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# ICT skills and challenges faced by high school teachers of Inle Lake located in the Nyaungshwe township of Shan State in Myanmar

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**ABSTRACT**

In western Shan State of Myanmar, there is a picturesque lake, famous for its floating villages and gardens and the unique way of life of the local Intha people, with their living communities based entirely on the water. The present survey research was aimed at identifying the ICT facilities, skills, usage, and the problems faced by the high school teachers of basic education while using ICT. The population of the study comprised the teachers of 17 Inle villages. Instrument was developed by the first author. About 102 state high school teachers were selected from three government high schools. Descriptive statistics were used to analyze the data. The findings revealed that only some of the teachers have computers and Internet facilities at home and school. They are expert at simple skills like searching and browsing internet, social networking, and MS word but are less skilled or poor on other skills like using MS access, discussion forums/blogs and Windows & file management. Teachers spend more time on computers for academic and other purposes than for recreational purpose. They believe that the use of ICT supports their learning, lack of technical support at home and at school, load shedding at home and at school and signal problem in Internet at home and are the problems faced by most of the teachers. Thus, the government high schools should invest more on improving the infrastructure to address the ICT related problems of teachers at the schools.



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## 1. INTRODUCTION

The current basic education system in Myanmar comprises six years of primary (Grade 1 to Grade 6), three years of lower secondary (Grade 7 to Grade 9) and two years of upper secondary (Grade 10 and Grade 11) education. Inle Lake is Myanmar's second largest lake, and it sits in the center of the country, in the state of Shan. In 2015, Lake Inle became the first natural area in Myanmar to be declared a UNESCO biosphere reserve. There are 17 villages on the shore and islands on Inle Lake. According to related indicators for Myanmar number of high schools in Shan state, there are over 7,000 teachers working at 43 high schools in the 2019 academic year. Ultimate power of technology is the information and the communication. ICT is vital for social life, business, and economy, to meet the demands of modern information society, and for the progress of education (Aduwa-Ogiegbaen & Iyamu, 2005).

Use of ICT in education improves the quality and the quantity of education (Balasubramanian et.al., 2009) and causes better innovative, creative, and cognitive thinking, higher productivity, efficiency, and educational outcomes (Adeosun, 2010). ICT facilitates both instructional and learning process (Jung, 2005) and has a great influence on teaching and learning in education. Therefore, computer has been integrated in teaching faster than the previous audio-visual technologies (Balasubramanian et.al., 2009). Computers and internet offer excellent and plenty opportunities to the students using text, graphics, multicolor images, motion,

and audio for the development of their creative talents and high-quality learning. Internet is playing the major role in the dissemination of information and knowledge in this global village (Aduwa-Ogiegbaen & Iyamu, 2005).

**1.1 Problem identification**

Computer and internet affected the educational process more than the previous educational technologies. Integration of ICT in basic education facilitates both instructional and learning processes. In addition to audio and visual sense, computer and internet activate the sense of touch of the user as well and provide the opportunity of higher interaction to the users for the development of their individual, creative, and intellectual abilities. Advanced forms of ICT assisted instruction including computers and Internet assisted instructions require proper infrastructure including substantial computers and Internet resources. The lack of ICT resources and poor infrastructure prevent the full implementation of ICT in education. There are many challenges regarding the integration of ICT particularly in developing countries. ICT in basic education of Myanmar is also a challenge as infrastructure is neglected particularly in its remote areas.

**1.2 Computers and internet facilities for the teachers at home and schools**

Teachers have computers and Internet facilities at home and schools. They believe that the use of ICT supports their learning. However, they spend more time on computers for recreational and other purposes than for academic purpose. Teachers are expert at simple skills like MS Word, MS Power Point, Searching and browsing at internet, social networking, e-mail, file attachment, and computer games, but are less skilled or poor on other skills like using digital library, discussion forums, and blogs. Lack of electricity, slow speed of computers, signal problem in internet, virus threat, poor working condition of computers, load shedding, and lack of access of internet are the problems faced by the majority of the teachers distributed the computers in the educational institute (UNESCO, 2014).

