Novice Teachers Use of ICT for Teaching Purposes at Secondary School Level

Mohammad Iftikhar Bakht * | Abid Hussain Shahzad † | Muhammad Qasim Ali ‡

Abstract

ICT has revolutionized the way people learn and teach. The study aimed to examine how new secondary school teachers used ICT. The study included all secondary school teachers who teach 9th and 10th classes. The researchers chose 200 secondary school teachers randomly. In descriptive research, a questionnaire is an excellent approach to collect data. The data were analyzed using statistical approaches to understand frequency, percentage, mean score, and standard deviation. This study found that using ICT devices and other tools can help secondary school teachers become productive. The school has internet access to aid teaching. The study indicated that secondary instructors who use ICT resources like social media and YouTube during class would be effective, and their pupils learn more. Also, ICT is supposed to assist teachers in communicating better and finding and sharing knowledge.

Key Words: Novice Teachers, ICT, Secondary School Level

Introduction

An important criterion used to evaluate a country's progress is its educational attainment. As a result, increased attention must be paid to the educational system regarding facilities, equity, qualities, and outcomes, among other considerations. While there has been significant progress in the use of technology in the teaching and learning process during the twenty-first century, there has also been significant progress in the widespread use of information and communications technology (ICT) in the educational sector, which is expanding day by day all over the world. When it comes to integrating information and communication technology (ICT) into the educational process, Pakistan, like many other third-world countries, is still in its infancy. According to Johnson, Becker, Cummins, Estrada, Freeman, and Hall (2016), it is believed that the use of information and communication technology (ICT) has made a significant contribution to the modification of the teaching-learning process as well as the techniques used in the process of teaching.

Underdeveloped infrastructures, a lack of human skills, and a lack of knowledge about information and communications technology (ICT) are all significant obstacles in educational institutions when it comes to information and communications technology (ICT). Because of the disadvantages listed above, the implementation of information and communication technology in educational institutions has been slowed. The cost of using the Internet is too high in many institutions, according to Aduwa-Ogiegbaen and Lyamu (2005). Moreover, they claim that emerging countries do not have enough money to spend on the expensive equipment associated with information and communications technology. According to the realities of the twenty-first century, economic, social, and technological development are all fueled by information and communication technologies.

ICT refers to the tools used in information and communication technology (ICT) to create, store, and process information and distribute and exchange data (Ali, Hoalder & Muhammad, 2013). We define these as tools that teachers use to assist students in the operation of ICT equipment and gadgets across computer networks.

* Ph.D. Scholar, Department of Education, The Islamia University of Bahawalpur, Bahawalpur, Punjab, Pakistan.
† Assistant Professor, Department of Education, The Islamia University of Bahawalpur, Bahawalpur, Punjab, Pakistan.
‡ Ph.D. Scholar, The Islamia University of Bahawalpur, Bahawalpur, Punjab, Pakistan.
Email: qasimvr@yahoo.com
and the creation, operation, and exchange of information, according to a definition we developed. Because technology is being used in classrooms today, teachers can provide students with excellent learning experiences. Teachers who are well-versed in technology will achieve their goal of providing students with a rich learning environment in this manner. Therefore, it has been determined that teachers require training manuals on electronic devices, which should be developed as soon as possible to meet the needs of the students (Najam & Ali, 2019).

When it comes to higher education, the use of information and communications technology (ICT) is critical; however, various factors influence how ICT is used. The aspects that are serialized include government technology policy, ICT literacy policy, teachers' educational backgrounds, teachers' educational beliefs, teachers' professional training, teachers' attitudes toward information communication technology education, administrative support, teachers' motivation for technology integration in education, teachers' period of experience with ICT, and ICT infrastructure and resources. When teachers emphasize using new technological gadgets and draw on their teaching experience, students' confidence will soar. All of the elements listed above assist instructors in incorporating information and communication technology (ICT) into the teaching and learning process, allowing them to become successful technology adopters.

