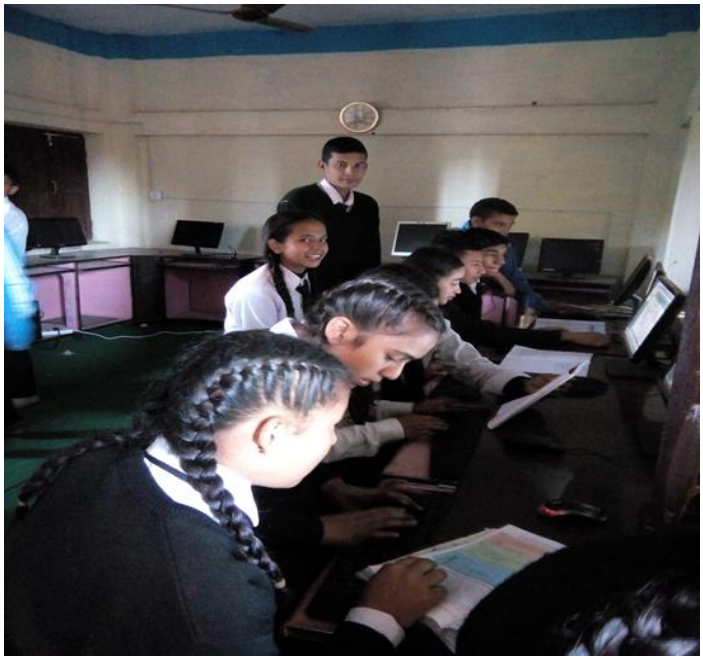
The Existing Situation of Digital Literacy and Use of ICT in Public Secondary Schools

(A Baseline Study)



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I hope the findings from this study will be helpful for the British Council and other stakeholders to develop policies, plans and activities to strengthen ICT skills of teachers in public schools.

Prem Phyak
Team Leader

Executive summary

The overall objective of this study was to collect baseline data about the existing situation of teachers' digital literacy and use of ICT in public secondary schools. The specific objectives of the study were as follows:

- to identify the available digital devices in secondary schools and their use for the classroom purposes.
- to assess teachers' digital literacy skills and motivation for using them for the classroom purposes.
- to identify the reasons for using and not using ICT tools in the classroom and assess the effectiveness of the existing ICT training practices.
- to find out the challenges of implementing the existing ICT trainings and suggest recommendations to improve them.

This study adopted both qualitative and quantitative approaches to collect data from teachers/head teachers, students and ETC trainers. Questionnaire, focus group discussion, interviews, and classroom observation were the methods of data collection. The sample size of the study was 126 teachers, from 42 schools of 14 districts, from seven provinces.

The findings of the study show that all the sample schools have computers and a majority of them have multimedia projectors, laptops and the internet. However, in most schools such resources are available only in a computer lab and they are not used for individual classes. The study shows that very few schools, mostly 'model schools' have ICT facilities in each class. The study shows that a majority of teachers have TVs (89.7%), smartphones (88.9%) and laptops (73.8%) at home and have a 'basic' computer skill (84.1 %). But only a small percentage of teachers (9.5 %) use digital applications (such as email, MS Word, MS Excel, PowerPoint) 'frequently' in teaching while 29.4 percent of teachers have 'never' used such applications for the classroom purposes. Regarding the digital literacy skills, only 4.8 percent of teachers are 'experts' while 2.4 percent of them are 'non-users'.

The data show that mobile phone is the most popular digital device (72.6 percent use it) used in the classroom, followed by laptops (44.8%). However, only 14.3 percent of teachers use such digital devices 'frequently' while 16.7 percent of them use laptops 'twice a week' in the classroom. More strikingly, 76.5 percent of teachers 'rarely' (less than once a month) use digital devices in the classroom. Similarly, a high percentage of teachers (96.0%) used digitial devices to browse YouTube and watch videos, both for personal and teaching purposes, while 89.7 percent of them have used such devices for 'posting pictures on social network' (mostly Facebook) and 'commenting on others' social media pages.'

The teachers, in this study, are aware of the importance of ICT in teaching-learning processes. A significant percentage of the teachers (87.7%) think that ICT tools help them 'explore new resources for teaching'. Yet, the teachers do not use them frequently for the classroom purposes. The teachers, in this study, have pointed out a number of reasons for this. A significant percentage of teachers (64.3%) have said that they do not use ICT in the classroom because their 'schools do not provide digitial devices' and 59.5 percent of them have said that they 'don't know how to use digitial devices' in the classroom effectively.

Overall, only 35.7 percent of teachers, in this study, have received ICT-related training. Regarding the effectiveness of such trainings, only 22.5 percent of teachers said that the ICT trainings were 'very effective' while 44.1 percent of them found such trainings 'moderately

effective'. More strikingly, 33.5 percent of teachers said that the trainings were 'not effective'. For 36.7 percent of teachers, ICT trainings are not effective because 'there is lack of follow-up support' for teachers, and for 33.0 percent such trainings are 'more theory-based'. Similarly, 70 percent of teachers have said that due to 'lack of logistics support from the school' the ICT knowledge and skills have not been translated into practice. Some 56.7 percent of teachers also said that 'lack of high-speed internet' is one of the major factors contributing to non-implementation of ICT in the classroom. Similarly, 53.3 percent of teachers have considered 'lack of motivation' as one of the major factors affecting the implementation of ICT tools in the classroom.

In addition, ETC trainers and teachers pointed out the following major issues in the existing ICT-related professional development programmes:

- Lack of regular support and monitoring to the teachers.
- Unavailability of resource materials and ICT tools in the Nepali language.
- Lack of appropriate infrastructures both in training venues and schools.
- Lack of subject-specific ICT trainers.
- Lack of need-based, practice-oriented and subject-specific ICT curricula.
- Lack of teacher motivation (particularly among experienced teachers) for learning and using digital devices in the classroom.
- Short duration of training, and the repetition of the training contents.
- Lack of incentives and rewards for the teachers who use ICT devices in the classroom.

Based on the findings from the study, the following recommendations are suggested to improve the existing situation of ICT training:

- ICT-training should be based on schools' needs and teachers' prior ICT knowledge.
- ICT-training should be practical and subject-specific. For this, the duration of training should be extended, and teachers should be provided with opportunities to practise ICT skills in classroom, during training programme.
- Teachers need continuous refresher trainings and effective support mechanisms in school.
- Training materials and resources should also be developed in Nepali and other local languages to help teachers build and apply ICT knowledge and skills.
- School-based trainings is necessary to help teachers implement ICT skills in the classroom.
- Schools need adequate ICT infrastructures and technical persons to look after ICT tools in school.
- ICT knowledge and skills should be a key component of teacher hiring policies.

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List of abbreviations

CCGL	Connecting Classrooms through Global Learning
CGAS	Computerized Government Accounting System
CEHRD	Centre for Education and Human Resource Development
ETC	Education Training Center
FGD	Focus Group Discussion
ICT	Information, Communication and Technology
MoEST	Ministry of Education, Science and Technology
MOOC	Massive Open Online Course
PPT	PowerPoints
SSDP	School Sector Development Plan
SSRP	School Sector Reform Plan
TPD	Teacher Professional Development
Wi-Fi	Wireless fidelity

Chapter 1: Introduction

1.1 Background

Connecting Classrooms through Global Learning (CCGL) is British Council's project implemented through a memorandum of understanding with the Ministry of Education, Science and Technology (MoEST) in Nepal. The project "supports teachers and school leaders to improve teaching [by] giving students the knowledge, skills and attitudes they need to make a positive contribution now and in the future." In addition, the project aims to help students develop 'connections with other schools' and provide teachers with support for professional development. In Nepal, one of the focus areas of the project is to support public school teachers in developing their capacity for integrating digital devices in teaching-learning processes. As agreed between British Council Nepal and Centre for Education and Human Resource Development (CEHRD), the project is jointly implemented, for 3 years (2019-2021), in 21 districts across the country.

Although the recent national education policies, national curriculum framework and teacher professional development (TPD) framework focus on ICT integration in teaching-learning process, there is lack of baseline data about teachers' ICT knowledge and skills, ICT infrastructures in schools, ICT training activities and their implementation, and challenges of ICT integration in the classroom. Against this backdrop, this baseline study was carried out to identify the secondary level teachers' existing knowledge, skills and practices of using digital technology among public secondary level teachers. Before discussing the method and findings of the study, ICT policies and plans in education have been reviewed.

1.2 ICT in Nepal's education policies

ICT has remained at the center of education policies and reform discourses in Nepal. The National Curriculum Framework (NCF), first, introduced ICT both as a subject and a tool for teaching (MoEST, 2013). In its NCF, MoEST (2007) states that "in the context of globalization, it is essential to incorporate ICT education in school curricula" (p. 36). With the goal of equipping students with ICT knowledge and skills, NCF focuses on the three major areas: a) communicating and sharing information related to school administration; b) using ICT as a tool for teaching; and c) teaching ICT as a subject. NCF further states that in order to maximize the use of ICT, it is important to strengthen teachers' capacities in using digital devices for pedagogical purposes.

1.2.1 SSRP and SSDP

School Sector Reform Plan (SSRP-2009-2015) had introduced 'ICT-assisted teaching/learning' as one of the major priority areas in Nepal's educational reform agendas. The Plan stated that 'the use of ICT offers new and cost-effective avenues for capacity development" of teachers and schools. The Plan also stated that "much more needs to be done to fully understand and develop a strategy on how the Ministry can benefit from the opportunities offered by modern ICT" (MoEST, 2009, p. 44).

In the School Sector Development Plan (SSDP), the government has given more emphasis on creating 'an ICT enabling environment' (p. 63). While recognizing the importance of ICT in education, SSDP stated that "ICT facilities and opportunities will increasingly be made available to enable learners to engage with the rapidly changing technological world" (MoEST,

2016, p. 33). Highlighting the need for the application of ICT tools in education, the Ministry of Education (MoEST, 2016), in its SSDP document, stated:

> A long-term goal of education in Nepal is to provide citizens with the knowledge and skills they need to work for the development of the country and to integrate Nepal into the global community. To achieve this goal, the Government of Nepal is working to ensure access to quality basic education for all and to develop work and job market relevant education. With the expanding role of information and communication technology (ICT) in all areas of life, MoEST considers the use of and knowledge of ICT essential. (p. 68)

MoEST further states that the government aims to "provide students with ICT skills and use ICT as an important tool to improve classroom delivery; increase access to learning materials; and improve the effectiveness and efficiency of educational governance and management" (p. 68). More specifically, SSDP has identified the following objectives to increase and strengthen the use of ICT in education:

- to increase the appropriate use of ICT to improve classroom delivery by establishing an *ICT enabling learning environment* (including institutional and professional capacity of managers and implementers), based on need and context.
- to ensure students' and teachers' access to learning materials and supporting *professional development packages* and guidelines to ensure adequate capacity for incorporating these in the curriculum.
- to create an environment to use ICT for the improvement and increased effectiveness and efficiency of overall *educational governance and management*. (MoEST, 2016, p. 69)

Furthermore, SSDP has suggested multiple strategies to achieve these ICT-related goals. Such strategies include various activities covering infrastructure development, teacher training and material development. The strategies to strengthen the use of ICT in education, as specified in SSDP, are as follows:

a) Establish an *ICT enabling learning environment* by including ICT prerequisites as enabling conditions in secondary schools and the provision of ICT infrastructure and teaching-learning materials for pedagogy.
b) Establish *ICT learning centers in model schools* with enhanced teaching-learning processes.
c) Incorporate ICT in the secondary curriculum through the development of *professional development packages* and guidelines.
d) Develop *need-based educational materials* for children with visual and hearing impairment and support computer education in secondary deaf schools.
e) Develop *portals and websites* including e-libraries.
f) *Train teachers* on the use of ICT in teaching and learning.
g) Develop *online and offline training courses* and materials (focusing on science, math and English).
h) Prepare *ICT teaching and learning materials*, initially for science, math and English.
i) Develop and distribute *subject-wise e-learning resources* for students and teachers and establish a repository of them.
j) Strengthen *school governance and management* through a strengthened EMIS, including the enhanced use of ICT to improve the EMIS and implement a unified

> accounting software, the Computerized Government Accounting System (CGAS) in MoEST. (MOE, 2016, p. 69)

The implementation of these activities needs a rigorous and systematic plan to strengthen capacity of both institution and teachers. In this regard, MoEST states that there is "the need for strengthening institutional capacity, skills and the awareness of teachers and education managers to maximize the impact of introducing ICT in education" (MoEST, 2016, p. 63). Policies and plans cannot be implemented without strengthening teachers' capacity to use ICT tools in the classroom. For this reason, SSDP has suggested that the existing TPD curricula should focus on ICT training and support for teachers.