Proper infrastructure also includes electricity that is necessary for using the computers (Aduwa-Ogiegbaen & Iyamu, 2005). Most ICT resources including computers and Internet require stable energy resources to support ICT in education. Telecommunication facilities are included in the required infrastructure. A communication technology may be a narrowband or broadband fixed telephone line or a cable connection that connects a terminal equipment to the telephone, or other telecommunication network (UNESCO, 2014). Money spent on youth is best for long term investment and offers the highest rate of return (ROI) for the future of a nation (HEC, Pakistan, 2016). Education institutions have been spending large amounts in ICTs for the past two decades (Youssef & Dahmani, 2008) as integration of ICT in education adds the value of the education institutes for the social and economic development (Balasubramanian et al., 2009).

Many Asian countries include courses or objectives on computing or basic computer skills at primary, lower secondary, and upper secondary levels of education because basic computer skills or computing are important for lifelong learning (UNESCO, 2014). Integration of ICT in education is still in its initial stages (Balasubramanian et.al., 2009). There are many challenges regarding the integration of ICT particularly in developing countries, where high opportunity costs are involved in establishing institution wide ICT systems compared to developed countries. The main problems are high cost of getting, installing, operating, maintaining, and replacing ICT systems, use of unlicensed software, outdated hardware and software systems, lack of technical support for maintenance of systems (Balasubramanian et.al., 2009; Akarawang et.al., 2016). ICT in education in Pakistan is a challenge as infrastructure is neglected particularly in its remote areas (UNESCO, 2014). Myanmar and Pakistan are more or less the same economic situation and practice the same educational systems.

## 2. RESEARCH QUESTION

The current study was aimed at assessing the facilities, skills, usage, and problems regarding the computers and Internet among the teachers of higher education. Following were the research questions of the study:

(1) To what extent ICT facilities are available to the teachers at home and school?
(2) To what extent they have expertise on ICT skills and programs?
(3) To what extent ICT facilities are in use of them for academic purpose?
(4) What are the problems faced by them while using ICT resources?

## 3. METHOD

The present study was a survey research of descriptive research design. The population of the study was the teachers of basic education in Myanmar. Majority of the participants (94%) were female whereas males were only 6%. Age range of the participants were between 24 to 58 years, out of which about 75% of the participants were in the age range 28-42 years. Both open and close ended questions were used in this survey. Some parts of the scale comprised checklists on which the teachers were required to respond in yes or no. Other parts included items on Likert type scale. Open ended questions were included in the study to obtain more insight regarding the research questions.

## 4. RESULT

According to research design, availability of ICT resources among participants at home and at school, participants' level of expertise at different programs, use of ICT for academic purposes, computer learning among the participants, usage of ICT resources in teaching and learning, and problems faced by the teachers while using ICT were calculated. The data were analyzed using descriptive statistics including frequencies, percentage, mean score, and standard deviation.

### 4.1 Availability of ICT resources among participants at home and at school

Participants were provided with a checklist of ICT facilities available to them at their homes and at their schools and they were required to respond in yes or no. Results about the access of ICT facilities are summarized in Table 1.

Table 1 Availability of ICT resources among participants at home and at school

| SN | ICT resources | Facility at home | | Calculation | | Interpretation | Facility at School | | Calculation | | Interpretation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No | Yes | Mean | SD | | No | Yes | Mean | SD | |
| 1 | Computer | 94% | 6% | 1.06 | 0.24 | Poor | 52% | 48% | 1.48 | 0.50 | Average |
| 2 | Laptop | 34% | 66% | 1.66 | 0.47 | Average | 30% | 70% | 1.70 | 0.46 | Good |
| 3 | Internet | 41% | 59% | 1.59 | 0.49 | Average | 29% | 71% | 1.71 | 0.45 | Good |
| 4 | Printer | 95% | 5% | 1.05 | 0.22 | Poor | 41% | 59% | 1.59 | 0.49 | Average |
| 5 | Scanner | 100% | 0% | 1.00 | 0.00 | Poor | 99% | 1% | 1.10 | 0.30 | Poor |
| Average | | 73% | 27% | 1.27 | 0.44 | Poor | 50% | 50% | 1.51 | 0.50 | Average |

*Note*:
1.00-1.33 represents Poor
1.34-1.66 represents Average
1.67-2.00 represents Good.

Table 1 shows that a few participants have computers and Internet at homes and schools. Majority of the teachers (Mean=1.66) have laptops at their homes. However, printers and scanners are not available to the teachers at their homes, rather they can use this facility at school.

### 4.2 Participants' level of expertise at different programs

ICT skills among basic education teachers were provided with a list of computer skills and programs so that they can show the level of expertise on these on yes, no responses (Table 2).