In the classroom, the use of technology aids in the improvement of learning outcomes. When technology is used in the classroom, students' learning is enhanced in various exciting ways. The most exciting method for making the learning process more meaningful is sharing films, short stories, and music with the class (Albirini, 2006; Agyei, 2013). The government of Pakistan uses information and communication technology (ICT) in all provinces to improve the efficiency of the educational process. Academic purposes and academic mobilization are achieved by using information and communication technology (ICT) (Ali, Riaz & Wattoo, 2018). In order to advance the development of ICT resources, the governments of Punjab provide laptop computers to students. It has also been observed that the Ministry of Education is interested in expanding information and communication technology infrastructure and developing the abilities of teachers and other educators. A study's findings revealed the need for the government to take responsibility for in-service teacher training to promote the development and growth of information and communication technology (Ali, Nargis, Yaseen, & Iqbal, 2015).

Education institutions' teaching personnel in advanced countries are being provided with information and communications technology (ICT) tools and gadgets to raise the overall quality of the teaching and learning experience. A scarcity of information and communications technology (ICT) resources in schools, colleges, and universities in underdeveloped countries is a significant source of frustration for students and faculty. Furthermore, in this technological century, a scarcity of information and communication technology (ICT) resources is the most significant impediment to achieving higher levels of educational achievement. In order to achieve the goals of 21st-century teaching and learning, teachers are exerting every effort. The lack of ICT resources and facilities in their respective institutions, on the other hand, is a source of frustration for them. Concerning secondary school instruction, this study focused on the role of information and communication technology (ICT) in delivering effective instruction to students. In order to achieve the following objective, the researchers conducted a study.

- To analyze novice teachers' use of ICT for teaching purposes at the secondary school level.

**Review of Related Literature**

In recent years, there has been a significant increase in computers and the Internet to improve the effectiveness and efficiency of instructional practices at the undergraduate and graduate levels, particularly in higher education. Cacheir-González (2011) argues that students' information and abilities related to information and communications technology (ICT) develop at the university level, allowing them to take advantage of opportunities later in their lives. It has evolved into a powerful motivator for people worldwide who want to learn more and improve their skills. Information and communications technology (ICT) can explain a wide range of aspects of life and society. The way information and communications technology (ICT) is explained in educational sectors may be different from how it is explained in other fields such as nursing and engineering. For example, when it comes to information and communications technology (ICT), the terms technology and educational technology are frequently used interchangeably in the United States (Aduwa-Ogiegbaen & Lyamu,
When it comes to information and communication technology (ICT), Hismanoglu (2012) explains it as a set of digital modes of communication that are commonly referred to as ICT and are well-known in the context of ordinary literacy. According to Kaware and Sain (2015), the use of information and communications technology (ICT) in education facilitates the teaching-learning process and improves student learning outcomes. Students studying in an ICT-enhanced environment can take courses from any location, so long as they have access to a computer with active internet connectivity.

With the help of computers and Internet connections, they can gain access to a vast amount of up-to-date information that is easily accessible, straightforward, and logical (Ojo & Adu, 2018). The critical application of information and communication technology (ICT) has been widely adopted and has significantly impacted many aspects of human life, including educational opportunities. In the New Educational System, information and communications technology (ICT) serves as the driving force, resulting in the development of E-Education and E-School (Bakar & Mohamed, 2008). Teacher training is an important consideration when considering the integration of ICT in pedagogical practices in conjunction with other factors. The use of information and communications technology (ICT) in education is being used to increase productivity, interaction, and knowledge exchange and enhance student learning.

Apart from the compilation of notes, teaching-learning resources, and tests, it has been stated that information and communication technology (ICT) was used for academic purposes. According to the research, preparing notes, searching for teaching and learning materials, and creating interactive whiteboards are three of the suggested methods for the use of ICT in teaching. It provides opportunities for people to gain access to a wide range of information. Additionally, it is beneficial in the preparation of examinations and tests. When it comes to teaching at the university level, information and communications technology (ICT) does not allow teachers to change their primary teaching methodology. Students' learning should be transformed into real-world applications, according to Mwalongo (2012), who argues that it is critical to think beyond the simple use of embedded ICT by student involvement to convert students' learning into real-world applications (Mwalongo, 2012).