1.2.2 ICT in Education Master Plan (2013-2019)

MoEST has developed a master plan to "expand access to and enhance quality of education, particularly using ICT as a tool for instruction" (MoEST, 2013, p. 6). The plan has a vision to "ensure extensive use of ICT in education sector and contribute for access to and quality of education for all" (MoEST, 2013, p. 13) and has aimed at narrowing the digital gap. The plan has four major aims: a) to expand equitable access to education; b) to enhance the quality of education; c) to reduce the digital divide; and d) to improve the service delivery system in education. The plan has specified its activities within the following four components:

a) ICT infrastructure development: This component includes the development of ICT equipment, internet connectivity, multimedia classroom, virtual data center, and educational resource sharing platform.
b) Human resource development: This component focuses on ICT-related capacity building of teachers, trainers, decorators, decision-makers, and managers.
c) Digital learning materials development: This component includes the development of ICT-based curricula for students and teachers, and ICT-related contents for teaching.
d) Enhancement of education system: This component of the plan includes the activities to strengthen governance, transparency, effectiveness and efficiency in education through the use of ICT.

1.2.3 National Education Policy (2019)

The government has recently approved a new national education policy. The new policy includes ICT-integrated teaching-learning process as one of the key national priorities (Policy 10.48). The policy states that ICT will be emphasized as an integral component of education system, and infrastructures will be developed to make teaching-learning processes ICT-friendly. In order to achieve these goals, the policy specifies the following activities:

a. ICT infrastructures will be developed and a high-speed internet service is expanded in schools.
b. E-libraries, virtual labs, virtual classes, online tests, e-portfolios, ICT-based lesson plans, subject-specific teaching materials, podcast, webinar, educast, makerspace and other teaching-learning related apps will be developed and implemented.
c. Digital technologies will be developed for effective teaching, supervision and evaluation.
d. *Mentor Teacher* policy will be developed to support teachers in using ICT-tools in the classroom.
e. ICT tools will be used as a medium of teaching from the early grades.
f. Appropriate and safe environment will be created to use online-based materials in all schools.

g. Teachers' capacity will be strengthened; infrastructures will be developed; and appropriate environment will be created for integrating ICT in teaching-learning processes (MoEST, 2019, pp. 63-64).

1.2.4 Teacher Professional Development and ICT training

Teachers' competency is key to integrating ICT in teaching-learning process. In order to enable teachers to use ICT tools in teaching-learning activities, MoEST has prepared a *Teacher Competency Framework* for professional development. ICT-based competency is one of the major competencies in the framework. The other competencies include the knowledge about: *contents, pedagogies, learners, learning/classroom environments, communication and collaboration tools, continuous learning and professional development, and legal bases and professional conduct*. The goal of ICT-based competency framework was to "equip all teachers with the skills, expertise and competence to harness technology purposefully, meaningfully and to transform classroom to open interactive learning." The framework also focuses on enabling teachers to use ICT for effective teaching and learning and identifies the following competencies for using ICT in education:

- Knowledge and skill of ICT.
- Selection and use of ICT integrated teaching learning strategies.
- Development and adaption of digital learning materials.
- Promotion of effective communication and collaboration skills for learning.
- Assessment of learning and providing feedback.
- Awareness of IT policies and contemporary digital cultures and follow them in professional practices.

1.3 Objectives of the Study

The overall objective of this study was to collect baseline data related to the existing situation of digital infrastructures, devices and literacy in public secondary schools. The specific objectives of the study were as follows:

- To identify the existing situation of ICT infrastructures and access to digital devices in public secondary schools.
- To investigate the types and use of digital devices and applications among the public secondary school teachers.
- To assess teachers' digital literacy skills.
- To explore teachers' awareness and motivation to use ICT tools in the classroom.
- To find out the purposes of using digital devices in the classroom.
- To identify the reasons for using and not using ICT tools in the classroom.
- To assess the effectiveness and gaps of the existing ICT training packages available to teachers.
- To find out the challenges of implementing ICT knowledge and skills in the classroom.
- To provide suggestions for improvement of the existing ICT training.

1.4 The Study Methods and Tools

This study has adopted both qualitative and quantitative approaches to collect data from teachers/head teachers, students and ETC trainers. The specific tools and methods of the study were as follows:

1.4.1 Questionnaire**:** A set of questionnaires was developed to collect information regarding the existing situation of ICT infrastructures and teachers' knowledge and awareness. The questionnaire covered the following thematic areas:

a. *Knowledge/Awareness/Skills*: The questions related to this area covered teachers' knowledge and awareness of digital devices and their use. More specifically, the questions under this area included teachers' knowledge, awareness and skills in using ICT tools in the classroom. Teachers' ICT skills were assessed by using the British Council's skills assessment tool (Annex 1). The sample teachers were asked to perform a set of tasks related office programs (Word, Excel, PowerPoint etc.) and search engines (Google etc.). The questionnaire also included the questions related to teachers' motivation and challenges regarding the use of ICT tools in the classroom.
b. *Availability of ICT tools*: The questionnaire included the questions regarding the availability of ICT resources, both at home and in school, for teachers. Such resources included the Internet, computers, multimedia projectors and digital applications for teaching-learning purposes.
c. *Use of ICT tools:* The questionnaire also included the questions related to the type, frequency and the use of digital devices for teaching-learning and other personal purposes. The teachers were asked the questions regarding purposes and reasons for the use of ICT tools in the classroom.
d. *ICT training and its effectiveness:* The teachers were also asked the questions related to existing ICT training policies and practices and their effectiveness in the classroom.
e. *Challenges of using ICT*: The teachers were also asked the questions related to the challenges of using ICT tools in the classroom. The questions for this area covered the status of institutional support, and the availability of ICT resources.
f. *Recommendations*: The teachers were also asked to recommend the ideas to increase the meaningful use of ICT tools in the classroom.

1.4.2 Focus group discussion: One focus group discussion (FGD) each with the sample teachers (including head teachers) and students was organized in each school to collect in-depth qualitative information regarding the knowledge, use, motivation, availability, and the types and challenges in using ICT tools. In addition, effectiveness of the existing ICT training was also discussed in FGDs. All FGDs were audio-recorded, transcribed and analysed to draw key themes. The discussions with the students were focused on the use of ICT by their teachers.

1.4.3 Interview: One ETC trainer from each province was interviewed to collect in-depth information regarding the existing ICT training for teachers. The discussion was focused on the effectiveness, challenges and the ways forward in the existing ICT training provided by ETCs.

1.4.4 Classroom observation**:** One class in each sample school was observed to document the implementation or lack of implementation of ICT tools in the classroom. The data from the classroom were collected in the form of field notes. The classes of the teachers, who permitted to audio-record, were also audio-recorded.

1.4.5 Photographs***:*** The pictures of the classroom and other school spaces were also captured to collect rich data.

1.5 Sample and Sampling Procedure

A total of 126 teachers from 42 schools of 14 districts were selected for the study. A purposive sampling approach was adopted to select schools, teachers, and students from the sample districts. The sample districts and local government units for the study were as follows:

Province 1:	Sangkhuwashabha (Khandabari Municipality) and Morang (Biratnagar Metropolitan city)
Province 2:	Mahottari (Bardibas Municipality) and Parsa (Birgunj Metropolitan City)
Province 3:	Ramechap (Manthali Municipality) and Kavrepalanchok (Dhulikhel Municipality)
Gandaki (4):	Kaski (Pokhara Municipality) and Parbat (Kusma Municipality)
Province 5:	Dang (Ghorahi Municipality) and Rolpa (Rolpa Municipality)
Karnali (6):	Surkhet (Birendranagar Municipality) and Dailekh (Narayan Municipality)
Sudurpaschim (7):	Kailali (Dhanagadi Sub-Metropolitan city) and Dadeldhura (Amargadhi Municipality)

Schools were selected in consultation with the local government and BC. The chiefs of the education unit in each municipality were requested to suggest one school each with high, mid and low ICT facilities. After selecting the schools, head teachers were consulted to select three teachers and students. The teachers teaching English, Nepali, and Math/Science subjects were selected as sample of the study. The following table shows the personal use of digital devices by different subject teachers:

Subject-wise use of digital devices

	Subjects			
Digital devices	*English*	*Nepali*	*Science*	*Math*
Computer (desktop)	37.5	25.0	26.7	42.3
Laptop	79.2	80.0	53.3	92.3
TV (at home)	79.2	100.0	93.3	88.5
Mobile (smart)	87.5	90.0	86.7	92.3
Mobile (regular)	45.8	35.0	33.3	26.9
Internet (regular/Wi-Fi)	62.5	60.0	66.7	69.2
Internet (data)	62.5	55.0	46.7	73.1
Microphone	4.2	10.0	13.3	7.7
Radio	37.5	35.0	46.7	30.8
Tape-recorder	20.8	15.0	6.7	15.4
Digital camera	41.7	55.0	26.7	26.9
Other (please specify)	12.5	0.0	6.7	11.5

At least one female teacher from each school is included in the study. However, in some sample schools female secondary level teachers were not available. In such cases, only male teachers were the participants of the study. The list of teachers is given in appendix 7.

One teacher each from Grade 9, 10 and 11 were selected to respond to questionnaire and to participate in focus group discussions and skill assessment tasks. In the schools, without Grade 11 and 12, one teacher was selected from Grade 8. In addition, one class of one of the three sample teachers was observed to understand how the teachers used or did not use ICT tools in the classroom.

1.6 Data Analysis and Interpretation Procedure

Quantitative data from questionnaire were entered an SPSS software. Using the software, the data were analyzed and presented in graphs, tables and bars, as per the objectives of the study. Qualitative data, from focus group discussions, interviews and classroom observations, were transcribed and analyzed by drawing necessary themes. Interview excerpts, key ideas from focus group discussions and important evidences from the classroom observation were used as the data to support the ideas drawn from qualitative data.