Table 2 Participants' level of expertise at different programs (n=69)

| SN | Program | Responses | | Calculation | | Interpretation |
|---|---|---|---|---|---|---|
| | | No | Yes | Mean | SD | |
| 1 | MS Word | 58% | 42% | 1.42 | 0.49 | Average |
| 2 | MS Excel | 69% | 31% | 1.31 | 0.46 | Poor |
| 3 | SPSS | 78% | 22% | 1.22 | 0.41 | Poor |
| 4 | MS Power Point | 78% | 22% | 1.22 | 0.41 | Poor |
| 5 | Photoshop | 87% | 13% | 1.13 | 0.34 | Poor |
| 6 | MS Access | 89% | 11% | 1.11 | 0.31 | Poor |
| 7 | Searching/Browsing at Internet | 37% | 63% | 1.63 | 0.48 | Average |
| 8 | Using digital library | 89% | 11% | 1.11 | 0.31 | Poor |
| 9 | Email | 62% | 38% | 1.38 | 0.49 | Average |
| 10 | File attachment | 65% | 35% | 1.35 | 0.48 | Average |
| 11 | Discussion forums/Blogs | 88% | 12% | 1.12 | 0.32 | Poor |
| 12 | Computer games | 62% | 38% | 1.38 | 0.49 | Average |
| 13 | Social networking | 57% | 43% | 1.43 | 0.50 | Average |
| 14 | Windows & file management | 87% | 13% | 1.13 | 0.34 | Poor |
| Average | | 72% | 28% | 1.28 | 0.45 | Poor |

*Note:*
1.00-1.33 represents Poor
1.34-1.66 represents Average
1.67-2.00 represents Good.

Table 2 shows that participants are poor at some educational and recreational ICT related skills and programs like MS Word, MS Power Point, searching and browsing at internet, Email, file attachment, social networking, and computer games. Results showed that teachers have moderate level of skills at using MS Excel, windows & file management, and using digital library and are poor at using programs like Photoshop, discussion forums and Blogs, and SPSS.

**4.3 Use of ICT for academic purposes**

In the present study, teachers were asked how much time they spend on computer and Internet for academic and recreational purposes. Table 3 presents the results regarding the usage of computer and Internet for various purposes.

Table 3 Participants' usage of computer and Internet per week

| SN | | | Responses | | Calculation | | Interpretation |
|---|---|---|---|---|---|---|---|
| | | | No | Yes | Mean | SD | |
| 1 | Academic purposes | 0-5 hours a week | 42% | 58% | 1.42 | 0.49 | Average |
| | | 6-10 hours per week | 41% | 59% | 1.41 | 0.49 | Average |
| | | More than 10 hours | 37% | 63% | 1.37 | 0.48 | Average |
| Average | | | 60% | 40% | 1.40 | 0.49 | Average |
| 2 | Recreational purposes | 0-5 hours a week | 41% | 59% | 1.59 | 0.49 | Average |
| | | 6-10 hours per week | 65% | 35% | 1.35 | 0.48 | Average |
| | | More than 10 hours | 90% | 10% | 1.10 | 0.30 | Poor |
| Average | | | 65% | 35% | 1.35 | 0.48 | Average |

*Note:*
1.00-1.33 represents Poor
1.34-1.66 represents Average
1.67-2.00 represents Excellent.

Table 3 shows that most of the participants use computers for academic purposes for 0-5 hours a week (Mean=1.42). For recreational purposes, the use of computers is comparatively more and almost the same percentage of participants (Mean=1.59). About 59% (Mean=1.41) of participants use computer for 6-10 hours per week for academic purpose. About 63% (Mean=1.37) of the participants use computer for academic purpose for more than 10 hours per week. On the other hand, for recreational purposes only about 10% (Mean=1.10) participants use computer for more than 10 hours.

**4.4 Computer learning among the participants**

Participants were provided with a checklist of four possible sources which contributed towards their computer learning. Participants were required to respond in yes or no to each of these sources. Frequencies and percentages of these sources are presented in Table 4.

