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Availability and Utilization of Educational Technology in Primary Schools of Ethiopia

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Abstract: *The purpose of this study is to look into the availability and utilization of instructional technology in Ethiopian primary education, using some urban and regional schools as case representatives. 165 in-service teachers were recruited using available sampling method from Addis Ababa and Amhara regional state primary schools. A questionnaire and semi-structured interview items were created and administered to collect data. The study used a descriptive survey design with a mixed methods research approach. Major findings revealed that teachers in the case primary schools do not have accesses to properly utilize educational technologies in the teaching-learning processes. Multiple regression analysis results showed that there is no significant difference in the use of educational technology between regional and urban school teachers.*

Keywords: availability, utilization, educational technology, primary schools, Ethiopia

Background of the Study

Quality education is a major concern in the age of globalization and technological diffusion. In this environment, effective and high-quality instruction appears to be critical. Educational technologies play an important part in the teaching and learning process, and they have proven to offer a number of inherent benefits when used properly (Alice, 2012). Fatimah (2017) stated that it allowed students to collaborate and conveniently obtain information that might complement their learning experience. These advantages have become a major aspect of 21st Century education, and they could be enhanced in the future to generate classic learning. Fatimah (2018) further stated that the incorporation and integration of technology into the educational process opened up new options for teachers to expand and enhance teaching and learning activities.

According to Bransford, Brown, and Cocking (2000), technology played a five-fold role in the classroom. These roles include: (1) bringing real-world experiences into the classroom, (2) providing scaffolding that allows learners to participate in complex cognitive tasks, (3) increasing opportunities to receive classy and individualized feedback, (4) creating communities of interaction between teachers, students, parents, and other interested groups, and (5) expanding opportunities for teacher development. Furthermore, technology, as the most recent instructional medium developed in this globalized era, creates situations that enable learners to have new authentic and meaningful learning experiences while also engaging their efforts and behaviors by providing a more enjoyable and effective learning environment (Baek et al., 2008).

Teachers must master varied learning techniques and display high-level technological literacy as well as technology-based abilities, including the capacity to facilitate the creative and inventive use of technology, as technology-supported learning activities transform the nature of education (Morgenshtern & Pinto, 2016). In particular, as long as the global drive toward a sustainable knowledge-based society has caused stakeholders in the education industry to recognize the potential need for ICT integration in education, 21st Century teachers will require mastery of teaching skills through the integration of technology into the classroom (Ansari &Malik, 2013). This is seen as an essential step in developing a 21st Century learning environment that will equip students to be effective citizens in knowledge-based, ICT-driven societies (Garba, et al. 2015).

Teachers are encouraged to be more creative by using instructional technologies. Thus, the finest teaching and pedagogical practice should employ a variety of methods, tactics, techniques, approaches, and resources that are skillfully blended to ensure that teacher-centered, pupil-centered, and resource-centered teaching and learning sessions are supported by technology (Rusdin, 2018). The tools, applications, media, and virtual environments used are instrumental in helping students learn a curriculum composed of understandings and performances, delivered via pedagogy, and evaluated through assessment (Dede, 2007). In the same way that a carpenter might use a saw, hammer, screwdriver, and wrench to help construct an item, information and communication technologies (ICT) help with representing content, engaging learners, modeling skills, and assessing students' progress. In this instance, the tools make the job easier, and the output is of higher quality than it would be without them. For reflecting 21st Century

understandings and intellectual as well as psychosocial performances, 21st Century containers (e.g., chalk and talk) are insufficient (Dede, 2007).

However, whether or not teachers employ technologies in their classrooms is not exclusively determined by their existing knowledge and skill sets, as well as how technology is integrated into the curriculum. According to Baek et al. (2008), a number of barriers that prohibited teachers from employing technology in the classroom, including insufficient infrastructure, a lack of training and personal experience, and a lack of technical assistance existed. In addition, Parker (1997) observed that logistical problems such as a lack of time, software, hardware, keyboarding abilities, knowledge of accessible information technology resources, and the lack of computer labs and computer lab technicians hampered the use of technology. Furthermore, findings from the NetDay Survey (2001) revealed that smart school leadership was required to effectively support teachers' efforts while using technology, implying that numerous aspects other than the physical environment must be considered in order to motivate teachers to use technology (Baek, et al., 2008).

In a knowledge-based society, new information technologies are set to transform how people access and process information and communication (Power, 1997). Teachers and students are bombarded with information from television, radio, periodicals, movies, video games, and other technology, (Johnson &McElroy, 2010). Despite having easy access to cable television, music, video games, cell phones, movies, and other multi-media sources at their personal and home-bases, whether or not these technologies are adequately exploited for educational purposes is in question. These authors triggered to analyze the extent to which instructional technologies are utilized in Ethiopian primary schools, besides to access and related matters. This is because, as teacher educators, they interact with in-service teachers who are enrolled in summer courses and taking the course "Educational Technology" as part of their Bachelor's degree requirements. This study makes significant contributions to the theoretical and methodological understanding of instructional technology required to adapt the modern learning paradigm.

Research Questions of the Study

1. Do teachers in Ethiopian primary schools have an access to utilize instructional technologies?
2. Are there variations in using instructional technologies in sampled primary schools of Ethiopia due to location i.e., being at metropolitan (Addis Ababa) or regional (Bahir Dar) sites?