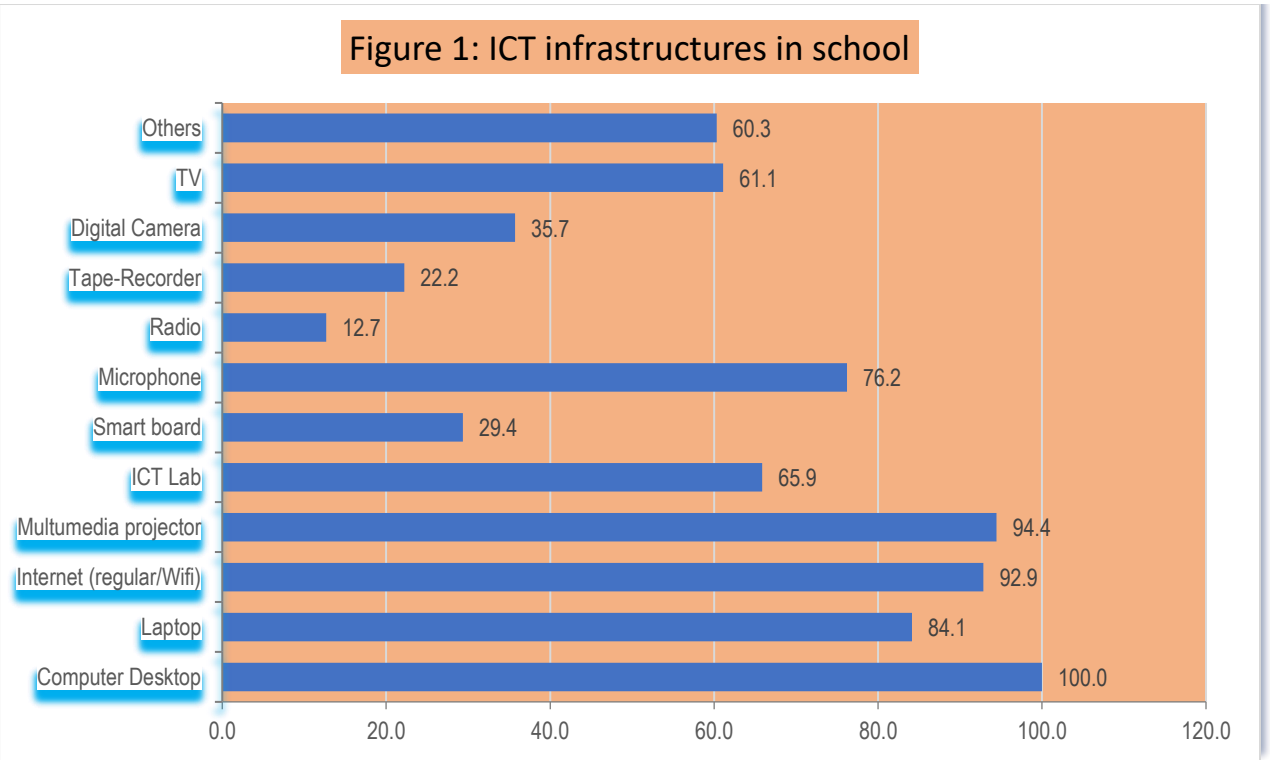
Chapter 2: Existing Situation of Digital Devices and ICT Tools

This chapter of the report discusses the existing situation of schools in terms of the availability of digital devices and their use in the classroom. The chapter also presents the major findings related to teacher's self-assessment of their digital literacy skills.

2.1 ICT infrastructure in schools

One of the major objectives of this study was to identify the existing situation of digital devices in schools and digital literacy skills of teachers. The study shows that all 42 sample schools from seven provinces have desktop computers (100%) in working condition and a majority of them have multimedia projectors (94.4%), with access to the Internet (92.9%). Similarly, a majority of sample schools have laptop (84.1%), microphones (76.2%), and labs (65.9%). Likewise, 61.1 percent of total schools have TVs and 35.7 percent of them have digital cameras. But very few schools have smart boards (29.4%), tape-recorders (22.2%) and radios (12.7%).

Figure 1: ICT infrastructures in school



Although the quantitative data show that most sample schools have digital devices, they are not sufficient for the classroom purposes. Most schools have a computer lab but they do not have computers for each classroom. Regarding this, the head teacher from one of the sample schools in Province 3 said that "we have a computer lab, but it is used only for computer subject. Only the assigned 'computer teacher' knows how to use the lab. Other teachers rarely use the computer lab." Another head teacher from one of the schools in Province 1 stated that "We have around 10 computers in the school, but only a few are working. All of them are stored in one room. Very few computers are in the working sate, but they are unused." Similarly, one of the head teachers from Province 5 shared the existing situation of ICT in his school as follows:

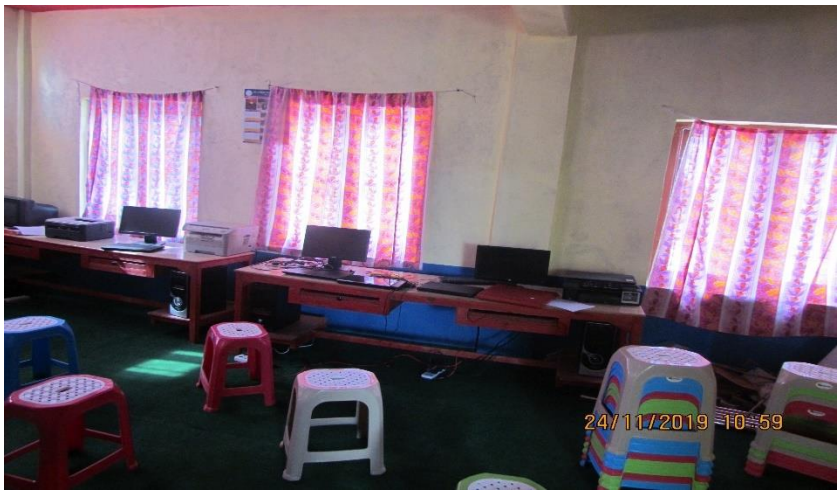
> We have one computer lab with 30 computers. Our students use it 2-3 times a week for computer practice. But it is not used by all teachers. Very few teachers have computer literacy skills. So digital devices are not used in all classes. We do not have enough devices as well. […] we have only one multimedia projector. Very few teachers use it to show movies and give PowerPoint presentations. We do not have a smooth and high-speed internet facility here.

Another head teacher from Province 3 further says "we do not have ICT infrastructures such as Internet and computers. We have computers for official purposes only. We have some computers but they are not working. We need at least one technical person to repair our devices." Although a majority of schools do not have sufficient digital infrastructures, there are some schools with sufficient digital infrastructures. For example, one head teacher from an urban and model school of Province 1 described the existing situation of ICT infrastructure as follows:

> We have a well-equipped lab. Multimedia projectors are fixed in each class and Wi-Fi internet facilities are available to the teachers and students.

The schools with good ICT infrastructures are mostly Model Schools. Such schools have more digital devices and they receive more ICT support, from the government, than other schools. In this regard, the head teacher from one of the model schools in Dhangadi said "Our school is a model school. The government is supporting us to develop ICT-friendly environment." He further said that "We have ten smart boards and installed CCTV cameras and e-attendance machines. We have a good computer lab, and about 40 percent of teachers have basic digital literacy skills." In FGD, other teachers also agreed that they are receiving regular ICT-related supports to develop their digital literacy. One teacher, for example, said "as a model school, we have a good ICT infrastructure. Most teachers use at least multimedia projectors and PowerPoints for teaching."

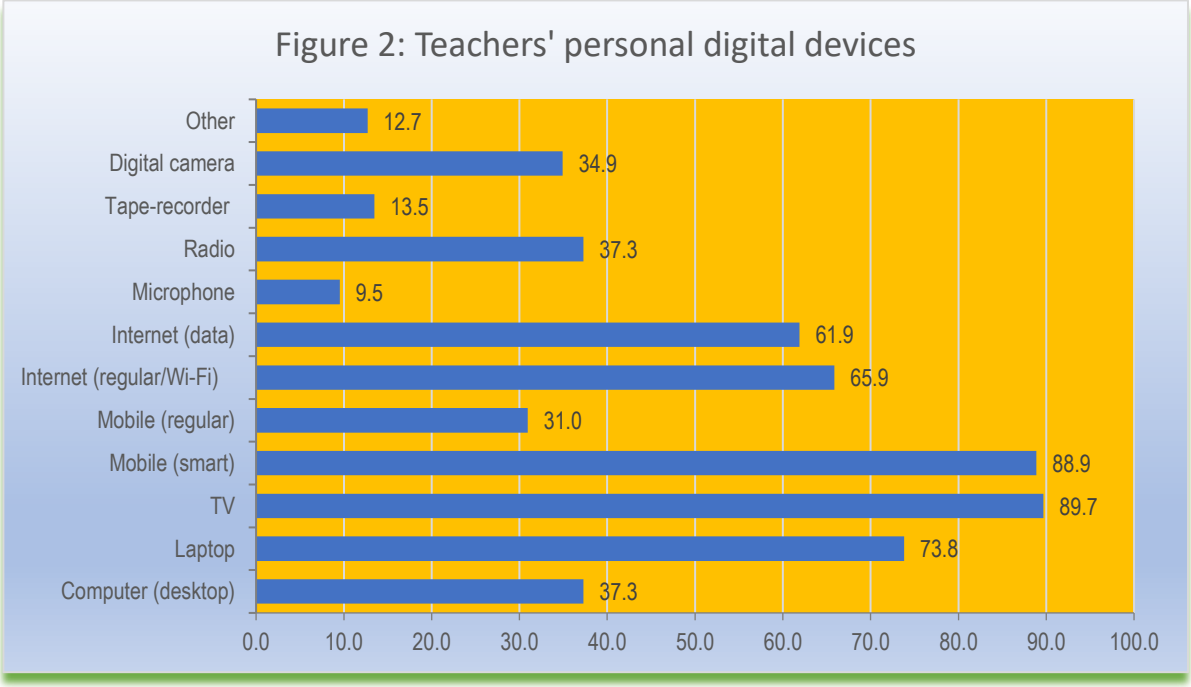
However, the teachers from model schools said that they need further support on a regular basis. For example, one teacher from Province 3 (Bagmati) said, "we've good infrastructures. But we still need support to integrate ICT tools and digital devices in our teaching. Very few teachers know about using ICT in teaching." Another teacher from Province 1 said "We've basic ICT literacy. So, we don't use ICT tools effectively. We use only PowerPoints and videos. There are many new tools which we don't know."



Computer lab of Rastriya Higher Secondary School, Rolpa

2.2 Teachers' personal digital devices

The study shows that a majority of teachers have ICT devices such as smartphones and laptops. As seen in Figure 2, majority of them have TVs (89.7%), smartphones (88.9%) and laptops (73.8%). The data also show that a significant percentage of teachers have access to the internet with WiFi (65.9%) and mobile data (61.9%). However, the number of teachers with a desktop computer (37.3%), radio (37.3%) and digital camera (34.9%) is relatively low. Similarly, very few teachers use tape-recorders (13.5%) and microphones (9.5%).

