there are 11 woredas, and from these, 5 woredas namely Tach Gaynt, Simada Ebinat Debre Tabor and Addis Zemen were taken using simple random sampling technique. Furthermore, secondary and preparatory schools from woredas were taken using lottery method because there is homogeneity among the population considered in the study. Hence, from each woreda, 1 secondary school was chosen using lottery methods, and preparatory school was taken using comprehensive sampling methods because in most woredas there is only one preparatory school. Totally, 10 schools were taken as representative sample of secondary schools (high school and preparatory school) which are found in the zone. In addition, the target populations for the study were all teachers, supervisors, school directors or principals, unit leaders and heads of Wereda education bureau of secondary schools (high school and preparatory school); they were considered as study participants. Teachers' were selected using systematic simple random sampling technique. Using this method a total of 303 teachers was selected. However, the participants other than the teachers were selected purposively, for they are part of the schools management structure.

2.3. Data Gathering Tools and procedures

2.3.1. Datagathering tools

The pertinent data required from the respondents was collected through the following data gathering instruments.

- **Semi- structured interview:** this technique was preferred because of its promising advantage to gather raw data from the participants. It can be helpful again to clarify ideas, as the interviewer will have the chance to ask for clarification. It was developed to each sample school directors, supervisors, unit leaders and woreda educational head officers to obtain data about the implementation of ICT and its barriers which hamper teachers to use ICT for instructional purposes.
- **Focus group discussion:** this tool was used to obtain relevant data about the study, as it can help the participants to identify ICT barriers, sharing their experiences and spotting problems they face regarding ICT in the teaching learning process. Therefore, in each school, those who are part of the school's management structure such as school principals, department heads, unit leaders, supervisors, and some teachers (3 teachers from each stream) were selected to conduct focus group discussion. To do so, from the 10 schools, there were 20 focus group discussions. To undertake this research, the participants were cleared with the procedures of focus group discussion, and in this case, the moderators were in touch with researchers to minimize the problems they may face during the discussion.
- **Questionnaire:** the reasons why a questionnaire was developed here in this study is that it is pertinent data gathering instrument from many participants so that valid data were gathered. Hence, it is to be distributed to teachers to obtain data about the factors that are affecting the integration of ICT in the teaching learning process.

2.3.2. Data gathering procedures

Pilot study

The researchers came to agreement to prepare and adapt questions to test the data gathering tools by teachers in some selected schools. Thus, after the questionnaire were typed and made ready, the pilot study was conducted in Debre Tabor secondary school, and Dagmawi Tewodros General Secondary school. Following the administration of the pilot study, the analysis was made to select appropriate questions that suit the desired objectives of the study and also to determine the reliability of the items and found to be 0.89. At the end, taking the necessary feedbacks, the final questionnaires were made ready for the study.

Main study data gathering process

After questions were testified by the researchers, the main task was to disseminate the data questions that are prepared in the specified data gathering instruments. Firstly, interview was conducted with educational bureau officers, school principals, and supervisors. In doing so, those participants were clear with the purpose of the study before the actual interview delivery. Secondly, data were collected through focus group discussion from selected teachers and concerned participants participated in the interview. Last, questionnaire was distributed to teachers just to see significant relationships and to validate the responses obtained through interview and focus group discussion. To do this, respondents were clear with its purpose and how to fill it as well.

2.4. Data analysis methods

The data analysis included the content analysis of responses to the questionnaires, interviews, focus group discussion. The collected raw data was tailed, organized and tabulated according to the similarities of the issues raised in the questionnaires. In addition,

the collected information through interview and focus group was presented to complete the data obtained by means of questionnaires. Tools of data analysis used to analyze the data obtained through quantitative and qualitative instruments were as follows:

2.4.1. Quantitative data

The study were employed both descriptive and inferential statistics to analyze the data collected through questionnaire. The following tools of data analysis were used. Computer software called statistical package for social science (SPSS) were used for analysis after the response of questionnaire and classroom observation.

- ✚ Correlation coefficient was conducted to see the interrelationships among the variables considered in the study.
- ✚ Stepwise regression analysis was used to identify the factors affecting teachers' classroom ICT use and to examine the extent to which the factors affect teachers' classroom ICT use.