Review Literature

Accelerated technological advancements are presenting several prospects for revolutionary transformation in the sphere of education, as well as practical solutions to future trends-related difficulties. Primarily, integrating technology into education is a time-consuming and costly process, and these potential also bring with them substantial challenges and ethical concerns that must be addressed before they can be implemented in the classroom (Morgenshtern & Pinto, 2016). Instructors must also be praised for encouraging students' creativity, inventiveness, and personal learning autonomy, as well as allowing students to express themselves through their school activities and fostering a spirit of collaboration and flexibility among teachers and students. These could be made

possible and facilitated through the use of instructional technologies, which can enrich learning environments by displaying things that are far away, happened in the past, are miniscule to see, too large to bring to class, too complex to understand at first glance with only explanations, or cannot be seen, heard, or perceived through other channels (Kemp &Dayton, 1985).

Additionally, the utilization of instructional technology can help reduce the amount of time spent on instruction, allowing more time for skill practice. The majority of instructional technologies are excellent in delivering content and maintaining learners' interest. Furthermore, students can study instructional technology in greater depth at a time and location that is more convenient for them (Alice, 2012). Nonetheless, teacher competency, motivational teaching methods, and skills in the areas of adapting to relevant technologies and implementing appropriate educational strategies could impact the quality and amount of learner achievement. Education is not a mechanical activity of information transmission, and instructors are not information dispensers, according to Itighise and Babayemi (2018). With the use of technology, instructors must be facilitators of children's learning in a way that aids the child's learning. Technology, according to Rahim and Abdullah (2017), was the disciplined use of scientific principles and theoretical knowledge to support and enhance human learning and performance through the creation, use, and management of appropriate technical processes and resources. The use of both physical hardware and instructional theories is referred to as educational technology. It includes learning theory, computer-based training, online learning, and situations in which mobile technology are applied (Itighise & Babayemi, 2018). Integrating information technology and media and making them relevant to pedagogy and teaching practices are critical in assisting and supporting students' advancement in the twenty-first century (Rahim & Abdullah, 2017). It allows students to grasp 21st Century skills such as information literacy, collaboration, and self-access learning (Rusdin, 2018).

The utilization of instructional technologies can actually provide a learner with flexibility not available through traditional methods and processes. Many Websites are freely available on the internet that students and teachers can use to build reasoning, critical thinking, analysis, and problem solving skills, thereby assisting them in the sharing of instructional technology (Alice, 2012). For this reason, there is a need to integrate instructional technology into the teaching and learning process to promote learner-centered education (Muriithi, 2005). However, the barriers to using technology are complicated, involving a mix of material and non-material factors. For example, according to Baek et al. (2008), the most frequently reported material difficulty was a shortage of technical instruments, whereas the most frequently mentioned non-material problem was a lack of teachers' necessary knowledge and abilities in information and communication technology.

In terms of technology use, developing countries need to learn from the experiences of industrialized countries and adopt comparable techniques due to a digital divide between them. Countries like Japan, China, India, and Korea, for example, can employ computers and the internet in their educational systems; nevertheless, they are not available in other Asian countries. European countries, on the other hand, invested in information and communication technology, whilst African countries, with the exception of North Africa and Egypt, did not (Hamidi et al., 2010).

Research Methodology

The goal of this study is to look into the availability and use of instructional technology in Ethiopian primary schools by looking at various examples from metropolitan and regional schools. Both quantitative and qualitative research approaches are used for this goal. Hence, the emphasis is on a descriptive survey design.

Target Population

Primary schools in Ethiopia are found in nine regional states and two municipal administrations. In-service teachers are teaching in those primary schools but attending summer courses at Bahir Dar University.

Sample Population and Sampling Techniques

One regional state (Amhara) and one city administration (Addis Ababa) are selected as a representative sample of Ethiopia's regional and metropolitan areas, respectively. The distribution of the 165 total samples — 165 school teachers — from each zone and sub-city is depicted in Figures 1 and 2 below (37 from Addis Ababa City Administration and 128 from Amhara Regional state).

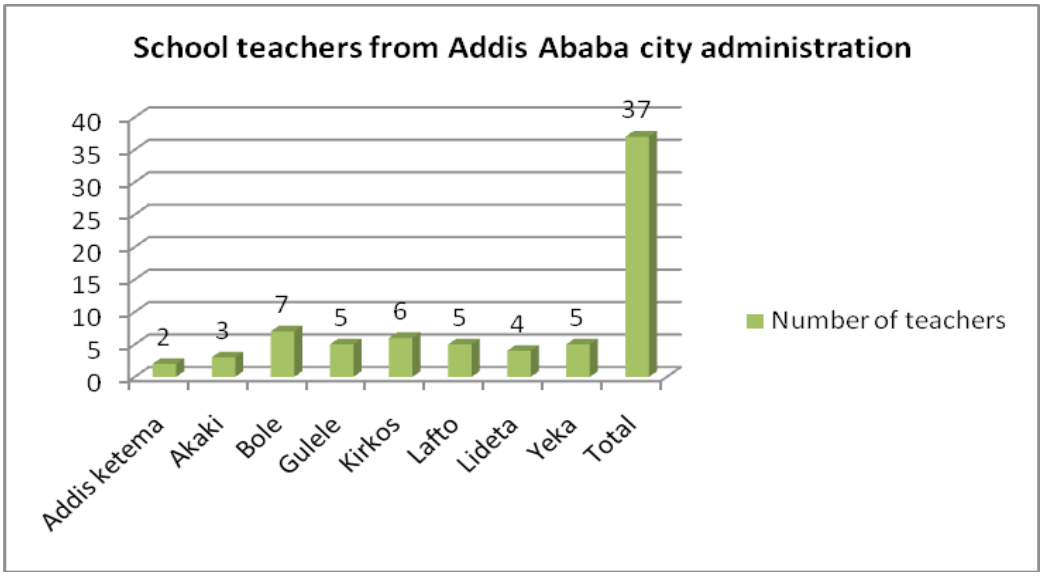

Figure 1

Distribution of Sample Population across Sub-cities of Addis Ababa

Note: The bar graph displays the distribution of sampled school teachers from Addis Ketema, Akaki, Bole, Gulel, Kirkos, Lafto, Lideta, and Yeka 5