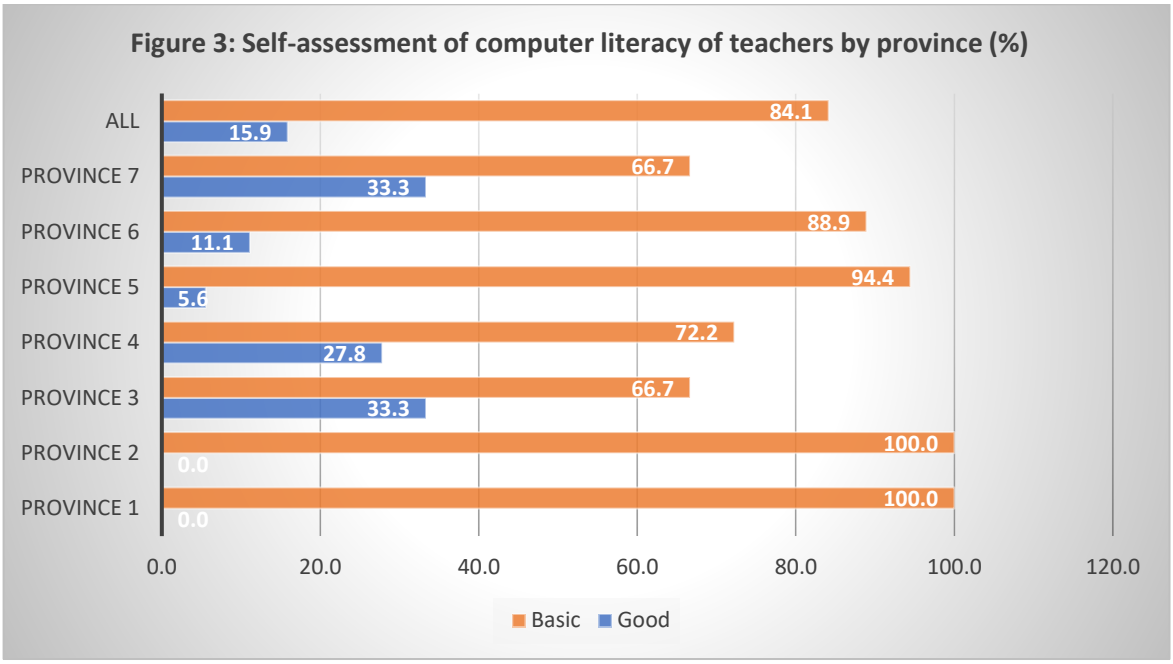


2.3 Self-assessment of teachers' computer literacy

Digital literacy is necessary to use ICT tools for the classroom purposes. The teachers in this study were asked to self-assess their computer literacy. They were given three categories; 'good', 'basic' and 'non-user'[1] (see Annex 6). The data show that all the respondent teachers have rated themselves to have computer skills. Out of the total teachers involved in the self-assessment tasks, a large majority of teachers (84.1 %) have reported to have 'basic' computer literacy skills while only 15.9 percent of them have reported to have 'good' at computer literacy. The data show that all the respondent teachers in Province 1 and Province 2 have reported to have 'basic' computer literacy skills. But no teachers reported themselves as computer 'non-users', and none of them reported themselves having 'good' computer literacy skills too in both provinces. In Province 3 and Province 7, however, some teachers have claimed that they have 'good' computer operating skills (33.3%). In these provinces, 66.7% of teachers have 'basic' computer skills. A similar situation exists in Province 4 where 72.2 percent of teachers have claimed to have 'basic' computer literacy skills while 27.8 percent of them have reported to have 'good' computer skills. Likewise, 94.4 percent of respondent teachers have rated themselves to have 'basic' computer skills while only 5.6 percent of them have claimed to have 'good' computer skills in Province 5. In Province 6, 88.9 percent of teachers have rated

[1] [Note: Good—can turn on/off computer, use office applications (Word, Excel PowerPoints) and the internet, search and download online materials, print documents from the computer, and use communication tools (Skype, email); Basic—can turn on/off computer and use office applications and Non-user—never used computer personally.]

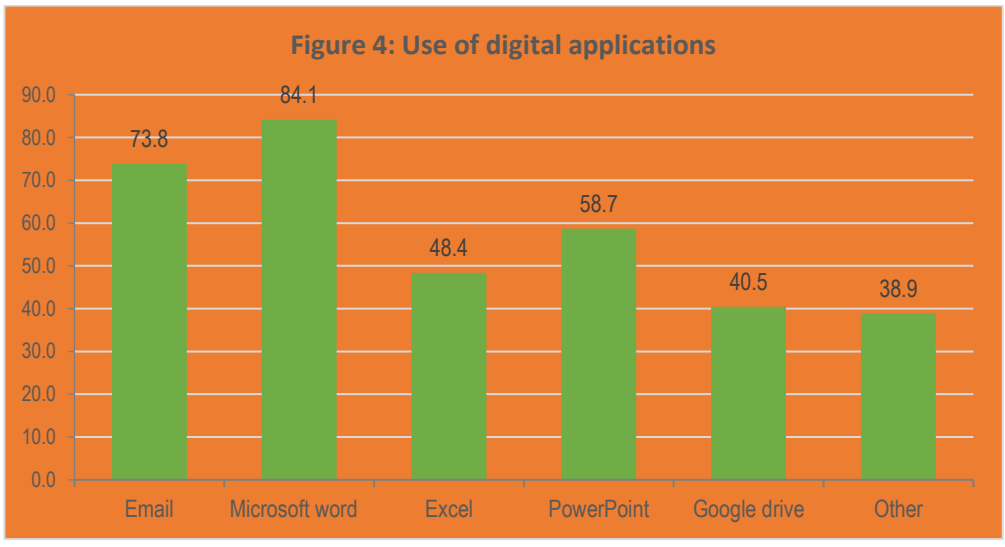
themselves to have 'basic' computer literacy skills and only 11.1 percent of them have informed that they possess 'good' computer literacy skills.



Overall, there are no computer 'non-user' teachers across the schools in this study. However, the number of teachers having a 'good' computer literacy skill is very low (only 15.9%), with a huge majority (84.1%) having 'basic' computer literacy skills. The teachers with 'basic' computer literacy skills can turn on/off computer and use office applications, but they do not know how to use internet.

2.4 Teachers' use of digital applications

Teachers' self-assessment shows that they can use multiple digital applications such as email, MS word, MS excel, PowerPoint, and Google Drive. As seen in Figure 4, a large majority of teachers (84.1%) can use MS Word while 73.8 percent of them can use email. The data show that only 48.4 percent of respondent teachers use MS Excel while 40.5 percent of them use Google Drive. Likewise, 58.7 percent of them can use PowerPoint. Some teachers (38.9%) can use 'other' applications such as Viber, WhatsApp and Messenger.



The teachers from all provinces have shared how they used digital tools in the classroom. One teacher from Province 5, for example, shares:

> […] For example, we have a lesson on 'transformation', I've taught the topic by showing figures that show how one shape can be transformed to another. We got this idea from a 2-day ICT training.

Another teacher from Province 2 shared similar experiences:

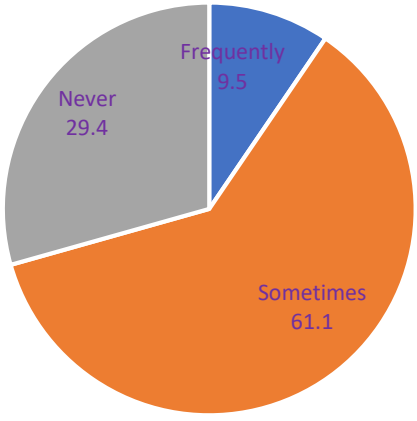
> We teach stories by using ICT in English. I show pictures to my students to teach stories. Students become active, and I become passive, when I teach by using ICT. For the dictionary purpose, I use a mobile phone. I use mobile to teach poems as well. I teach grammar by using authentic materials from the internet. So, ICT makes our pedagogy more updated.

Overall, a majority of teachers are able to use basic computer skills such as Microsoft Word and email. Some teachers already have experiences of integrating ICT in teaching. However, there is need of a continuous upskilling support for all teachers in varied degrees.

2.5 Use of digital applications for classroom purposes

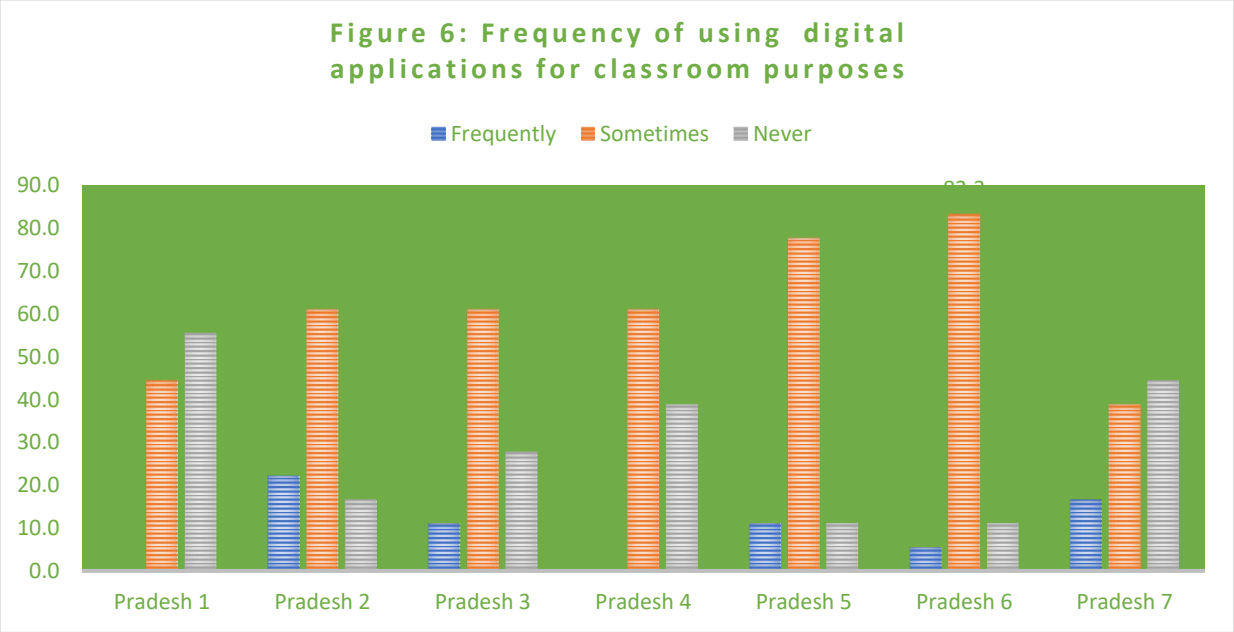
The data show that the use of above-mentioned digital applications in the classroom is not quite frequent. As Figure 5 shows, only a small percentage of (9.5 %) the teachers use digital applications 'frequently' (teachers use digital applications at least 4 days a week). A majority of teachers (61.1%) use digital applications 'sometimes' (at least twice a week). More strikingly, a significant number of teachers (29.4%) have 'never' used digital applications for the classroom purposes.