2.4.2. Qualitative data

Data collected using interview and focus group discussion will be analyzed through direct quotation, interpretation, storytelling and narration.

3. Results and Discussion

3.1. Results of the study

Table 1: interrelationships among the contributing factors (N= 303)

	Variables	Mean	Sd	1	2	3	4	5	6	7	8	9
1	Teachers ICT use	3.08	.596	1								
2	Language command	2.62	1.35	0.05	1							
3	Teacher's perception	.94	1.05	0.51*	-0.08	1						
4	Teacher's attitude	3.44	.595	0.11	-0.05	0.04	1					
5	Teacher's training	3.07	.746	0.26*	0.03	0.04	0.02	1				
6	School policy	5.50	.368	0.56*	0.50*	0.04	0.54*	0.41*	1			
7	Access to ICT	4.85	.378	0.70*	0.04	0.06	0.70*	0.47*	0.62*	1		
8	Curriculum	3.25	.433	0.51*	0.06	0.05	0.70*	0.44*	0.67*	0.83*	1	
9	Support	3.64	.412	0.41*	0.11	0.06	0.40*	0.58*	0.81*	0.79*	0.85*	1

*Correlation is significant at 0.05 levels two tailed.

As indicated in the table 1 above, there were statistically significant relationships observed between teachers' ICT use for instruction purpose and teacher's perception ($r = 0.51$); teacher training ($r = 0.26$); school policy regarding teachers' ICT use ($r = 0.56$); access to ICT ($r = 0.70$); school curriculum ($r = 0.51$) and school support to the teachers to use ICT for instruction purpose ($r = 0.41$), but no significant relationships were observed between teachers ICT use and other variables considered in the study such as language instruction of the teacher's and attitudes of the teacher's ($p > 0.05$).

None of the study variables were related significantly with language proficiency of teachers. Teachers' perception regarding using ICT for instruction purpose significantly related with school policy ($r = 0.54$), access to ICT ($r = 0.70$), school curriculum ($r = 0.70$) and support given to teachers to use ICT for instruction and teachers perception were not related significantly related with teacher's attitude and training provided to the teachers' ($p > 0.05$). Furthermore, teachers' attitude regarding ICT use for instruction purpose significantly related with teachers' training ($p = 0.56$), school policy regarding teachers' ICT use ($r = 0.41$), access to ICT ($r = 0.47$), school curriculum ($r = 0.44$) and school support for teachers' to use ICT for instruction purpose ($p = 0.58$).

Statistically significant relationships were found between teacher training and school policy ($r = 0.56$), access to ICT ($r = 0.62$), school curriculum ($r = 0.67$), and school support ($r = 0.81$).

*Teachers' ICT Use for Instructional Purposes in the secondary and preparatory of school
South Gondar Zone, Amhara, Ethiopia*

School policy also significantly related with access to ICT ($r= 0.89$), school curriculum ($r= 0.83$) and school support ($r= 0.79$). Moreover, access to ICT were significantly correlated with school curriculum ($r=0.92$) and school support ($r=0.85$).

The strongest and modest correlation were found between teachers ICT use for improving quality of education and teachers' access to ICT facilities and materials, teachers access to ICT facilities and material and teachers' perception and school curriculum and teachers' perception. The strongest and highest magnitude of correlation were found between school support for teachers to use ICT for their instruction and teacher's training, school policy regarding ICT use and access to ICT facilities and materials, school curriculum, and school support for the teachers to use ICT to improve their instruction, and school curriculum and school support ($r=0.95$).

Table 2: Summary of results of multiple regression analysis on selected predictor variables

Model	Un-stand. coefficient	B	T	P-value	R	R ²	Adjusted R ²	Std. err
Constant	4.52		9.31	0.000	0.806	0.649	0.643	0.35626
Teachers' Perception	0.168	0.296	4.73	0.000				
Teachers' training	0.140	0.175	2.46	0.014				
Access to ICT	2.823	1.764	15.15	0.000				
School policy	0.373	0.230	3.01	0.003				
School support	0.947	0.654	7.34	0.000				
School curriculum	0.213	0.152	2.65	0.005				

The above table shows that the independent variables (teachers perception of ICT use for instruction purpose, the training received by the teacher regarding ICT, access to ICT resource and material, school policy regarding ICT use and support provided by the schools to use ICT for instruction purpose); when pulled together have a significant effect on the teachers ICT use for instruction purpose to improve the quality of education. The value of R (adjusted) =0.806 and R² (adjusted) = 0.643. This implies that 64.3% of teachers ICT use for instruction purpose accounted by a linear combination of the predictor variable.