Figure 1 above shows the distribution of sampled school teachers taken from each zone (sub-city) of Addis Ababa city administration. These sampled elementary school teachers were taken from Addis ketema 2 (5.4%), Akaki 3 (8.1%), Bole 7 (18.9%), Gulele 5 (13.5%), Kirkos 6 (16.2%), Lafto 5 (13.5%), Lideta 4 (10.8%) and Yeka 5 (13.5%) through available sampling method.

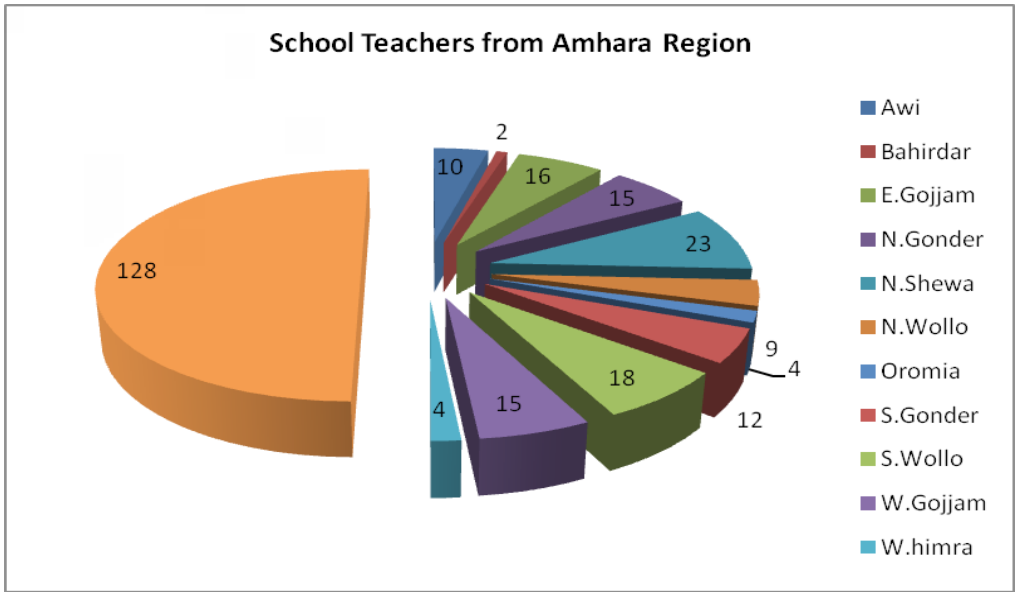

Figure 2

Distribution of sample population across zones of Amhara region

Note: The distribution of elementary school teachers from the sampled regions of Awi, Bahir Dar, East Gojjam, North Gonder, North Shewa, Oromia, South Gonder, W.Gojjam, and Waghimra is depicted in the pie chart.

The distribution of sampled elementary school teachers from each zonal school in the Amhara region is shown in Figure 2 above. These teachers were selected from the following schools: Awi 10 (7.8%), Bahir Dar 2 (1.6%), East Gojjam 16 (12.5%), North Gonder 15 (11.7%), North Shewa 23 (18.0%), Oromia 4 (3.1%), South Gonder 12 (9.4%), W.Gojjam 15 (11.7%), and Waghimra 4 (3.1%) through available sampling method.

Instruments of Data Collection

The data for the study was gathered using a questionnaire checklist created by the researchers. There were three basic sections to the instrument. The first section included questions about the teacher respondents' personal information, such as length of service and ability to use instructional tools. The second section included a checklist for each teacher-assessment respondents of the

accessibility of some anticipated instructional media lists, as well as the amount to which they used technology in their teaching, assessment, and administrative responsibilities. The questionnaire included both closed-ended and open-ended questions. The questionnaire was created utilizing information acquired from previous literature reviews, as well as feedback from pilot testing and expert validation. Finally, it was given to in-service teachers representing 165 different schools. The researchers administered the survey questionnaires to service teachers from –zones – woredas and –schools, and they provided the required support when there was confusion in understanding items, but only 165 were returned.

Interview questions, which were semi-structured, were the second type of instrument. The content focused on instructional technology "wish lists" for the next five years, as well as the frequent issues they face in providing schools with appropriate and sufficient instructional technology, as well as utilization-related concerns. Researchers additionally coordinated the interview schedules for individuals who were randomly selected respondents to the questionnaire to corroborate and triangulate the written responses.

Pilot test

The questionnaire and interview items were pilot-tested in a small sub-sample (Creswell, 2009) to ensure their reliability and validity. The draft instruments were handed to two teachers, one vice principal, and one preschool supervisor to test their validity. Some items have been upgraded, while others have been reduced, based on their comments. The draft questionnaire was given to 20 teachers from Dil Chibo elementary school to see if it was reliable (out of the targeted schools). The Cronbach Alpha for the five Likert-scale items was determined using SPSS software Version 20, and it was found to be 0.89, indicating the instrument's reliability.