Figure 5: Frequency of using digitial applications for the classroom purposes



The province-wise data show that no respondent teachers from Province 1 and Province 2 use digital devices 'frequently' for teaching-learning purposes. A large majority (83.3%) of teachers use digital applications 'sometimes' in the classroom in Province 6 while 77.8 percent of them do so in Province 5. The number of teachers using digital applications 'sometimes' is a bit low in other provinces. For instance, around 61 percent of teachers have used digital applications 'sometimes' in the classroom in Province 2, 3 and 4. However, only 44.4 percent and 38.9 percent of them have used digital applications 'sometimes' for the classroom purposes in Province 1 and 7, respectively. One of the most striking findings is that the percentage of teachers 'never' using digital applications for the classroom purposes is significant. As data

show, 55.6 and 44.4 percent of teachers have 'never' used digital applications for the classroom purposes in Province 1 and Province 7, respectively. Similarly, 38.9 and 27.8 percent of teachers in Province 4 and Province 3, respectively, have 'never' used digital applications in the classroom. The percentage of teachers who have 'never' used digital devices in the classroom is 16.7, 11.1 and 11.1 in Province 2, 5 and 6, respectively.



There are a few reasons for not using digital applications in the classroom. In a focus group discussion, one of the teachers in Karnali Province has said "We don't have WiFi to show videos to my students. We have only one projector in school. It's time consuming to bring and fix the projector in class. So, I don't use digital applications. But I would like to use them in my class." Another teacher from Gandaki Province has said: "I don't feel confident to use digital tools. If they are used every day in teaching we develop confidence. But I don't have to use digital applications to teach my courses. So, I don't put efforts to use digital applications, if I am not required." Some teachers also said there is lack of 'incentive' and 'support' for them to implement digital applications in the classroom. Likewise, a head teacher from Province 1 said:

> Most teachers use ICT in teaching, but not every day. They use PPT slides. Use Web resources such as pictures and videos. Some teachers do not use ICT because of their unfamiliarity and lack of skills with ICT use. They participated in ICT trainings, but could not grasp knowledge and skills. Most teachers who do not use ICT are old. They think that learning ICT is difficult for them.

The students were also asked to share whether they can use digital devices in the classroom. The students from all seven provinces have said that they are 'not allowed to use digital devices such as mobile phones' in the classroom. One student from Province 4 (Gandaki) said that "Our teachers and parents think that we see Facebook only in our mobile phone. They think that we are not paying attention to our study." Another student from Province 3 said "Only teachers can use Wi-Fi. We aren't allowed to use the internet. The digital facilities are available only for teachers." In this regard, one student from Province 6 has shared his experiences as follows:

> I didn't see [the use of ICT] our teachers using digital devices in our class. It was used last year. We don't have Wi-Fi in our class so searching learning materials is impossible

> for students. If we had Wi-Fi we could also use our phones to download the relevant materials. We can use a mobile phone to watch videos related to our lessons. But it is not possible in our classroom.

Regarding the use of ICT in the classroom, there is a common opinion among the students of all provinces that their teachers do not use ICT tools 'frequently' in the classroom. In focus group discussions, most students said that they have learned basic computer skills in their school's computer lab. However, they said that very few teachers use ICT tools frequently in their class. For example, students from Province 1 (Biratnagar) said:

> Our English and Social [Studies] teacher teaches by using his own laptop and a multimedia projector. He uses pictures and videos in his lessons. Videos are helpful for to learn the lessons easily. He also encourages us to do PowerPoint presentations. […] We have searched information related to our national leaders from various websites and learned about historical events. Our teacher also shows some films and asks us to listen to the videos of English conversations from the internet to improve our English.

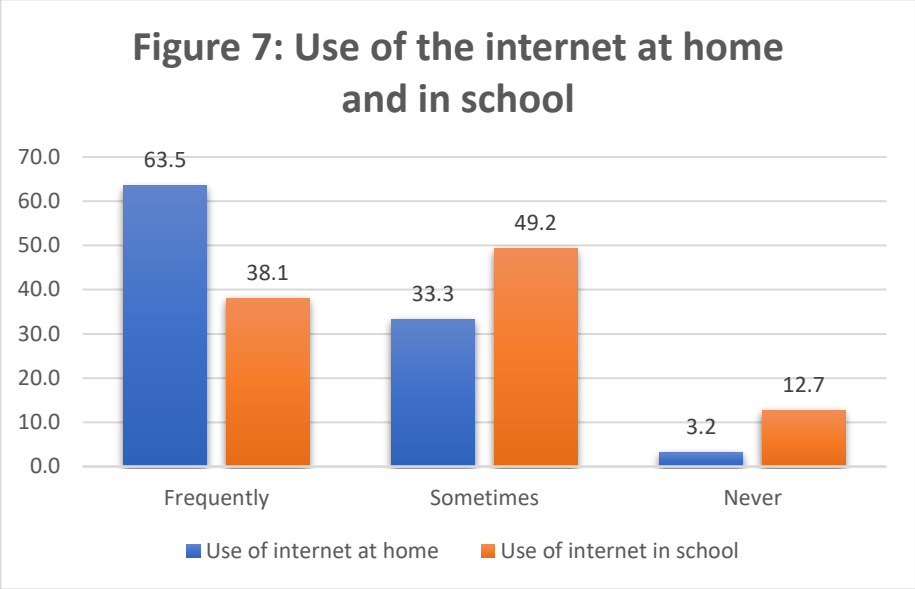
While the use of ICT in the classroom motivates students to research and learn about the topics of lessons effectively, the data suggest that the frequency ICT use in the classroom is not much encouraging and significant. However, a few teachers have initiated ICT-integrated teaching, mostly with their personal efforts. During FGDs, teachers have said that there is need of 'a continuous support' for all teachers in order to make ICT 'a common pedagogical tool'. On the other hand, as students' self-learning approach through ICT, particularly by using mobile phones, is not much appreciated in schools, there is need of encouraging students to use ICT tools facilities such as mobile phone and the internet as a self-learning tool in order to broaden their knowledge and understanding about the topics of discussions in class.

A teacher in Dang uses a laptop in his class

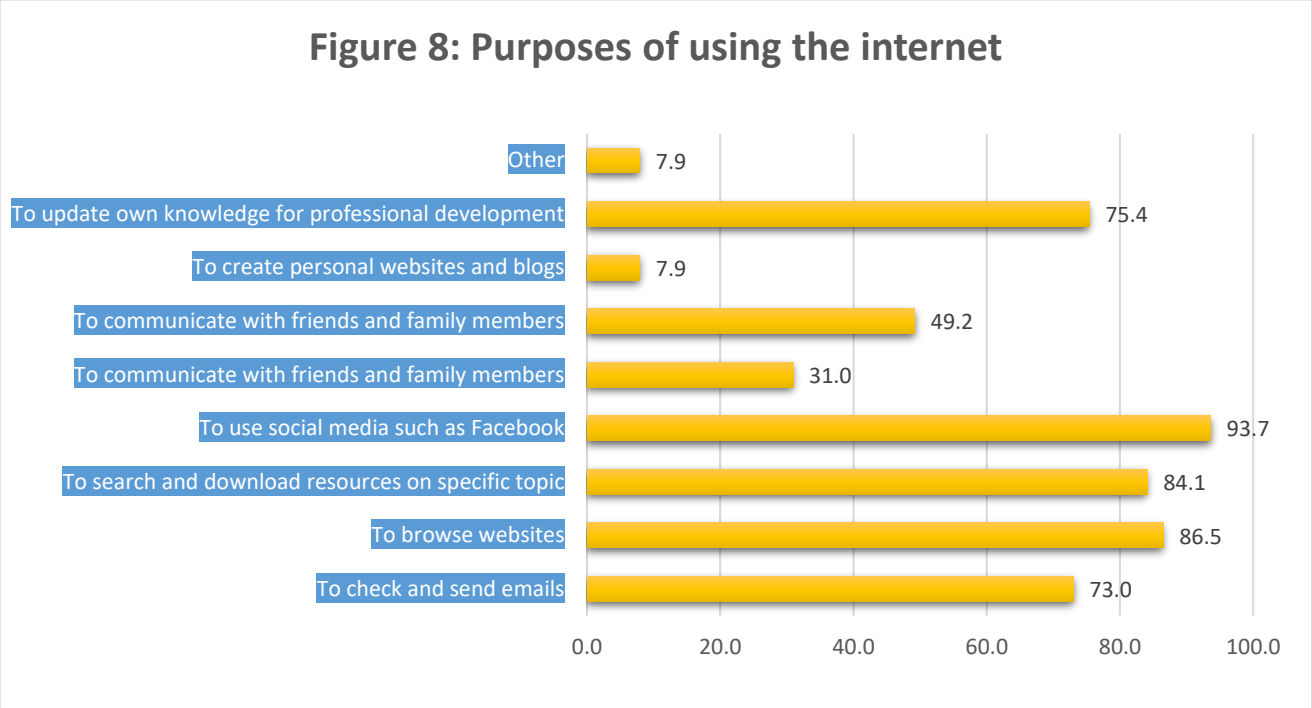
2.6 Use of the internet

Access to the internet is key to the use of digital devices and, in this study, a majority of teachers were found using the internet. The results show that most of the teachers use the internet 'frequently' (63.5%) at home while only 38.1 percent of them do so in school. Similarly, 49.2 percent of them use the internet 'sometimes' in school and 33.3 percent of them use

'sometime' at home. The data also show that some teachers have never used the internet at home (3.2%) and in school (12.7%).

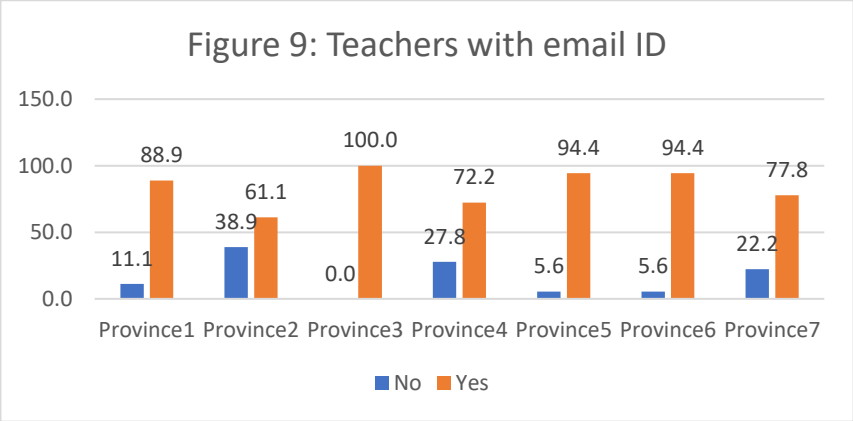


There are multiple purposes of using the internet (see Figure 8). A majority of teachers (93.7%) use the internet to use social media such as Facebook whereas 86.5 and 84.1 percent of them use it for browsing websites and searching and downloading resources on specific topics. Similarly, 75.4 of them use the internet to update their own knowledge for professional development while 73.0 percent of them use it to check and send emails. While 49.2 percent of teachers use the internet to communicate with their friends and family members using Viber, 31.0 percent of them use it to communicate with friends and family members on Skype. Very few teachers (7.9) use the internet to create personal websites and blogs. These results suggest that teachers take the internet as an essential tool for communication and updating knowledge in their subject areas. While the use of the internet is generally frequent for using social media, there should be a continuous support for them to use the internet-based resources in the classroom.