As can be seen in the summary of multiple regression analysis, there was a statistically significant relation found between teachers' perception about the ICT use for instruction purpose ($t= 4.37$, $p<0.000$), training received by the teachers' ($t= 2.46$, $p<0.014$), access to ICT facilities and resources ($t= 15.15$, $p<0.000$), school policy to use ICT to instruction purpose ($t= 3.01$, $p<0.03$) and support provided to teachers to use ICT ($t= 7.34$, $p<0.000$).

Table 3: Summery ANOVA table

Model	Sum of squares	Df	Mean squares	F	Significance
Regression	69.705	5	13.941	109.841*	0.000
Residual	37.695	297	0.127		
Total	107.400	302			

*Significant at $P<0.001$

As indicated above in the table, result further strengthened by the F-value (109.841) which is significant at df (5, 297) at significance level of $p< 0.001$.

Table 4: Summary of stepwise regression analysis

Variables	R	R ²	Change in R ²	Beta value	F-value	t-test	Significance
Perception	0.504	0.254	0.254	0.244	102.28	10.11*	0.000
Training	0.559	0.313	0.059	0.405	25.95	5.09*	0.000
Policy	0.609	0.370	0.057	0.657	27.18	5.21*	0.000
Access	0.765	0.585	0.215	0.310	154.47	12.43*	0.000
Curriculum	0.805	0.648	0.062	0.257	52.55	7.25*	0.000

* is significant at $P<0.001$

Teachers' ICT Use for Instructional Purposes in the secondary and preparatory of school South Gondar Zone, Amhara, Ethiopia

The result of stepwise regression analysis shows that only one factor made a significant contribution to the prediction of teachers ICT use for instruction purpose. Thus, in terms of magnitude of contribution, teachers' perception of ICT use for instruction purpose made the most significant contribution. The relative contribution of teachers' perception regarding ICT use for instruction purpose is 25.4%, followed by access to ICT facilities and material 21.5%, school curriculum 6.2%, training received by the teachers' to utilize ICT in their instruction 5.9%, and school policy to utilize ICT for instruction purpose 5.7%. The contribution made by school support for the instructors to use ICT in the teaching learning process is found insignificant.

4.2. Discussion

Although the Government of Ethiopia is committed to implementing ICT in education, the result of this study showed that the process is hindered by a number of barriers. The factors are categorized as per findings of the study supported by literature.

Teachers' perceptions and Beliefs about ICT

There exists a strong and positive relationship (0.51) between teacher's perception and teacher ICT use for instructional purpose. This finding is refuted by the findings of Buabeng-Andoh (2012), stating that the correlation between perception and ICT use was positive and low but not statistically significant ($r = .09, p > .01$). Furthermore, teachers' perceptions regarding ICT use for instructional purpose have been found to be a major predictor. The results were supported by the results obtained from interview and focus group discussion. Some of the participants (78%) replied that they believe that ICT if it is used for instruction purpose is very important and can be an effective tool for ensuring the quality of education which was adversely affected by over flooding of students populations. They said its positive impacts outweighs.

A teacher from s1 stated:

In the first place, I do like to use technology because I feel that it has positive impacts on the pupil. Let me say something about internet. If you motivate students to use internet, it increases their effort to be problem solvers by providing ample information that supports the students in their endeavor for solving problems. Moreover students' can easily get the solutions by browsing appropriate materials. Furthermore, students engage in adoption of lifelong learning opportunities and can make learning as part of their life, if their learning is integrated with technology. Finally I believe that ICT has a relationships with students learning promote quality of education.