Data Analysis

Excel spreadsheets and SPSS software were used to examine the data. This contains descriptive statistics capabilities that help with variable response comparison and show response frequencies clearly. SPSS software Version 20 additionally includes broad data processing capabilities as well as a variety of statistical routines for analyzing small to big data sets. The analysis was carried out in a methodical manner to meet the study's objectives. Accordingly, descriptive statistics such as percentages and frequencies were employed to examine research question 1 while inferential statistics such as ANOVA and Multiple Regression were utilized to examine research question 2. The data acquired from the interview questions and open-ended questions in the questionnaires were analyzed using word narrations.

Results and Discussion

The empirical findings of the survey results and in-depth interviews about the availability and utilization of Educational technology in Ethiopian primary schools, with a special focus on some schools from the Addis Ababa and Amhara areas, are presented in this sub-section.

Table 1

Cross tabulation of respondents in length of teaching experience & skills in technological use

Regional State	Length of Service	Range	Skills of Instructional Technology Use				Total	%
			Nonexistent	Beginner	Intermediate	Advanced		
Addis Ababa City	Service in teaching	Less than 10	2	11	9	0	22	
		11-20 years	1	3	6	1	11	
		21-30 years	0	2	1	0	3	
		Above 31 years	0	1	0	0	1	
		Total	3	17	16	1	37	32.5
Amhara Regional State	Service in teaching	Less than 10	8	46	28	3	83	
		11-20 years	1	15	11	1	28	
		21-30 years	2	7	5	0	14	
		Above 31 years	0	0	1	0	1	
		Total	11	68	45	4	128	77.5
Grand Total			14	85	61	5	165	100
%							100	

The study's participants are listed in Table 1 above. Hence, 128 (77%) of the 165 responders taken from the same number of schools are from the Amhara Region, while 37 (33%) are from the Addis Ababa City Administration. In terms of the distribution of respondents from both regions in terms of *years of service in teaching,* 113 (68.5%) served for less than 10 years, 39 (23.6%) during 11-20 years, and the rest for more than 21 years. To this connection, the information provided by the respondents about technological use in their schools was assumed to be useful. The distributions of respondents in *skills of instructional technology use* are another set of statistics that can be retrieved from Table 1. Accordingly, self-reported competency technological use appeared to be 14 (8.5%) without appropriate abilities; 85 (51.5%) beginners, and 61 (37%) at an advanced level.

Expertise is typically gained via the cultivation of experience, which takes time, commitment, and perseverance. Years of teaching experience, according to Abiola et al. (2013), did not always imply expertise. One with eighteen years of experience, for example, could be compared to one year of experience repeated seventeen times. Only when practitioners make conscious and conscientious efforts to learn consistently through reflective practices will experience contribute to expertise. Consequently, this research is looking into the amount of time teachers have been teaching and how they utilize technology for instructional purposes to see if it has anything to do with the integration

of instructional technologies.

Another factor likely to influence teachers' use of instructional technologies in the classroom is their technological knowledge. According to Shahneaz, et al. (2014), technology training must focus on "the instructional strategies needed to infuse technological skills into the learning process" rather than just on the acquisition of technical skills. Learning to use technology to improve the educational process entails more than just knowing how to operate certain hardware and software. It necessitates an awareness of pedagogical principles unique to the use of technology in the classroom. The importance of learning theory in the design and function of class activities, as well as the selection and usage of educational technologies, is the first step in pedagogy-based training. Furthermore, "fully integrating technology into a school system entails help to people employing the technology toward learning outcomes," as Hawkes et al. (2002) understood. Major barriers to the efficient use of technology in schools usually emerge in the absence of this kind of coordination and assistance" (Hawkes et al., 2002). Of course, teachers' preparation and skills are critical in implementing ICT in the classroom. Teachers must have appropriate ICT skills and a high level of confidence to implement technology in the classroom. Furthermore, to use ICT effectively in their teaching process, teachers need to understand its pedagogical purpose (Ghavifekr et al., 2015). However, if schools continue to struggle to keep teachers current and trained on the technology that is accessible to them, expecting them to fully utilize it will remain a futile exercise. Furthermore, effectively integrating technology into a classroom entails far more than merely using it and instructors must be taught how to do so.

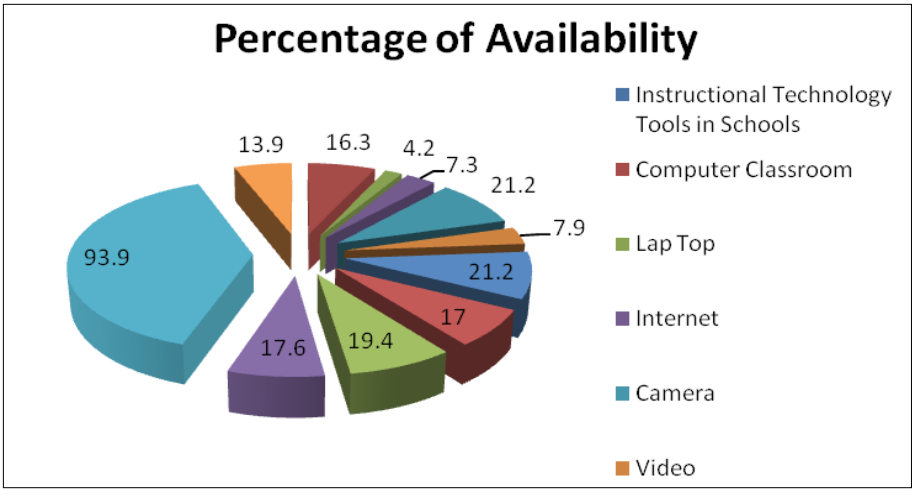

Figure 3

Percentage share of respondents on the availability of some instructional technology tools in schools

Note: The percentage distribution of respondents who reported having access to technology in their respective schools is shown in the pie chart above, which represents the sample of 165 primary schools.