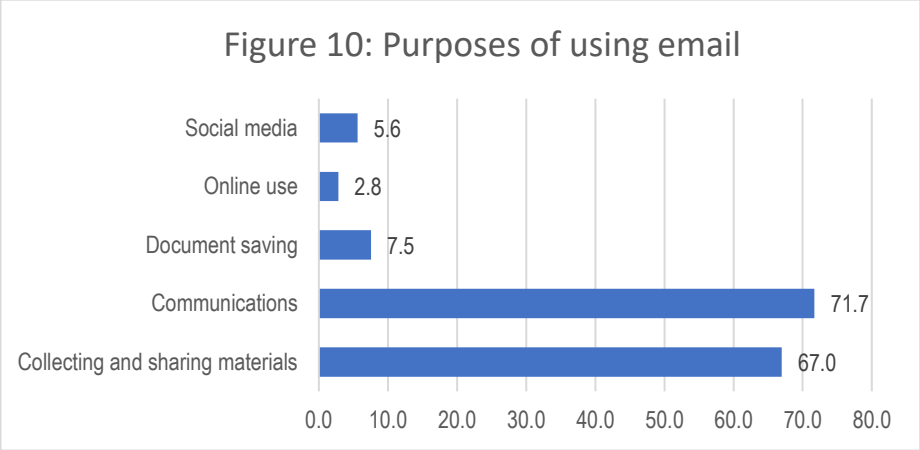


2.7 Teachers with email ID and the purposes of using email

As an essential means of communication, a large majority of teachers are found using email, though there is a substantial variation in number across seven provinces. The data show that all respondent teachers in Province 3 have emails while 94.4 percent of them have emails in both Province 5 and 6. In Province 1, 7 and 4, only 88.9, 77.8 and 72.2percent of teachers, respectively, have an email ID. In Province 2, only 61.1 percent of teachers have emails. This result suggests that teachers in Province 2, in particular, need support for creating and using email.

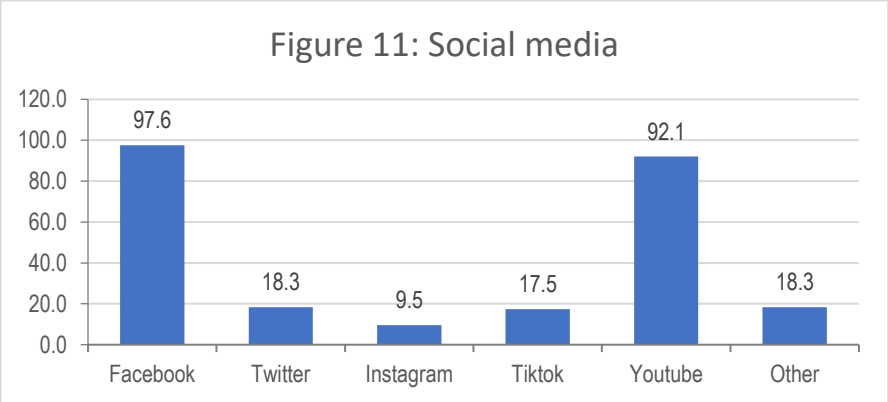


The data show (see Figure 10) that teachers use email for five different purposes. Most teachers (71.7%) have said that they use email to ‘communicate’ with their colleagues, family members and parents. A significant number of teachers (67%) have said they use email to ‘collect and share materials’ related to their teaching. Similarly, some respondent teachers also said they use email to ‘save documents’ (7.5%) and use social media sites such as Facebook. A few teachers also said that they use email for other ‘online purposes’ such as opening bank accounts.

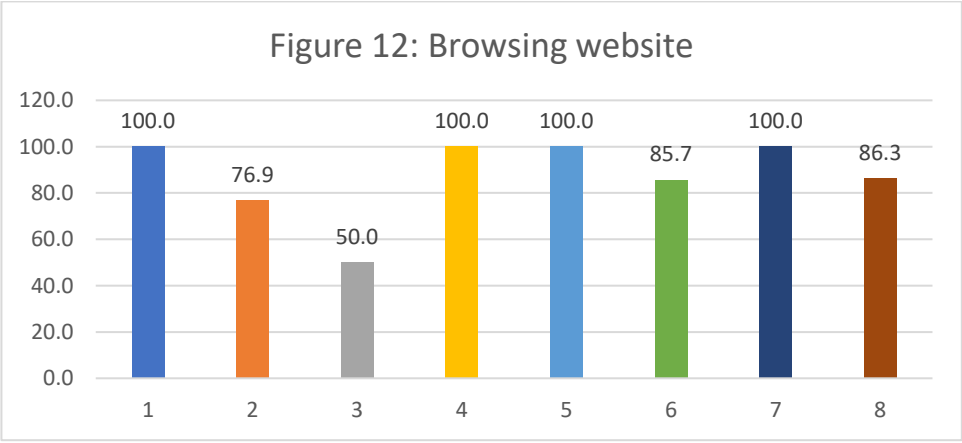


2.8 Use of social media and websites

The respondent teachers also use different social media, mostly Facebook and YouTube. As seen in Figure 11, a large majority of teachers use Facebook (97.6%) and YouTube (92.1%). Some teachers also use Twitter (18.3%), TikTok (17.5%) and other social media such as WhatsApp and Viber (18.3%). Some teachers (9.5%) also use Instagram. As a vast majority of teachers were found using Facebook and YouTube, they are to be trained using these social media for the classroom purposes.

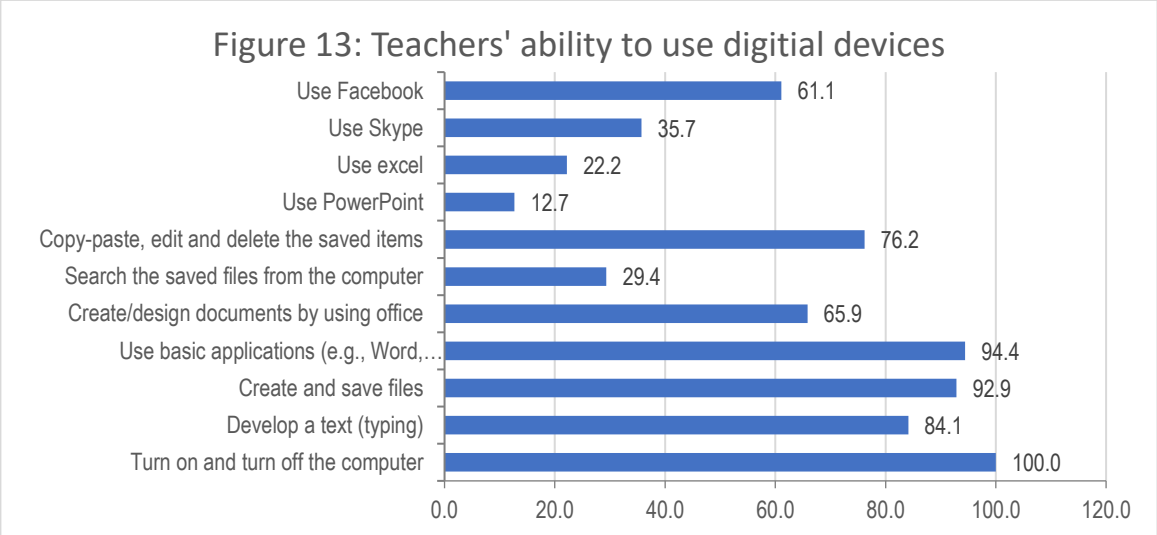


In addition, a majority of respondent teachers know how to browse websites. The percentage of teachers who know how to browse websites is relatively lower in Province 3—only 50 percent of the teachers have browsed websites. In Province 2 and 6, 76.9 and 85.7 percent of teachers have browsed websites, respectively. Overall, 86.3 percent of teachers have browsed websites. The result suggests that teachers in Province 3, in particular, require support and training for browsing websites for searching digital materials that are helpful for their teaching.



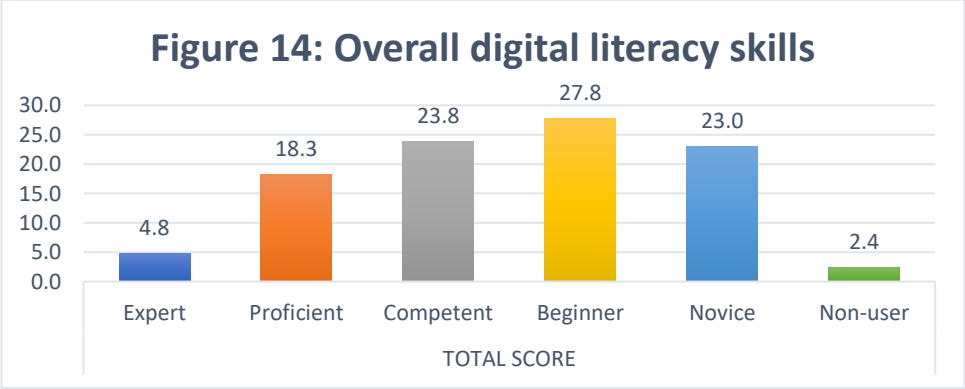
2.9 Teachers' abilities to use digital devices

In addition to digitial applications, the respondent teachers were also asked to self-report their own abilities to use digital devices. As presetned in Figure 13, all teachers said that they could turn on and turn off the computer while 94.4 and 92.9 percent of them were able to 'use basic office applications' and 'create and save files', respectively. Similarly, 84.1 percent of them can 'develop a text' and 76.2 percent of them can 'copy-paste, edit and delete the saved files'. Futhremore, 65.9 percent of teachers can 'create/design documetns by using Microsoft Office' and 61.1 percent of them can 'use Facbook'. More strikingly, only 35.7 percent of them 'use Skype' and 29.4 percent of them can 'serach the saved files from the computer'. Very few teachers said that they can 'use Power Point' (12.7%) and 'use Excel' (22.2 %), suggesting that teachers require training to use PowerPoint and Excel for teaching.



2.10 Digital Literacy Skills Assessment

The respondent teachers were given a set of tasks to assess their own digital literacy skills. The tasks covered the activities related to MS Word, MS Excel, PowerPoint (creation and presentation) and web search. The teachers were given instructions before performing each task. Their skills were closely observed and given appropriate scores, based on their performance. As presented in Figure 14, 27.8 percent of teachers are 'beginners' and 23.0 percent of them are 'novice' in terms of ICT knowledge and application. The data further show that 23.8 percent of teachers are 'competent' while 18.3 percent of them are 'proficient' to use digital devices. More importantly, only 4.8 percent of teachers are 'experts' while 2.4 percent of them are 'non-users'.



The table below shows the comparison of the self-assessment and task-based assessment results. The results show a huge gap between the self-assessment and the actual levels of literacy. 84.1 percent of teachers had said they have a 'basic' computer literacy but only 48 percent of them were able to demonstrate skills related to this level. Similarly, 15.9 percent of teachers said that they have 'good' literacy skills, but only 4.8 percent of them demonstrated 'good' literacy skills in task-based assessment. More strikingly, none of teachers said that they were 'non- computer users', but task-based assessment data showed that 2.4 percent of teachers were 'non-computer users.'