When it comes to properly implement information and communications technology (ICT) in education, the role of the teacher is critical. If we exclude teachers from this entire process, the vast majority of students will not be able to take advantage of the vast array of ICT resources that are currently available to them on their own as a result. As a result, teachers must actively encourage students to use information and communication technology (ICT) for academic and social purposes. It is necessary to train them in the proper use of information and communication technologies to achieve this goal, and the situation at hand must provide the necessary training. According to the teacher, incorporating information and communication technology (ICT) into classroom activities can help students develop their thinking patterns and vision for the future (Bakar & Mohamed, 2008). The use of information and communications technology (ICT) alters the nature of the educational process and learning experiences in general due to its widespread adoption. It is becoming more and more web-based (i.e., more use of CDROMs, electronic journals, online sources of materials, etc.). With the advancement of new and more affordable technologies, introducing new and more affordable computers has emerged as a primary driver of increased ICT literacy. Information and communication technology (ICT) resources are products that process, store, communicate, transform, duplicate, or receive e-information. They are also known as ICT resources. IT encompasses a wide range of products and services, including computer software and hardware; operating systems; web-based information; applications such as distance learning and telephones; audio-visual apparatus and multimedia products such as DVDs, CDs, emailing, or the World Wide Web (www); office equipment such as printers, fax machines, and photocopiers; and calculators, among other things (IT). Information and communications technology, electronic textbooks, instructional software, and social media programs are all examples of information and communication technology.

Classification of information and communications technology resources: classification of information and communications technology resources

- Availability of information resources (e.g., webliography and online databases),
- Collaboration tools (such as blogs and wikis), as well as social media sites
- There are learning resources available (e.g., repositories of educational resources and m-learning).
In this context, the term "webliography" refers to academic documents available on the Internet in electronic journals and electronic books. Resources relating to information and communication technology (ICT) can be beneficial for various purposes in pedagogical practices, including (Cacheiro-Gonzalez, 2011). One of the most frequently encountered problems when implementing information and communications technology in education is that decisions and priorities are based on technological potential rather than academic necessity. Higher education faces significant challenges at all levels in developing countries, from the most basic to the most elite. Stakeholders are focused on ensuring that the country's technological potential is sufficient to meet the demands of contemporary higher education. Other aspects of educational technology's role in providing alternative approaches to meet the significant environmental and educational difficulties with which instructors and students in higher education are currently confronted are discussed in detail in a research report (Jaffer, Ngambi & Czerniewicz, 2007). The use of information and communications technology (ICT) in the teaching process is not a new phenomenon in developing countries, but it is a relatively recent phenomenon that has attracted the attention of educational experts. Determining the effectiveness of embedded educational technology in pedagogical and classroom procedures is difficult for teachers and administrators to answer successfully (Ali, Hoalder & Muhammad, 2013).

Information and Communications Technology (ICT) in Instructional Delivery is a relatively new concept. It was not that long ago that the teacher-centered (chalk and talk) approach (Agyei, 2013) was the most widely employed instructional strategy, in which teachers did the majority of the talking and intellectual work while students served as passive recipients of the information presented. Higher education institutions place a strong emphasis on information and communication technology (ICT) in the classroom and learning environment (Ministry of Education, Science, and Sports, 2010). Several research studies have demonstrated the significant impact of information and communications technology (ICT) on teaching and learning. For example, Bingimlas (2009) points out that incorporating technology into classrooms allows students to concentrate on tactics and interpretation rather than on the actual answers. (2018, 2018); (Ojo & Adu, 2018). It is also critical for pre-service teachers to learn ICT during their training programs because this integrated technological knowledge helps a potential teacher better understand the world of technology, which can then be applied to the development of students in the future. Nowadays, information and communication technologies (ICTs) are giving new life to schools and classrooms by introducing a new curriculum based on real-world problems, projects, and tools for enhancing learning and providing teachers and students with more facilities and opportunities for feedback. ICT also facilitates collaboration between teachers, students, and parents (Bhattacharjee & Deb, 2016).

Computers, the Internet, broadcasting technologies (radio and television), and telephony are some of the technologies in this category. Information and communications technology (ICT) is the technology that uses the information to meet human needs, including formatting and exchanging. The use of information and communication technologies (ICTs) will be significant in education (Kaware & Sain, 2015). People of all ages, particularly those traditionally excluded, such as those living in rural areas, women who face social barriers, and students with disabilities, can benefit from new and innovative educational opportunities made possible by information and communication technologies (ICTs). Because of advances in information and communication technology (ICT), our work has become more sustainable, saving energy and materials resources while creating more value from less physical input while simultaneously improving quality. Effective teaching is made possible through the use of information and communication technologies. Projectors, computers, and other standard tools are now commonly used in the classroom as part of the teaching process.