Figure 3 above depicts the percentage distribution of respondents who reported about the technological access in their respective schools which, in turn, represents the sampled 165 primary schools. Thus, it was only radio reported to be available in excess among 93.9 percent school sites. All other anticipated media were in short supply, while 21.2 percent of respondents said they have a camera and a television, and 19.1 percent and 17.6 percent said they have a CD and an OHP, respectively. Primary schools are reported to be nearly devoid of all other projected media instruments. This fact may indicate that primary school instructors in the selected regions are not employing modern instructional technology tools in their teaching and learning processes.

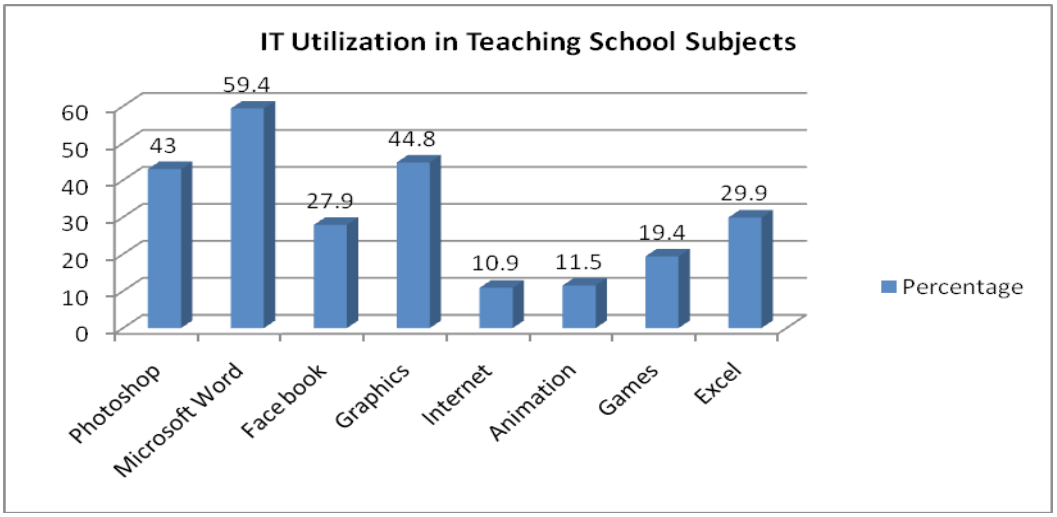

Figure 4

Percentage share of some instructional technology utilization in teaching of school subjects

Note: The graph displays the percentage distribution of respondents who indicated using technology in the teaching and learning process for the corresponding 165 school instructors, with 59.4 % respondents citing Microsoft Word, followed by 44% Graphics and 43% Photoshop respectively.

The percentage distribution of respondents who mentioned technological utilization in the teaching learning process of respective 165 school instructors is shown in Figure 4. Meanwhile, 59.4 percent of respondents said they use Microsoft Word, followed by Graphics (44.8%), and Photoshop (43%). respectively As can be observed from the graph, the use of all other ICT related technologies in the list is almost non-existent. Hence, readers may get the impression that the lack of technological tools, as shown in Figure 4, has anything to do with the limited use of instructional technology in classrooms of the studied schools in both regions.

Mastery of the skills for applying technology to education should be part of using it for instruction. Because technology can be used as a cognitive tool to help students understand concepts, construct conceptual models, and solve issues. Technology help

teachers think about ways to integrate it into day-to-day instructions in the classroom teaching. Educators, students, parents, and the community benefit from the use of technology as a communication tool because it encourages dialogue and collaboration. Teachers and students benefit from the usage of technology as a management tool. When employed as an evaluation tool, technology assists teachers in reflecting on and modifying instruction while also providing feedback on student learning. Students are encouraged and engaged in learning when technology is employed as a motivator (Shahneaz, et al. 2014).

In order to improve the use of sophisticated technologies in countries' teaching and learning processes, ministries of education around the world have provided a variety of facilities and training. A large fund has been set aside to give teachers with the necessary equipment to improve the educational system. Despite their efforts, most countries are experiencing a similar dilemma in which teachers are not making the most of the technology available to them (Ghavifekr. et al. 2015). What was observed in the study's sampled schools also demonstrates that, while some teachers are said to have the abilities, the use of technology for instruction is not fully utilized.

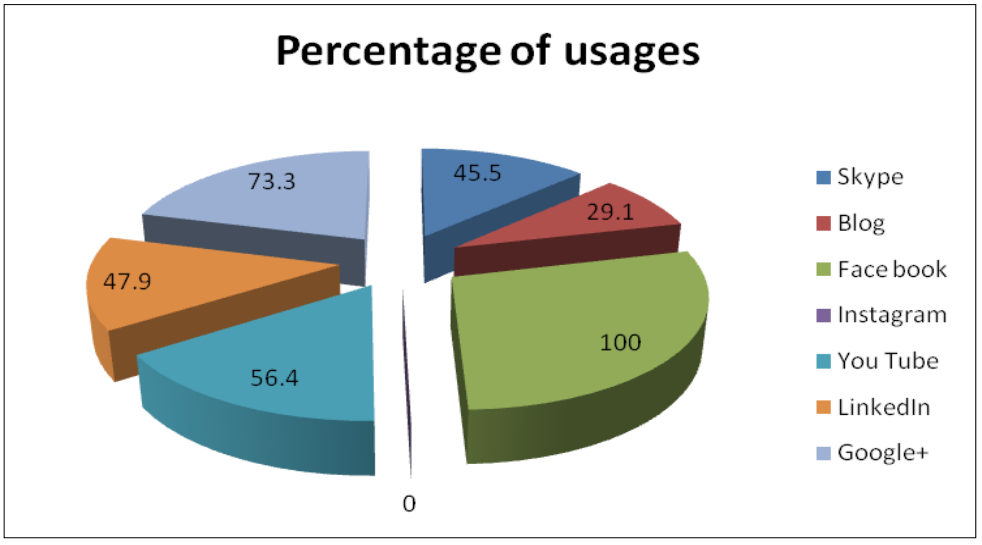

Figure 5

Percentage share of teachers who reported use of social media for educational purposes among sampled primary school teachers