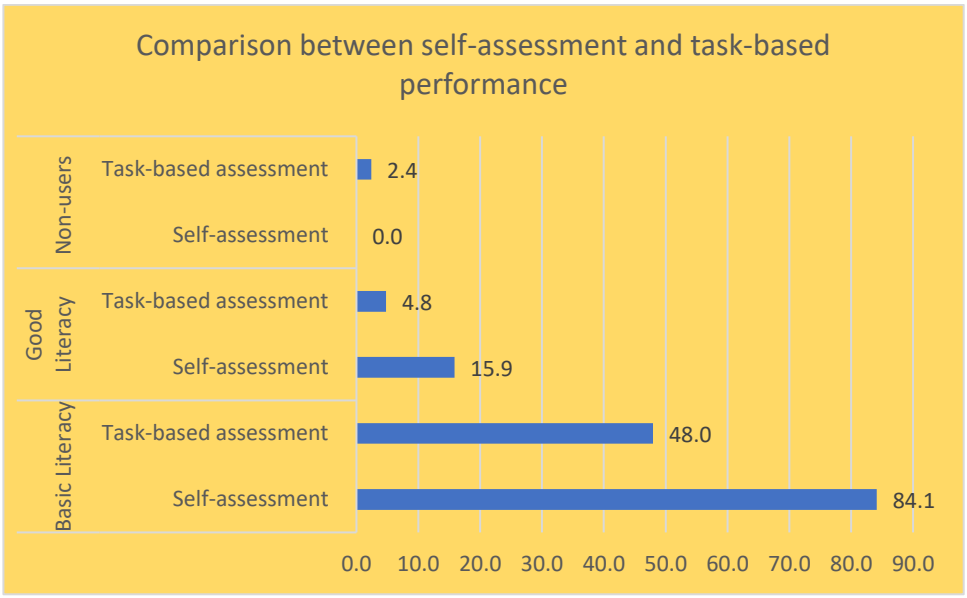
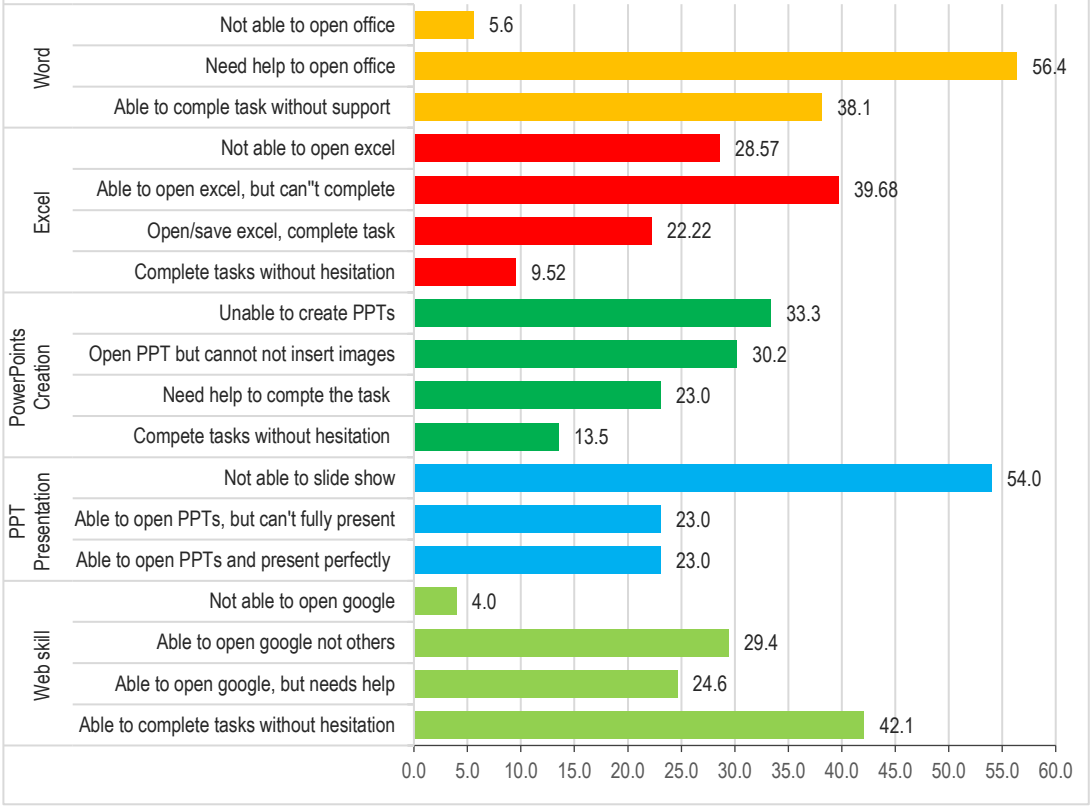


Figure 15 below shows the literacy skills of teachers in each task. The data show that 56.4 percent of teachers still 'need help to open office' and only 38.68 percent of them were 'able to complete tasks without support'. Only 9.52 percent of teachers completed Excel tasks without hesitation while 28.57 percent of them could not open Excel. Likewise, only 13.5 percent of teachers were able to complete the tasks for PowerPoint while 33.3 percent of them were 'unable to create PPTs'. Likewise, a majority of teachers were unable to use 'slide show'. As the data show, 54.0 present of them were not able to use slide show and 23.0 percent of them 'couldn't fully present' the slides. Only 23 percent of them were able to open PPTs and present them perfectly. In terms of web search, 42.1 percent of teachers were able to complete tasks without hesitation while 24.6 percent of them needed help to find the given information in Google search. Similarly, 29.4 percent of teachers were able to open Google but could not search the given information while 4.0 percent of them were not able to open Google.

Figure 15: Digital literacy assessment



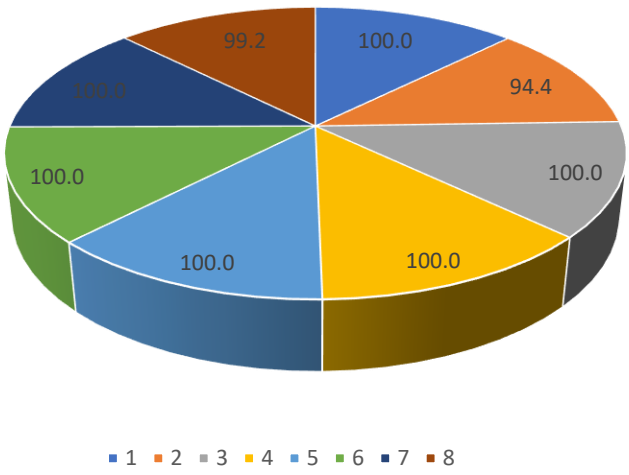
Chapter 3: Motivation and Awareness in Using Digital Devices

Teachers' motivation and personal awareness is a major prerequisite to engage teachers in learning and using ICT tools in the classroom. The respondent teachers were also asked a series of questions to identify their awareness and motivation in using digital devices for teaching-learning purposes. This chapter presents their motivation and awareness regarding the use of digital devices and ICT tools.

3.1 Interest in using digital devices

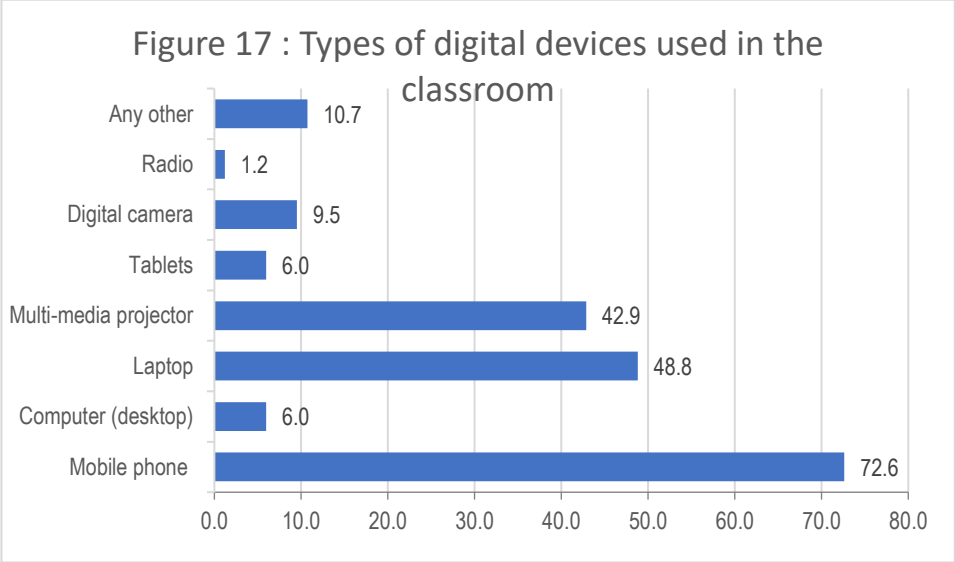
The teachers in this study were found interested in learning digital skills. As the following figure (Figure 16) shows, overall 99.2 percent of the teachers are interested in learning digital skills. The number of teachers interested in learning digital skills in slightly lower in Province 2 (94.4%). In other Provinces, all teachers were found interested in learning digital skills.

Figure 16: Teachers interested in learning digital skills



In a focus group discussion, one teacher from Province 3 said that "we cannot avoid using ICT tools in our profession. ICT tools help us update our knowledge." He added that "students have learned many things at home with the help of the internet. But we teach lesser than what they know. I think they don't pay attention to what we teach because they know more than what we know and teach." Similarly, another teacher from Province 4 said "If I don't use ICT tools, I become outdated. Textbook is not enough for effective teaching. ICT tools help us become a good teacher." Similarly, another teacher from Province 1 stated that "ICT tools make us autonomous teachers. With the help of the internet, we can create different materials and update our teaching methods. I can make my class interesting and engaging by using ICT tools." Regarding the use of digital devices in the classroom, one of the teachers from Province 6 (Karnali) said:

> ICT is not only useful for teachers but also for students. Students can search and find relevant materials to complete their assignments. Teaching for me has become easier and more effective due to ICT. I use ICT in Nepali class to provide students with an exposure to listening different poems. I have taught a lesson about 'Jhamak Ghimire,' that I have downloaded from the internet and shown to the students in my class.



The data show (Figure 17) that most teachers use mobile phone (72.6%) in the classroom while 48.8 percent of them use laptops. Likewise, 42.9 percent use multimedia projectors while very few (6.0%) of them use desktop computers in the classroom. Similarly, only 6.0 percent of teachers use tablets while 9.5 percent of them use digital cameras. Regarding the use of mobile phone, one teacher from Province 6 (Karnali) said:

> Mobile phones are part of our life. I use my mobile phone for teaching. I usually use it for lesson preparation at home and sometime for supporting my teaching in class. I can easily show visual materials to the class in my phone. I have used my phone to teach pronunciation and word meanings. Mobile phone helps teachers solve problems immediately.

Similarly, another teacher from Province 5 shared his experiences as follows:

> When I teach a poem, I download lyrics […]. The textbook content provides a limited knowledge about the topic. If we use ICT tools such as the internet, students can explore new information. They develop creativity and learn more than what we teach. For example, when I teach a poem, I may not know about the writer. I can find information about the author from the internet. We can ask students to find out new information about the poem. So, they get authentic information.