The use of information and communications technology (ICT) in education is growing steadily. Although education is a social activity and teachers have traditionally been the backbone of the teaching-learning process, information and communication technologies (ICTs) are a powerful tool for disseminating knowledge and information, a critical component of the educational process. ICTs can make a significant contribution to improving access and equity in the education sector in general, as well as in the higher education sector in particular. These efforts also benefit from the momentum created in this direction by the steady increase in the number of students enrolled at universities. As a result of these factors, it is expected that the demand for higher education will increase significantly in the coming years. By complementing both the formal education and distance learning systems, information and communications technologies (ICTs) provide an ideal mechanism for closing this gap. (Neeru et al., 2009)
ICT-enabled education will eventually stress the fact that ICT activity can cause a significant shift in both the teacher's and the student's activities. On the other hand, the natural evolution is found in educational culture: a culture of collaborative learning that strives to overcome the individualistic matrix through social action, whether from the perspective of interaction or representation. There is still much work to be done in this field, particularly within the culture of the universities. The use of information and communications technology (ICT) in education enhances the classroom teaching-learning process and provides the capability of e-learning. Distance learning has benefited from information and communications technology. The teaching community can reach out to remote locations, and learners can access high-quality learning environments from any location and at any time of day or night. Teachers or trainers must incorporate technology into their teaching methods to provide pedagogical and educational benefits to their students. Kirkup and Kirkwood (2005) developed that formalized academics have embraced computers in the classroom much more readily than they have done with previous audio-visual media. This is partly because computers' most significant strength is manipulating words and symbols, which is at the heart of the academic endeavor. On-campus and distance learning courses are increasingly being supplemented with eLearning or online learning, becoming more popular. Distance education and eLearning are not always the same thing, and their cost structures can be very different. Whether or not e-Learning improves quality or lowers costs is dependent on the specific circumstances. ICTs in general, and eLearning in particular, have helped lower the barriers to entry into the higher education business, which was previously prohibitively expensive. They reveal that information and communications technologies (ICTs) should be introduced systematically that clarify the business model through cost-benefit analyses (Balasubramanian, Clarke-Okah, Daniel, Ferreira, Kanwar, Kwan & West, 2009).

The continued and increased use of information and communication technologies (ICTs) in education in the coming years will increase the temporal and geographical opportunities currently available. Progress in educational opportunities is often hampered by the ICT capabilities of the lowest common denominator, i.e., the students who have the least access to information and communications technology. As student access to ICT grows, so will the number of opportunities available. In the past, the position of teacher in an educational institution was reserved for only the most highly qualified individuals in the field. As a result of technology-facilitated learning, there are opportunities to expand the teaching pool beyond this small group of specialists to include a much broader range of individuals.

Research Procedure
Research methodology is the procedure that smoothen the research process. The present study investigated novice teachers' use of ICT for teaching purposes at the secondary school level. Researchers used a descriptive research method for the constitution of the study, and survey method was used to collect data. In Sahiwal division, all the secondary school teachers who are teaching to the 9th and 10th secondary school subjects are included in the population of the study.

The researcher selected the sample of the study from the target population. There were 200 secondary school teachers in aforesaid secondary schools comprised the sample of the study. The researcher used the simple random sampling technique for the selection of teachers that participated in the research study. Cohen, Manion, and Morrison (2000; p. 94) mentioned a table sourced by Krejcie and Morgan, 1970. According to that sample would be 190. The researcher collected data from 200 secondary school teachers.

The researcher used a self-developed questionnaire comprised of 5 points Likert scale as a research tool for the collection of data from respondents. The finalized questionnaire comprised 15 items.

According to Gay (2012), a questionnaire refers to a tool for receiving answers to questions by using a form which respondents fill according to their perception. It is a planned set of questions that are liable to a sampling of the population from which information is required. They may be distributed personally or by mail to the respondents. The questionnaire was validated through the opinions of experts and administrated to collect data from the respondents, which were later on analyzed, tabulated, and interpreted in the light of the objectives of the study.

The main function of pilot testing is to check the design of the research instrument, works in practice, and to identify and amend problematic questions. Any problems relating to the content, wording, layout, length,
instructions, or coding can be uncovered in the pilot study and can be amended accordingly. The first draft of the questionnaire was examined by five experts in the field of ICT to ensure the validity of the instruments. Moreover, to test the reliability of the instrument, data was collected from 25 secondary school teachers who were not included in the sample of the study. The overall Cronbach’s Alpha value was 0.78.