Note: The pie chart displays the percentage distribution of respondents who described their use of social media for any educational activity, horizontally to colleagues and the academic community, and vertically to students or officers below or upward, as appropriate. The use of other social networking sites by the sampled teachers is also evaluated, including Google+ (73.3%), YouTube (56.4%), Linked In (47.9%), and Skype (45.5%). All sampled in-service teachers (100%) use Facebook, whereas Instagram is a completely underutilized aspect of the media.

The percentage distribution of respondents, who described their use of social media for any educational activity, both horizontally to colleagues and the academic community; and vertically to students or officers below or upward, has been analyzed using the offered items, as shown in Figure 5 above. Thus, feasible to conclude that practically all sampled in-service teachers (100%) used Facebook, whereas Instagram is a wholly underutilized component of the media. Other social media platforms such as Google+ (73.3 %), YouTube (56.4 %), Linked in (47.9%), and Skype (45.5 %) are also checked as being used by sampled teachers. According to interactions with certain respondents, the use of social media in the teaching learning process of the 165 schools represented in Figure 5 is made feasible via their own mobile phones rather than resources from schools.

According to Eady and Lockyer (2013), learning with technology had become vital in today's schools. Governments, education systems, researchers, school administrators, teachers, and parents all believe that technology is an important aspect of a child's education. It is because, according to Alba and Trani (2018), information and communication technology is a game-changer in the educational setting. It allows for educational interaction with learners in a way that complements traditional teachers' roles as coaches, trainers, or even a peer to younger people in particular, and the school system in general. Because teachers are widely using some social media, as shown in the figure, it is thought that if they are appropriately exploited for educational purposes, they will contribute to changing teachers' roles from mere providers of knowledge to facilitators.

Table 2

Model summary output from the standard regression analysis of instructional technology utilization

Model Summary

Regional State	Model 1	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
						R Square Change	F Change	df1	df2	Sig. F Change
Addis Ababa City	1	.331[a]	.110	.056	9.14952	.110	2.033	2	33	.147
Amhara Region	1	.029[a]	.001	-.015	5.90311	.001	.051	2	125	.950

a. Predictors: (Constant), Skills of Instructional Technology Use, Years of Service in teaching

The preceding model summary in Table 2 presents a variety of measures for evaluating the model's success in predicting the dependent variable of *Instructional Technology Utilization* in sampled primary schools from the AA and Amhara Regions.

In AA, R = .331 for Model 1's *instructional technology utilization*, but in Amhara, R = .029 for Model 1's dependent variable. These are the Pearson correlations between the anticipated values of the dependent variable i*nstructional technology utilization* and the actual values of the dependent variable. The amount of variation of the criterion variable accounted for by the combination of the respective independent variables in the model, *skills of instructional technology use* and *years of service in teaching*, was depicted by the R^2 coefficients (R^2 = .110 for AA and R^2 = .001 for Amhara). Because the samples in each cell were small (60), the adjusted R^2 values (adjusted R^2 = .056 for AA and adjusted R^2 = -.015 for Amhara) were the more conservative indications of the variance accounted for and should be used (Meyers, et al, 2006). Thus, only about 5.6% variance in the *instructional technology utilization* variable in AA was explained by *skills of instructional technology use* in the regression model 1, while only 1.5% variance in the *instructional technology utilization* variable in Amhara was explained by the respective ICT skill in this study. Bringing instructional technology into all classrooms has the potential to revolutionize modern education and student learning. However, not all districts or schools have the same level of access to technology. In many rural school districts, reduced funding and budgetary constraints have had a direct influence on technology procurement. When it comes to implementing technology in the classroom, rural districts face particular hurdles, with budgets and funding playing a key role. However, instructional technology may not always be readily available. Budget cuts and funding shortages may influence monetary allocation decisions.

The Digital Divide, a very real problem, has had an influence on rural schools' ability to provide instructional technology due to a lack of financing. Rural schools, according to Redding and Waiberg (2012), are disadvantaged by a lack of resources and assistance. Rural schools are forced to do more with less due to a lack of resources (Monk, 2007), yet instructors remain committed to using instructional technology in their classrooms despite technological budget limitations (Sundeen, 2013).

After ensuring that the assumptions of homogeneity and normality are not violated, ANOVA is used in this investigation. Because the dependent variable (instructional technology utilization) is a continuous (ratio) variable and the independent variables (*length of service of teachers* and *skills of instructional technology use/teachers' competence*) are categorical (ordinal) variables, ANOVA is recommended. Checking for homogeneity of variance, approximation equivalent data within groups, that the data is normally distributed, and that the observations are independent of each other are all important aspects of data assurance. Employing this parametric ANOVA test is determined to be necessary for the aim.