Table 4 Computer learning among the participants

| SN | Reasons for | Responses | | Calculation | | Interpretation |
|---|---|---|---|---|---|---|
| | | No | Yes | Mean | SD | |
| 1 | Help family members | 95% | 5% | 1.05 | 0.22 | Lack of experience |
| 2 | Help peer/friend | 88% | 12% | 1.12 | 0.32 | Lack of experience |
| 3 | Studied some course in degree program | 97% | 3% | 1.03 | 0.17 | Lack of experience |
| 4 | Have taken certification course in computer | 96% | 4% | 1.04 | 0.20 | Lack of experience |
| Average | | 94% | 6% | 1.06 | 0.24 | Lack of experience |

*Note:*
1.00-1.33 represents Lack of experience
1.34-1.66 represents Experienced
1.67-2.00 represents Well experienced.

Table 4 shows that a few of the teachers (Mean=1.03) have studied some course related to computer in their degree program. Moreover, the help of a family member (Mean=1.05) peers/friends (Mean=1.12), and attending a certification course in computer (Mean=1.04) also contributed towards their learning of computer.

**4.5 Usage of ICT resources in participants' teaching and learning**

Teachers were provided with three statements to identify the extent to which they experience the use of ICT for teaching and learning. They were asked to respond on statements on 5-point Likert type scale. The results are summarized in Table 5.

Table 5 Usage of ICT resources in participants' teaching and learning

| SN | Program | Responses | | | | | Calculation | | Interpretation |
|---|---|---|---|---|---|---|---|---|---|
| | | Never | Rarely | Sometimes | Often | Always | Mean | SD | |
| 1 | Our school courses require us to make use of computer and Internet. | 32% | 38% | 10% | 17% | 3% | 2.21 | 1.15 | Too little |
| 2 | We use computer/ Internet/ multimedia in teaching. | 42% | 30% | 10% | 7% | 11% | 2.15 | 1.33 | Too little |
| 3 | Computer/Internet helps us in learning. | 0% | 2% | 17% | 42% | 39% | 4.18 | 0.78 | Too much |
| Average | | 25% | 23% | 12% | 22% | 18% | 2.85 | 1.46 | About right |

*Note:*
1.00-2.33 represents 'Too little'.
2.34-3.66 represents 'To some extent'.
3.67-5.00 represents 'Too much'.

Table 5 shows that the teachers agreed that their courses require them to use the computer and Internet and it also helps them to some extent in their learning (Average mean= 2.85). In this regard, about Mean=4.18 of the teachers said that Computer and Internet helps them in their learning so that ICT plays a very important role in their teaching and learning. About Mean=2.15 of the participants expressed that they could get information about anything with the help of Internet in teaching and about Mean=2.21 suggested that their school courses require them to make use of computer and Internet.

**4.6 Problems faced by the teachers while using ICT**

Teachers were provided with a checklist of problems they face at home and at school. Results are presented in Table 6.

Table 6 Problems of participants' while using computer/Internet

| SN | Problem | At home | | Calculation | | Interpretation | At School | | Calculation | | Interpretation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No | Yes | Mean | SD | | No | Yes | Mean | SD | |
| 1 | Poor working condition of computers | 41% | 59% | 1.59 | 0.49 | It is problematic. | 65% | 35% | 1.35 | 0.48 | It is not problematic |
| 2 | Lack of electricity input | 61% | 39% | 1.39 | 0.49 | It is not problematic. | 77% | 23% | 1.23 | 0.42 | It is not problematic |
| 3 | Lack of access of Internet | 33% | 67% | 1.67 | 0.47 | It is problematic. | 67% | 33% | 1.33 | 0.47 | It is not problematic |
| 4 | Non availability of the require software | 34% | 66% | 1.66 | 0.47 | It is problematic. | 60% | 40% | 1.40 | 0.49 | It is not problematic |
| 5 | Lack of technical support | 29% | 71% | 1.71 | 0.45 | It is problematic. | 52% | 48% | 1.48 | 0.50 | It is not problematic |
| 6 | Virus threat | 32% | 68% | 1.68 | 0.47 | It is problematic. | 61% | 39% | 1.39 | 0.49 | It is not problematic |
| 7 | Slow speed of computers | 43% | 57% | 1.57 | 0.50 | It is problematic. | 39% | 61% | 1.51 | 0.50 | It is problematic |
| 8 | Signal problem in Internet | 32% | 68% | 1.68 | 0.47 | It is problematic. | 58% | 42% | 1.42 | 0.49 | It is not problematic |
| 9 | Load shedding | 30% | 70% | 1.70 | 0.46 | It is problematic. | 31% | 69% | 1.69 | 0.46 | It is problematic |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Average | 37% | 63% | 1.63 | 0.48 | It is problematic. | 57% | 41% | 1.42 | 0.49 | It is not problematic |

*Note:*
1.00-1.50=It is not problematic.
1.51-2.00= It is problematic.