After seeking permission from concerned authorities, a developed research tool (questionnaire) was administered to the respondents personally with the request to fill in a prescribed place for them for data collection. The research instrument (questionnaire) was got filled and collected back personally, and thus luckily, the response rate was hundred percent. Every possible effort was made by the researcher to collect valid and reliable data.

The collected data from the required respondents through research tool (questionnaire) were appropriately tabulated, analyzed, and interpreted by means of appropriate statistical techniques in terms of frequency, percentages, and mean score method to result in an overall average score of each item in the light of objectives of the study. Data analysis of the study refers to analyzed and interpretation of data collected from respondents. Descriptive statistics such as frequency, percentages, mean score, and standard deviation were used for data analysis. It was presented in the following table along with descriptions:

<table>
<thead>
<tr>
<th>Statements</th>
<th>A</th>
<th>UD</th>
<th>DA</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT provides an easy access to subject-matter knowledge</td>
<td>162</td>
<td>22</td>
<td>16</td>
<td>4.16</td>
<td>1.039</td>
</tr>
<tr>
<td>ICT creates awareness for teaching</td>
<td>170</td>
<td>20</td>
<td>10</td>
<td>4.11</td>
<td>.823</td>
</tr>
<tr>
<td>ICT promotes collaborative learning</td>
<td>142</td>
<td>52</td>
<td>6</td>
<td>3.97</td>
<td>.861</td>
</tr>
<tr>
<td>ICT provides quick communication among teaching staff</td>
<td>151</td>
<td>38</td>
<td>11</td>
<td>4.04</td>
<td>.948</td>
</tr>
<tr>
<td>ICT helps users in getting quick feedback</td>
<td>152</td>
<td>42</td>
<td>6</td>
<td>4.01</td>
<td>.839</td>
</tr>
<tr>
<td>ICT motivates teachers to learn more</td>
<td>169</td>
<td>22</td>
<td>9</td>
<td>4.19</td>
<td>.859</td>
</tr>
<tr>
<td>ICT makes teachers efficient communicator</td>
<td>157</td>
<td>35</td>
<td>8</td>
<td>4.01</td>
<td>.814</td>
</tr>
<tr>
<td>ICT provides an opportunity to participate in professional networks</td>
<td>160</td>
<td>32</td>
<td>8</td>
<td>4.18</td>
<td>.943</td>
</tr>
<tr>
<td>ICT facilitates information gathering and dissemination</td>
<td>163</td>
<td>28</td>
<td>9</td>
<td>4.11</td>
<td>.823</td>
</tr>
<tr>
<td>ICT improves coordination related to teaching tasks</td>
<td>166</td>
<td>26</td>
<td>8</td>
<td>4.14</td>
<td>.863</td>
</tr>
<tr>
<td>ICT supports teaching-learning process</td>
<td>158</td>
<td>24</td>
<td>18</td>
<td>4.02</td>
<td>1.121</td>
</tr>
<tr>
<td>Teachers and students share information through ICT gadgets</td>
<td>172</td>
<td>22</td>
<td>6</td>
<td>4.16</td>
<td>.771</td>
</tr>
<tr>
<td>ICT helps in sorting out modern methods of teaching</td>
<td>166</td>
<td>26</td>
<td>8</td>
<td>4.22</td>
<td>.892</td>
</tr>
<tr>
<td>Teacher use YouTube</td>
<td>163</td>
<td>26</td>
<td>11</td>
<td>4.08</td>
<td>.902</td>
</tr>
<tr>
<td>Teachers use Twitter and others social networks</td>
<td>149</td>
<td>33</td>
<td>18</td>
<td>3.93</td>
<td>.975</td>
</tr>
<tr>
<td>The teacher uses academic blogs and wikis</td>
<td>142</td>
<td>41</td>
<td>17</td>
<td>3.82</td>
<td>.925</td>
</tr>
</tbody>
</table>
Teachers use educational repositories for effective teaching

<table>
<thead>
<tr>
<th></th>
<th>71.0%</th>
<th>20.5%</th>
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<tbody>
<tr>
<td></td>
<td>138</td>
<td>29</td>
<td>33</td>
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<tr>
<td></td>
<td>69.0%</td>
<td>14.5%</td>
<td>16.5%</td>
</tr>
<tr>
<td></td>
<td>3.71</td>
<td>1.193</td>
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</tbody>
</table>