In addition, a teacher from s2 responded:

There are some ICT facilities in my school, but I am not interested to use for instructional purposes. It makes me feel better when use, for example, blackboard than projector. I do not know whether students like this or not, but I can see the good sides of ICT. It makes people to be creative and problem solver by providing appropriate information as required, this facilitate students ability to work on things by themselves and it also bring positive Cultural Revolution and Social Transformations. Even if ICT benefits the instruction process, I am still convened that exposure to the ICT could result in Cultural Invasion

Hence, one can say that teachers' beliefs on ICT affect its use for instructional purposes. These ideas are supported by Mumtaz (2000) who claims that teachers' beliefs about teaching and learning with ICT are central to integration. To be successful in ICT use and integration, teachers need to engage in conceptual change regarding their beliefs about the nature of learning, the role of the student, and their role as teacher. Hence the successful use of ICT in classroom largely depend on teachers' attitudes and belief relating to these. Researchers have found that the success or failure of any initiatives to implement technology in an education

programme depends upon academic staff perception and beliefs towards the ICT, which will influence its use in the classroom, Teo, (2008). As stated by Bullock (2004:212), academic staff's beliefs and perceptions are a major enabling/disabling factor in the adoption of technology. Similarly, Huang and Liaw (2005:732) state that among the factors that affect the successful use of computers in the classroom, academic staff's attitudes towards computers play a key role. Moreover, it has been suggested that beliefs and perceptions towards computers affect teachers' use of computers in the classroom and the likelihood of their benefiting from training (Ali, Nargis, Yasmeen, & Iqba, 2015). From the above discussion one can conclude that teacher's perception and belief significantly affect teachers' ICT use for instructional purpose. As the experience of the researchers and literature inconsistency between teachers' actual use of ICT and perception and belief can be attributed to inadequate supply of ICT resources, lack of access to the right kinds of technology, inadequate ICT pedagogical training and insufficient administrative support.

Lack of in-service training as a means to support ICT skills

In service training contributed was positively related with teachers' ICT use for instructional purpose, furthermore the in-service contributed (5.9%) to the teachers ICT use for instructional purpose. Regarding to the magnitude of contribution made in in-service training was one of the contributors from the considered variables in this study. Similarly, almost all of the respondents of the study (98%) stated that they lack necessary and appropriate trainings to support their ICT skills

A teacher stated:

ICT skills are necessary for educational purposes. In my school, there are few ICT equipment's', but I do not know how to use a computer, how to use internet, even how to store instructional files using CDs and other storage materials. My colleagues who teach computer studies are not willing to give us appropriate trainings. They always complain for their work load and say that they suffer from their business in teaching their subjects.

This finding is in agreement with finding obtained from the quantitative data. 31.3% of the variance of teachers' ICT use for instruction purpose predicted by training provided to the teachers. Supporting the finding of the study Mumtaz (2000) in his study reported that in-service training is one of the (few) ways in which teachers typically have been given support to achieve ICT skills to facilitate their classroom teaching, and it has been successful in a way: teachers, like other people, use ICT in their activities outside school. To ensure efficient ICT integration and use for instructional purpose teachers must be provided with sufficient on-going training (Vannatta & Fordham, 2004). Similarly Mueller, Wood, Willoughby, Ross, and Specht (2008) stated that teachers ICT use for instructional purpose highly depends on professional development. Similarly, teacher's in-service ICT training does have its hand in affecting teachers ICT use for instructional purpose. Therefore, in-service professional training shall have impact on the use of ICT for instructional purpose.

Government Policy

The Educational policy of Ethiopia has emphasized the implementation of ICT in education in order to improve the quality of the educational system and also to create an improved teaching and learning environment to empower and develop the proficiency of teachers and students in the country. However, in the study, some participants reported that the use of ICT in education is on paper only as vision and cannot be realized on ground. They claimed that effective implementation of ICT in education is not merely a vision. Rather, it needs a proper plan, policies, execution and monitoring: which is really a major constraint for a country like Ethiopia.

A teacher T1 reflected:

Teachers' ICT Use for Instructional Purposes in the secondary and preparatory of school South Gondar Zone, Amhara, Ethiopia

I think the educational policy of the country introduced the importance and use of ICT at all levels for innovation. This is a good start for developing countries like Ethiopia where limited innovation is found. But, according to my observation, the policy remains on paper, and it is not translated into practice.