Table 6 shows that the most important problems participants reported are lack of technical support (Mean=1.71 at home and 1.48 at school) followed by the use of ICT for load shedding (Mean=1.70 at home and 1.68 at school). Third important problem faced by the teachers is signal problem in Internet (Mean=1.68 at home and 1.42 at school). Other problems participants face at home and at school are virus threat, lack of access of Internet and non-availability of the required software.

**4.7 Responses on open ended questions**

In open ended questions, teachers were asked to share anything they want to mention regarding their teaching and learning information technology.

Table 7 Sample responses on open ended questions (n=13)

| Theme | QN | Sample Discussion |
|---|---|---|
| A: Using ICT to improve teaching and learning | 1: How ICT help teachers interact with students? | Interviewee 1<br>*ICT helps teachers to interact with students. It helps them in preparation their teaching, provide feedback. ICT also helps in effective use of ICT software and hardware for teaching – learning process.* |
| | 2: How ICT is useful for a teacher? | Interviewee 2<br>*ICT helps teachers to interact with students. It helps them in preparation their teaching, provide feedback. It also helps in effective use of ICT software and hardware for teaching – learning process.* |
| | 3: How ICT can be used to improve effectiveness in teaching and learning? | Interviewee 3<br>*ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner-centered environment.* |
| | 4: How can technology enhance teaching and learning in the classroom? | Interviewee 4<br>*Technology in education enables children to adjust to their own pace of learning. Students who need extra time can spend more time going over exercises until they understand, whilst students who need less support can continue ahead. It also frees up the teacher to help kids who need more support on an individual level*. |
| | 5: Can ICT be used to improve teaching and learning? | Interviewee 5<br>*ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner-centered environment.* |
| B: The impact of ICT in education | 1: What is the impact of ICT in education policy to teaching and learning? | Interviewee 6<br>*There is widespread belief that ICTs can and will empower teachers and learners, transforming teaching and learning processes from being highly teacher-dominated to student-centered, and that this transformation will result in increased learning gains for students, creating and allowing for opportunities for learners.* |
| | 2: What ICT skills do teachers need? | Interviewee 7<br>*The digital skills that teachers need have long moved on from just being able to use word processing and* |

| | | |
|---|---|---|
| | | *spreadsheets software. Digital skills that 21st Century teachers should have included cloud storage and sharing solutions, social media, web editing, image editing, presentation software, and general multimedia.* |
| | 3: What are some new fun ways that teachers can incorporate technology into their lessons? | Interviewee 8<br>*If you're looking for ideas of exactly how to use technology in the classroom to enhance learning, some examples include:*<br>*Digital field trips.*<br>*Integrate social media.*<br>*Gather student feedback.*<br>*Creating digital content.*<br>*Using a shared, online classroom calendar.*<br>*Review and critique webpages.* |
| | 4: How can teachers use ICT? | Interviewee 9<br>*In some contexts, ICT has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time, and the "flipped classroom" model where students watch lectures.* |
| | 5: How are ICT tools used in teaching and learning? | Interviewee 10<br>*Information Communication Technology (ICT) tools contribute to high quality lessons since they have potential to increase students' motivation, connect students to many information sources, support active in-class and out-class learning environments, and let instructors to allocate more time for facilitation.* |
| C: The Challenges of ICT | 1: Why some teachers are against technology in education? | Interviewee 11<br>*These types of teachers usually think that technology can't do a good job, they have security issues, they're worried that students can easily cheat, that automatic systems calculate grades inaccurately, and more.* |
| | 2: How do you overcome ICT challenges? | Interviewee 12<br>*Understand and identify the key components of ICT capability. Make holistic judgements against broad criteria when assessing ICT capability. Promote learning progression in the development of concepts, knowledge, skills and confidence applied to tasks, and finally, in the range and type of problems tackled.* |
| | 3: What is the key challenge on teachers' use of ICT in the classroom? | Interviewee 13<br>*Overall, the key issues and challenges found to be significant in using ICT tools by teachers were: limited accessibility and network connection, limited technical support, lack of effective training, limited time, and lack of teachers' competency.* |

According to the interviewee responses regarding using ICT to improve teaching and learning, ICT helps teachers to interact with students. It also helps them in preparing their teaching and providing feedback. According to them, ICTs can enhance the quality of education in several ways. It also frees up the teacher to help kids who need more support on an individual level. Some of participants responded regarding the impact of ICT in education, digital skills that 21st century teachers should have included cloud storage and sharing solutions, social media, web editing, image editing, presentation software, and general multimedia.