Table 1 indicates secondary school teachers’ perceptions about ICT resources in universities. In the above table, the mean score and standard deviation rise from (3.97 to 4.22) and (.771 to 1.121) respectively that shows the inclination of the majority of the secondary teachers (more than 80%) agreed to the statements. Teachers (86%) have the perception that teachers and students share information through ICT gadgets. While teachers (85%) admit that ICT create awareness for teaching and ICT motivates teachers (84.5%) to learn more. The majority of secondary school teachers (83%) affirm that ICT improves coordination related to teaching tasks as well as it also helps in sorting out modern teaching methods. The majority of the teachers (81.5%) confirm the role of ICT for information gathering and dissemination, and teachers (81%) appreciate the role of ICT in providing easy access to subject matter knowledge. ICT also plays a significant role is in providing the opportunity to participate in professional networks. But there are various other roles of ICT that need to focus on as collaborative learning, a source of quick communication among teaching staff; it also helps in getting a quick response, makes teachers as an efficient communicator, and also plays an active role for the teaching-learning process. Furthermore, teachers (71%) make use of academic blogs and wikis. It is concluded that secondary teachers make the fullest use of ICT resources in the secondary schools. But there are also other resources that they may use less due to unawareness or lack of ICT knowledge i.e. use of Youtube, access and use of E-books, internet facility, data storage facility, use of online questionnaire and educational repositories for better and effective teaching.

Findings

A detailed description of the findings revealed from the results of the study according to the given objective is as below:

1. The analysis of the data showed that 81% of secondary school teachers show agreement with the statement that ICT provides easy access to subject-matter knowledge.
2. According to the results of the study, 85% of secondary school teachers show agreement with the statement that ICT creates awareness for teaching.
3. It was found that 71% of secondary school teachers agree with the statement that teachers' ICT promotes collaborative learning.
4. It was found from the results of the study that 75.5% of teachers agree with the statement that ICT provides quick communication among teaching staff.
5. According to the results of the study, 76% of teachers show agreement with the statement that ICT helps users in getting quick feedback.
6. It was found from the results of the study that 84.5% of teachers show agreement with the statement that ICT motivates teachers to learn more.
7. According to the results of the study, 78.5% of secondary school teachers show agreement with the statement that ICT makes teachers efficient communicator.
8. It was found that 80% of secondary school teachers show agreement with the statement that ICT provides an opportunity to participate in professional networks.
9. It was found from the results of the study that 81.5% of teachers agree with the statement that ICT facilitates information gathering and dissemination.
10. According to the results of the study, 83% of teachers show agreement with the statement that ICT improves coordination related to teaching tasks.
11. It was confirmed from the results of the study that 79% of teachers show agreement with the statement that ICT supports the teaching-learning process.
12. According to the results of the study, 86% of secondary school teachers show agreement with the statement that teachers and students share information through ICT gadgets.
13. It was found that 83% of secondary school teachers agree with the statement that ICT helps in sorting out modern methods of teaching.
14. According to the results of the study, 81% of teachers show agreement with the statement that teachers use YouTube.

15. It was found from the results of the study that 74.4% of teachers show agreement with the statement that teachers use Twitter and other social networks.

16. It was found from the results of the study that 71% of teachers show agreement with the statement that teachers use academic blogs and wiki.

17. It was confirmed from the results of the study that 69% of teachers show agreement with the statement that teachers use educational repositories for effective teaching.

Conclusions

On the basis of the findings of the study, the following conclusions were drawn:

It was concluded that teachers think that ICT plays a significant role for awareness of teaching and access to subject-matter knowledge, respectively. In the contemporary era, ICT plays a significant and essential role in collaborative learning within the classroom as well as in the institution. In this technological era, ICT gadgets provide quick communication among secondary school teachers. This study also concluded that ICT motivates (84%) teachers to learn more, and ICT reduces the burden of hard copy. ICT makes teachers (78%) efficient communicators and (82%) facilitate information gathering and dissemination, respectively. Whereas secondary school teachers (68%) have free access to E-books for effective teaching and for the preparation of their lectures. The study concluded that teachers use educational repositories and online questionnaires for better and effective teaching.
References