Table 3

ANOVA output from the standard regression analysis of instructional technology utilization

ANOVA[a]

Regional State	Model		Sum of Squares	df	Mean Square	F	Sig.
Addis Ababa City	1	Regression	340.334	2	170.167	2.033	.147[b]
		Residual	2762.555	33	83.714		
Total			3102.889	35	1.793	.051	.950[b]
Amhara Region	1	Regression	3.585	2			
		Residual	4355.845	125	34.847		
Total			4359.430	127			

a. Dependent Variable: Utilization

b. Predictors: (Constant), Skills of Instructional Technology Use, Service in teaching

The ANOVA analysis in Table 3 gives a summary of the regression analysis of variance. The significant F value, F (2, 33) = 2.033, P > .001, indicated that there was no significant relationship in Addis Ababa between the weighted linear composite of the independent variables of *skills of instructional technology use/teachers' competence* and *years of service in teaching* as the independent variables specified in model 1 and the dependent variable *of instructional technology utilization.* Similarly, at Model 1, the F (2, 125) = .051, P > .001, in Amhara region. Both data showed that the weighted linear composite of either variable of *skills of instructional technology use* or variable of *years of service in teaching* had no significant association with *instructional Technology Utilization* in Model 1. Meanwhile, the F value was not statistically significant, implying that the model's prediction of the criterion variable was no better than chance (Meyers et al., 2006).

Because regression assumes that variables have normal distributions, performing this test for this study ensures that non-normally distributed variables, such as highly skewed or kurtosis variables, or variables with significant outliers, are present. Furthermore, regression is thought to aid in the accurate evaluation of the link between the dependent variable (*educational technology utilization*) and the independent factors (*years of teaching experience* and *instructional technology skills/teachers' competency*). Disregarding this test, in particular, is thought to result in underestimation if the connection between (IV) and (DV) is not linear, leaving open to a Type II error. Furthermore, adjusting for low reliability is based on regression. Regression tests are given special attention to rectify potentials of low dependability, curvilinearity, and non-normality, which can often raise effect sizes and lead to a favorable result.

Table 4

Coefficients output from the standard regression analysis of instructional technology use

Coefficients[a]

Regional State	Model		Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
			B	Std. Error	Beta		
Addis Ababa City	1	(Constant)	5.619	4.690		1.198	.239
		Service in teaching	.368	2.099	.029	.176	.862
		Skills of Instructional Technology Use	4.517	2.249	.330	2.009	.053
Amhara Region	1	(Constant)	8.820	1.507		5.854	.000
		Service in teaching	.156	.708	.020	.220	.826
		Skills of Instructional Technology Use	.172	.775	.020	.222	.825

a. Dependent Variable: *Utilization*

The coefficients from the conventional regression analysis on educational technology utilization are shown in Table 4. In the multiple regressions model, the table shows the relative relevance of two independent variables, *skills of instructional technology use* and *years of service in teaching*. Both independent factors have no statistically significant influence to *instructional technology utilization* in this study (t = .176 and t = .220 for *years of service in teaching*, and t = 2.009 and t = .222 for *skills of instructional technology use*, respectively). In all situations, the p value was greater than .05, indicating that the independent factors had no effect on the dependent variable. Thus, it appeared that a lack of instructional technology tools was to blame for the low adoption of technology in elementary schools in the examined regions.

The knowledge or ability obtained by involvement with or exposure to something over a period of time is referred to as experience. People with more experience are thought to be better practitioners since gaining experience is a process of striving to make things operate better (Abiola etal., 2013). Teaching experience, according to the same authors, is defined as the number of years a teacher has spent in the classroom. Some academics believe that experience plays an important part in the teaching-learning process. For example, Abiri (1988) said that staying longer on the job made a professional more efficient and productive, whereas Coleman (1996) claimed that teachers' experience was a determining element in kids' overall growth. Adegbile and Igweike (2002), on the

other hand, asserted that as teachers gained experience, they become less dedicated, less industrious, and more consumed with other life commitments. They believed that teaching experience had little bearing on a teacher's ability to perform well. This was why; one of the purposes of this study was to see if a teacher's experience influences how they use instructional technology. Unfortunately, this means that *years of teaching experience* have had no impact on the use of technology in classrooms.

If instructors are not provided sufficient training on how to properly utilize and manage the resources they are given, technology can become a roadblock to learning (Yentes, 2015). Increased and improved teacher training is one way to improve teacher attitudes and beliefs. It is not simply about teaching instructors how to use technology. Teachers, on the other hand, require more assistance in understanding how to incorporate technology into their curriculum in novel ways in order to get the most out of it. Educating each other is one of the most successful ways for instructors to learn how to better integrate technology into their classes (Yentes, 2015). When instructors are ill-equipped for the technology they are given, it can be extremely difficult. Schools are discovering that the technical management and maintenance parts of technology are far more than just another duty for teachers to complete. Adequate technical support is important. Nonetheless, when respondents were divided into groups based on their ability to use instructional materials and then assessed against the items, the study found no significant differences between the non-trained, beginners, intermediate, and advanced respondents. This could be owing to a lack of appropriate and suitable instructional tools for each sub-category.