This result highly correlated with the result obtained from document analysis, and focus group discussion. As Omwenga, Waema, and Eisendrath, (2002), Policy and planning are important in identifying the aims of using ICT in education and in determining priorities in allocating resources furthermore, education authorities and the centers for which they are responsible have key tasks related to enabling, implementing and monitoring the use of ICT for learning and teaching. Countries rated low on appreciation of ICT have ICT policies that merely recognize the strategic role of ICT for growth and development (Guma, Haolader and Muhammad, 2013). Furthermore, Fisseha (2011) stated that Policies must take into account the retraining of teachers incorporating use of ICTs in education. Teachers should skillfully redesign learning environments so that students can transfer their newly gained ICT skills to other applications to use in an ICT rich environment. Government policy significantly correlated ($r= 0.56$, $p < 0.001$), with teacher's ICT use for instructional purpose, as a result teachers. Hence, government policy affects ICT use for teaching and learning purposes.

Access to ICT facilities and resources

As indicated in the Table 1 above there were significant relationships found between access to ICT facilities and resources and teacher's ICT use for instructional purpose. Moreover, access to ICT facilities and material predicted 21.5% of the variance of teacher's ICT use for instructional purpose. Data from focus group discussion revealed that the majority of the respondents (84%) reported that secondary schools in South Gondar zone lack the necessary resources and appropriate infrastructure and resource for implementing ICT in education.

Similar results also found in Mumtaz (2000) study that the effective use of ICT would require the availability of equipment, supplies of computers and their proper maintenance including other accessories. Access to ICT infrastructure and resources in schools is a necessary condition to the integration of ICT in education. In supporting the above idea, Plomp, Anderson, Law, & Quale, (2009), stated that effective adoption and integration of ICT into teaching in schools depends mainly on the availability and accessibility of ICT resources such as hardware, software, etc. Obviously, if teachers cannot access ICT resources, then they will not use them. Therefore, access to computers, updated software and hardware are key elements to successful adoption and integration of technology. Thus, from the above finding one can deduce that teachers' access to ICT and technological resources are one of the major factors that hinder their utilization in the instructional process.

On the other hand, focus group discussion and teachers interviewed revealed that access to ICT facilities and material also affected by the funds allocated to the schools. In line with this, majority of school principals and teachers in the study (91%) stated that the government emphasizes the use of ICT in schools for teaching and learning process. However, it seems that the schools should budget their ICT facilities which require huge amount of money. They added that if the government wants students and teachers to be innovative in terms of ICT, it should plan to support schools with appropriate funding.

For example, a principal reported that:

Nowadays, the world is becoming a small village. This is due to technology; and it makes human lives simple. But, the thing is if this does not change the country in a positive way, it won't work out. In my opinion, schools are the major changing agents of a country, and if the government emphasizes the use of ICT in school environments for instructional purpose, it should fund schools with appropriate plans and monitoring strategies though it requires huge budgets.

This idea is supported by Mumtaz (2000), who reported that effective implementation of technology in to education systems involves substantial funding, that is very hard to manage. ICT-supported hardware, software, internet, audiovisual aids, teaching aids and other accessories demand huge funds. He added that many scholars proposed that the lack of funds to obtain the necessary hard ware and soft ware is one of there as on teachers do not use technology in their classes.

Curriculum

The result in Table 1 showed that there exists a statistically significant relationship between school curriculum and teachers ICT use. This finding is consistent with the finding obtained from interview, focus group discussion and document analysis, they stated that school curriculum should have contents, topics, objectives and exercise if it is included teachers are forced to look for and use ICT for instructional purpose, but none of the school curriculum except information subject does have contents and exercise related to ICT. According to Buabeng-Andoh, (2012) restrictive curricula is one of the major factors which significantly affect teachers ICT use for instructional process. From the above discussion one can conclude that school curriculum is one of the factors that affect teachers ICT use for instructional purpose. Support provided by the school also significantly related with teachers ICT use. This finding also consistent with the finding obtained from the focus group discussion and interview. Moreover, school support to the teachers regarding ICT use contributed significantly to the variance of the ICT use by the teachers.

Surprisingly, the result of the study showed that statistically significant relationships were not found between attitudes and language of the teachers regarding ICT use. Furthermore, the result was also supported by the result obtained from focus group discussion.