Moreover, they suggested some new fun ways that teachers can incorporate technology into their lessons such as integrating social media, gathering student feedback and using a shared online classroom calendar. Besides, some of the teachers replied that ICT has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time, and the "flipped classroom"

model where students watch lectures. According to their discussions regarding the challenges of ICT, they are worried that students can easily cheat, that automatic systems calculate grades inaccurately, and more.

Additionally, they said that they overcome ICT challenges by promoting learning progression in the development of concepts, knowledge, skills and confidence applied to tasks, and finally, in the range and type of problems tackled. Overall, the key issues and challenges found to be significant in using ICT tools by teachers were limited accessibility and network connection, limited technical support, lack of effective training, limited time, and lack of teachers' competency.

## 5. DISCUSSION

Based on the results, it is concluded that a few teachers have computers and Internet facility at their homes and schools. However, they can use the facility of printer and scanner at the school rather than at home. Some teachers possess laptops and the Government distributed free laptops to the schools during last few years. Government planned to distribute free laptops and tablets among the basic education institutions of the states and regions. The aim of the government was to distribute laptops in education institutions to increase access to ICT, to enhance the quality of education, and to promote research. Teachers were skilled at simple programs like MS Word, MS Power Point, Searching and Browsing at Internet, Social networking, Email, File attachment, and Computer games. However, they are less skilled at using MS Excel, Windows & file management, and using digital library and are poor at using programs like Photoshop, discussion forums and Blogs, and SPSS. Internet may be used for different purposes like study assignments, seeking information for further studies, making friends, recreational activities, and shopping. They use the Internet for communication, research, and entertainment.

Results of the present study showed that teachers spend more time on computers for academic purposes rather than the recreational purposes. Majority of them learned the computer through a course that was offered to them during their degree program. They believe that the use of ICT supports their learning. The most important problem teachers reported regarding the use of ICT at home was the lack of technical support. About more than two third of the participants faced this problem both at the home and at school (Kristinawati et.al. 2018). They face tremendous amount of problem of lack of technical support. Production of electricity is weak, which results in severe shortage of electricity across the region. According to official statement, urban areas have schedule for about six hours and rural areas for about eight hours of load shedding across the country. However, practically urban areas have faced as high as 12-14 hours and rural areas from 18 to 20 hours of electricity shortfall during extremely hot summer. It is difficult to implement ICT in education if power supply is disturbed in national infrastructure. Fluctuation in electricity causes damage to expensive ICT resources. Stable and constant electricity supply is necessary for the proper functioning of computers and other high-tech equipment especially under extreme weather conditions.

Second important problem faced by the participants at home was the load shedding. According to Salomon (1989), supply of relevant and appropriate software is a major hindrance for expansion of computer use in many countries. Other problems participants faced at home were virus threat, signal problem in Internet, slow speed of computers, lack of access of Internet and poor working condition of computers. Teachers face more problems regarding the use of ICT at home than at school (Wang & Dostál, 2018; Aziz et.al., 2019). At school, signal problem in Internet, virus threat, poor working condition of computers, lack of electricity input, lack of access of Internet, and non-availability of the required software were the problems that were faced by nearly one third or more of the participants whereas the load shedding, slow speed of computers, and lack of technical support were the problems that were faced by nearly half or more teachers. Aduwa-Ogiegbaen & Iyamu (2005) identified lack of stable electricity, lack of relevant software, limited access to the Internet, inadequate telecommunication facilities, lack of human skills and knowledge, weak infrastructure, and lack of cost effective and reliable Internet connectivity as technological challenges.

## 6. RECOMMENDATION

Thus, government and schools should invest more on improving the ICT infrastructure to address the ICT related problems of teachers at the schools. Moreover, teachers should be introduced some important ICT skills in their computer course of the degree program that can help them in their study like MS Excel, Windows & file management, use of digital library, Photoshop, discussion forums and Blogs, and SPSS. The ICT should be firmly embedded into the teaching and learning so that the teaching and learning process may be improved with the help of the modern technology.

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