Table 5

Comparative view of item-based instructional technology utilization in schools of Addis Ababa and Amhara region

Items	Regional State	N	Mean	Std. Dev.	t	df	Sig. (2-tailed)
Use of computer in many circumstances	AA	37	.65	1.160	3.124	163	.002*
	Amhara	128	.20	.607			
Use of computer to deliver instruction	AA	37	.41	.798	3.221	163	.002*
	Amhara	128	.09	.405			
Access for an internet	AA	37	.65	1.060	2.228	163	.027*
	Amhara	128	.30	.748			
Use of digital projector	AA	37	.30	.661	2.080	163	.039*
	Amhara	128	.11	.421			
Use of Photographs	AA	37	.68	.973	.424	163	.672
	Amhara	128	.60	.925			

Use of Plasma-based instruction	AA	36	.25	.649	.833	162	.406
	Amhara	128	.16	.581			
Use of Slides	AA	37	.46	.767	2.471	163	.015*
	Amhara	128	.19	.529			
Watching of Video Cassettes	AA	37	.62	1.089	.977	163	.330
	Amhara	128	.45	.929			
Use of radio instruction	AA	37	2.41	1.166	-.696	163	.487
	Amhara	128	2.57	1.296			
Creating Models	AA	37	.97	1.118	-1.048	163	.296
	Amhara	128	1.20	1.193			
Use of e-mails for educational purposes	AA	37	.62	1.037	1.679	163	.095
	Amhara	128	.36	.771			
Use of Games	AA	37	1.08	.954	1.383	163	.169
	Amhara	128	.80	1.102			
Use of graphics	AA	37	1.14	1.182	.305	163	.760
	Amhara	128	1.07	1.124			
Use of Word and Excel	AA	37	.97	1.142	1.878	163	.062
	Amhara	128	.61	1.006			
Use of Computer for lesson preparation	AA	37	.92	1.140	2.416	163	.017*
	Amhara	128	.55	.685			

Table 5 investigates if school location has an impact on *instructional technology utilization*, i.e., whether the school is located in a metropolitan area or in a region. Table 5 further shows the findings of the descriptive analysis for items connected to *instructional technology utilization*. On a five-point Likert scale ranging from 0 (never) to 4 (always), informants were asked to score each item (Very Often). According to the mean scores, in-service teachers from Addis Ababa city administration primary schools use, at the very least, 'rarely better than' those from the Amhara region in areas. For example, *Use of computer in many circumstances* for AA was M = .65 and SD = 1.160, while for Amhara it was M = .20 and SD = .607 , that was, t (163) = -3.1242 and $p < .05$. *Use of computer to deliver instruction* for AA was M = .41 and SD = .798, while for Amhara it was M = .09 and SD = .405, that was t (163) = -3.221 and $p < .05$. *Access for an internet* for AA was M = .65 and SD = 1.160, while for Amhara it was M = .30 and SD = .748, that was, t (163) = 2.228 and $p < .05$. *Use of digital projector* for AA was M = .30 and SD = .661, while for Amhara it was M = .11 and SD = .421, that was, t (163) = -2.080 and $p < .05$. *Use of Slides* for AA was M = .46 and SD = .767, while for Amhara it was M = .19 and SD = .529, that was, t (163) = -2.471 and $p < .05$. *Use of computer for lesson preparation* for AA was M = .92 and SD = 1.140, while for Amhara it was M = .55 and SD = .685, that was, t (163) = -2.471, $p < .05$. In all other technical instruments, the status of classroom application appeared to be either completely missing or extremely rarely used. In any case,

minor differences in results in the use of some instructional technology tools suggested that, while primary school teachers in both sampled regions suffered from a scarcity of tools, those in a metropolitan site were infrequently getting access to some varieties while still suffering from the inaccessibility of the majority. This circumstance would result in a discrepancy in teaching and learning approaches between urban and regional schools.

Lack of infrastructure, such as power and internet connections, was mentioned as a barrier to technology integration, as did a lack of funding. Scarcity of various types of instructional technologies; limited skill of teachers to use technologies; lack of steady continual teacher training, time pressures to use different instructional technologies as demanded by the syllabuses, and lack of support from principals, central offices of education, and all other stakeholders in fulfilling instructional technologies and the like were the most frequently cited issues. However, such issues were not mentioned just by Metropolitan or Regional-specific school participants, but by Metropolitan and Regional participants alike. Teachers from both metropolitan and regional sites were asked to submit a "Wish List" for the next five years, with infrastructures such as power and internet connections, LCD and other ICT tools and equipment, scanners, Digital Graphing Calculators, Digital Microscopes, Document Cameras, Projectors, e-Textbooks Google Chrome books, Laptops, PC Desktop Computers, PC Tablets, Printers, Smart Boards, TV, Video Cameras and Wireless Sound System topping the list. Many others, however, question whether public schools could afford to equip and deploy such expensive equipment.

Teachers were also asked to submit any ideas for improving the availability and use of instructional technology in their classrooms. They cited the requirement for concerned government agencies to complete infrastructure; the purchase of essential instructional technologies in the required amount and quality for each school; and teacher training on how to handle technology use.

Conclusion

The availability and utilization of instructional technologies in elementary schools in Addis Ababa city administration and Amhara regional state are at an all-time low, according to the reports. Despite the fact that the majority of respondents had more than ten years of experience, instructors' skills in using educational technologies are said to be limited because the majority are at a 'beginning' level of proficiency in using instructional technology. Hence, schools face a variety of obstacles, beginning with infrastructure issues such as electricity supply and links to technology equipment. Once more, the majority of sampled schools have limited access to instructional technologies, and their utilization looks extremely limited, with little variance between metropolitan and regional public schools.

Finally, the study recommends that central educational offices at the regional, zonal, and woreda levels should continuously provide enough and relevant instructional technologies to all public schools, whether in metropolitan or regional locations, for successful execution of school subjects. If they are in need of ensuring educational quality through the inherent advantages of projected media, principals, heads of central educational offices and Ministry of Education (MoE) officials shall ensure regular supervisions to enhance effective utilization of instructional technology and resources in the teaching-learning processes.

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