A teacher from s1 stated:

I couldn't see how ICT could not be taken as could improve the way we teach and also language couldn't see how ICT related to the language we are using for teaching propose. I wouldn't like to use technology because I feel that it has negative impact on the pupil. Let me say something about internet. If you motivate students to use internet, it increases their effort to be dependent on technology by reducing their effort to become problem solver by providing ample information that students need to work in their endeavor for solving problem and studying for academic subjects.

This finding is refuted by the study conducted by Bingimals, (2009) stating that teachers has a strong desire to integrate ICT in their instruction. From the above finding one can easily conclude that attitude and language of the teachers are not the factor that affected teachers ICT use for instructional purpose. The result obtained might be attributed to poor infrastructure and inadequate training provided by the degree offering institutions since teachers are given only one course as common course.

4. Conclusions and Recommendations

4.1. Conclusions

Few studies examined the factors affecting teachers ICT use for instructional purpose. However, they were not done in Ethiopian context where there said to have a lot of factors responsible for ICT use in education. This study, therefore, was conducted to identify the factors affecting teachers ICT use for instruction purpose.

- The finding of this study showed that there are significant relationships among teacher's perception, teachers' training, school policy, access to ICT facilities and materials, school curriculum, school support and teachers' ICT use for instructional purpose. The study depicted that, these factors highly affected the teachers' ICT use for instructional purpose.

*Teachers' ICT Use for Instructional Purposes in the secondary and preparatory of school
South Gondar Zone, Amhara, Ethiopia*

- From above discussion one can conclude that access to ICT facilities and materials and teachers perceptions are highly influenced teachers' ICT use for instruction purpose.
- School curriculum is also other prominent factor in influencing teachers' ICT use for instructional purpose. In addition to this school policy, and school support also found significantly affecting the teachers ICT Use for instructional purpose.

4.2. Recommendations

Although there is great opportunity for improvement in school education at many levels through the use of ICTs in the country in general, the road to achieving it is not easy. It will take continued commitment from all stake holders involved to make any kind of substantial and sustainable change. The following broad-based suggestions may act as a basis for building a long-term road map to bringing ICTs to schools, and teachers at large in the South Gondar Zone. A key to succeed in this endeavor is to adopt a comprehensive, end-to-end, systematic approach that can be adjusted to adapt to the specific needs and a changing school environment.

Government and school support

Government cooperation is necessary for ICT programs to have substantial impact and be sustainable. In the attempt to re-evaluate the education delivery system and curriculum of schools to include ICT, Governments have to consider the social context in which they are implementing this new phenomenon on. The realities of individual countries and the disparities within and across their geographies, including their limitations say, the language barrier, should be considered and the availability of ICT should be made according to the needs and desires of the countries in order to facilitate appropriate learning and local ownership of knowledge.

Creating school based ICT facilities

Schools should work together to try to work on school base ICT facilities which could increase school students' access to ICT-based materials. For example, one ICT center may be created for every five schools in the village/block, and this center may be equipped with computers, television, radio, or other technologies. A time table may be allocated so that each school has access to the ICT center for one day of the week. Within each school again, different classes may be allocated different periods for accessing the ICT center.

Prioritizing and Planning Access to Remote Schools

Special consideration should be given to ICT connectivity and accessibility for educational purposes. Band width and spectrum of radio and television wave lengths should be allocated for education. Planning for connectivity infrastructure and regulations should promote and facilitate educational use of ICT.

Creating partnership with national and international donors

Investing on ICT may require huge amount of money. Apart from the national policy, schools and other stallholders should design projects to establish better ICT facilities in their schools which could have positive impacts for teaching and learning.

Creating Policy alignment

National ICT policies will have the greatest impact if they are aligned with other strategic and operational policies. Economic policy should consider other strategic policies which require the success of other policies. For example, if ICT policy is required to be implemented, policy makers should consider other policies aligned with each other; otherwise, policies may remain unimplemented.

Limitations and Future Research

This study was limited to only teachers in secondary and preparatory school in South Gondar Zone. Furthermore, the study was employed self-report scales supplemented by the interview and focus group discussion to measure variables for analysis. This could affect the result of the study. For future study, similar study using both qualitative and quantitative approach can be carried out on teachers' training colleges and higher education institutions by considering different demographic variable.

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*Teachers' ICT Use for Instructional Purposes in the secondary and preparatory of school
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