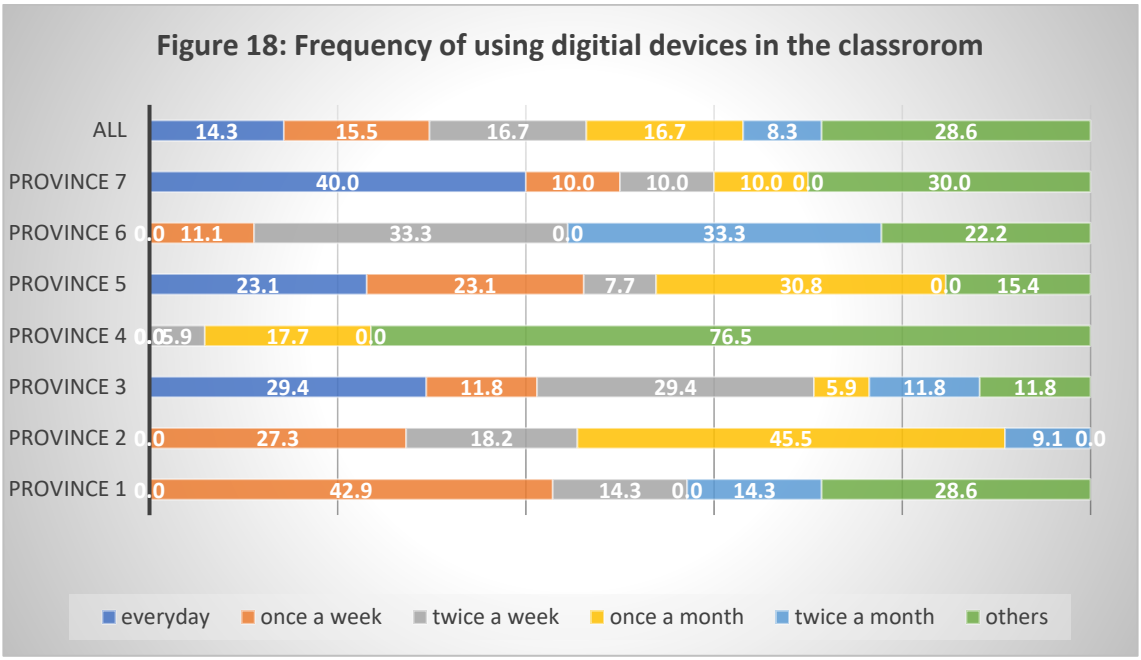
While the anecdotes are encouraging for teaching, teachers need further support for using available devices such as smartphone and laptops for classroom teaching. For example, one teacher from Province 5 said "I'm using the same tool and resources in the internet every year. I don't know how to use them differently and develop news and creative ideas to help students learn effectively. So, I need regular support to use multiple ICT devices for effective classroom teaching."

3.2 Frequency of using digital devices in the classroom

Although teachers have shown strong interests in learning digital skills, the frequency of using digital devices in the classroom is not encouraging. As seen in Figure 18, only 14.3 percent of teachers use digital devices 'frequently' while 16.7 percent use digital devices 'twice a week'. Likewise, 15.5 percent of them use digital devices 'once a week' only while 8.3 percent of them

use ‘twice a month’ and 16.7 percent use such devices ‘once a month’. More strikingly, 28.6 percent of teachers ‘rarely’ (others) use digital devices in the classroom.

Province-wise data show that no teacher in Province 1, 2, 3 and 6 uses digital devices ‘everyday’ in the classroom. In Province 1, 42.9 percent of teachers use digital ‘once a week’ and 14.3 percent of them use ‘twice a week’ and ‘twice a month’. The data show that 28.6 percent of teachers use digital devices ‘rarely’ in the classroom. In Province 2, a majority of teachers use digital devices ‘once a month’ while 27.3 percent of them use ‘once a week’. Moreover, 18.2 percent of them use digital devices ‘twice a week’ and 9.1 percent of them use ‘twice a month’ only.



In Province 3, 29.4 percent of teahers use digital devices ‘everyday’ and ‘twice a week’ . The percentage of teachers using digitial devices ‘once a week’ and ‘twice a month’ is the same, 11.8 percent. The same percentage of teachers use digital devices ‘rarely’, while 5.9 percent of them use ‘once a month’. In Province 4, the frequecy of using digital devices in the clasroom is lower than in other provinces. As given in Figure 18, 76.5 percent of teachers ‘rarely’ use digital devices in the classroom while 17.7 percent of them use ‘once a month’ only. In Province 5, the percentage of teachers using digital devices in the classroom is 23.1 and the same percentage of teachers use the digital devices once a week. A significant number of teachers (30.8%) use digital devices ‘once a month’ only while 15.4 percent of them use ‘rarely’.

A teacher in Dang teaches by using multimedia projector

In Province 6, 33.3 percent of teachers use digitial devices in the calssroom 'twice a week' and the same percentage of teachers use 'twice a month'. Similarly, 11.1 percent of them use digital devices 'once a week' while 22.2 percent use 'rarely'. The data collected from classroom observations also show that the use of ICT tools in the classroom is not quite frequent. Very few teachers used ICT tools during the classroom observation. One example from a school in Province 7 is given below:

The English teacher taught the poem *The Chimney Sweeper* of William Blake. For the lesson, students were taken to a hall equipped with a projector and a smart board. The teacher first browsed a YouTube video and audio of the poem. The teacher started his lesson by showing photos related to the poem on the projector and asked some questions to the students. "What do you see in the picture? How do they look like?" Students provided multiple answers to these questions. After that the teacher asked one student to read the poem aloud. Then the teacher provided the meanings of some words and showed the video to the class. After viewing the video, the teacher provided the background information of the poem and explained the meanings of each line in the poem. The teacher again played the video and paused where he wanted to provide more information about the poem. Then the teacher provided rhyming words and their meanings. He checked out whether the students understood the word meanings by asking some short questions. After that, he played the video again and paused three times and asked some comprehension questions to the students. The stduents answered to those questions. The whole class was focused on the lesson. Students were interested to learn about the poem.

Similarly, a Social Studies teacher from Ghorahee (Dang) used ICT tools in his class as described below:

First, the teacher connected his laptop with the multimedia projector. He had prepared PowerPoint slides of the lesson *People Movements*. He began the lesson by showing the pictures of the Rana kings and described historty of the Rana regime from 1903-2007. He also asked questions to the class as he explained the history of the Rana kings. After that, he showed the images of Jana Andolan-2006, with some information on bullet points. The teacher explained the history and major events of the Jana Andolan. The slides were full of texts. The teacher had just copy-pasted the lines from the textbook. He was simply reading the text on the screen. At the end, the teacher asked some questions and the students answered to them.

These classroom anecdotes show that ICT tools have helped teachers show pictures and other resources related to the lesson. They also help them organize their lessons. However, the classroom observations suggest that teachers need more support and skills to use ICT tools effectively in the classroom. For example, they need skills to develop interactive slides.

In Province 7, the frequency of using digital devices in the classroom is encouraging. As seen in Figure 18, 40.0 percent of teachers use digital devices 'everyday' while 10 percent of them use 'twice a week' (this percentage is the same for the percentage of teachers using digital devices 'once a week' and 'once a month'). In this province, the percentage of teachers using digital decvices 'rarely' is 30.0 percent. In this regard, one teacher from Province 5 said:

> I teach students without any ICT tools. I have been teaching for the last 2/3 decades. I don't need ICT. If it is fine for me to teach without ICT, why to bother? Teachers do not like to change their ways of teaching. Here, we lack knowledge and skills to use ICT in class. School doesn't provide enough resources. If classrooms are equipped with ICT materials, teachers can bring their lesson plans and teaching materials in a pen-drive and present in a convenient way. So, schools must be equipped with ICT materials.

While strong infrastructure is important, teachers' intrinsic motivation also plays a critical role in the use ICT tools in the classroom. Regarding motivation for using ICT, teachers and ETC trainers have pointed out that 'younger teachers' are more motivated to use digital devices in the classroom than the older and experinced ones. For example, an ETC trainer from Province 1 said:

> Younger teachers have a passion for learning and using ICT in teaching. In my training sessions, many of them [young teachers] have brought their own laptops and learned by practicing. Young teachers want to bring changes in the classroom […]. They make students engaged in learning and make classroom effective and fun. They want to bring innovations. For example, one teacher from Adarsha School used animated videos in teaching English. She used different examples and [video] clips retrieved from the internet. Use of online contents in teaching is difficult because of the lack of broadband internet. However, they [young teachers] download the contents at home and use them in class. Teachers use online materials for teaching, mainly for information, pictures, and videos. One of the teachers in the same school prepared students' portfolio in computer by taking the photographs of students' work and keeping them in their individual files. One primary teacher has used YouTube videos for teaching rhymes and for helping them participate in extracurricular activities.

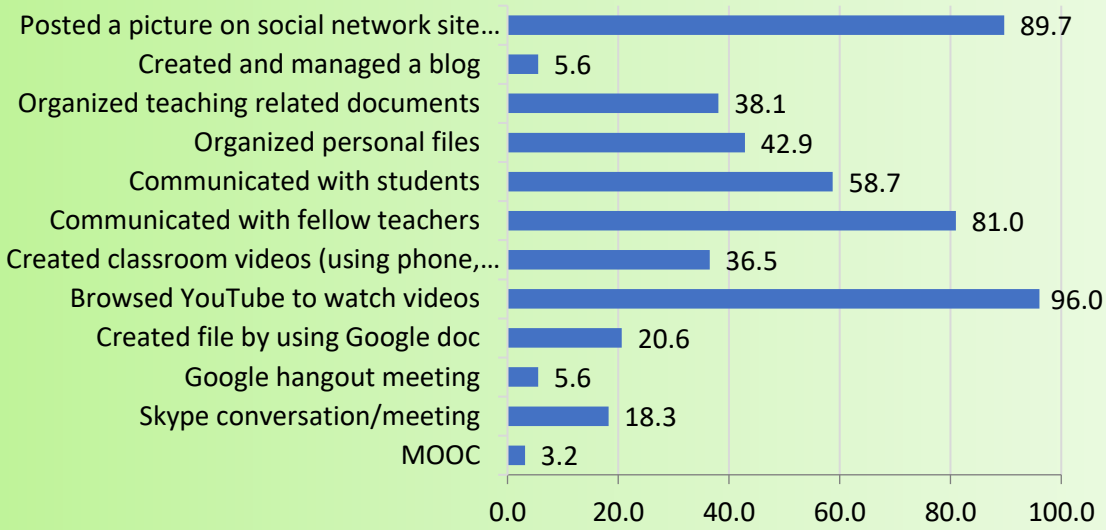
The above story suggests that teachers have begun to integrate ICT in the classroom but in a varied ways and degrees. Most teachers were found to be willing to learn and use ICT in the classroom, but younger teachers were found more keen to learn and use technologies in their everyday teaching. This implies that the MoEST, local authorities and school management committe should develop a clear plan and program to enourage and support all teachers to integrate ICT in their teaching.

3.3 Activities performed by using digital devices

The respondent teachers reported that they perform multiple activities by using digital devices. As presented in Figure 19, a high percentage of teachers (96.0%) have used digital devices to browse and watch YouTube videos while 89.7 percent of them have used such devices for posting pictures on social network (mostly Facebook) and commenting on others' social media

page. It was also found that 81.0 percent of teachers have used digital devices to communicate with their fellow teachers while 58.7 percent of them have used digital devices to communicate with their students. Some teachers (42.9%) have also used digital devices to organize their personal files while 38.1 percent of them have organized teaching related documents by using digital devices. Some teachers (36.5%) have also created classroom videos (using phones and cameras) and 20.6 percent of them have created files in Google Doc. However, very few teachers said they have used digital devices for Skype meetings (18.3%), Google hangout meetings (5.6%), blogs (5.6%) and Massive Open Online Course (MOOC) (3.2%).

Figure 19 : Activities performed by using digtial devices

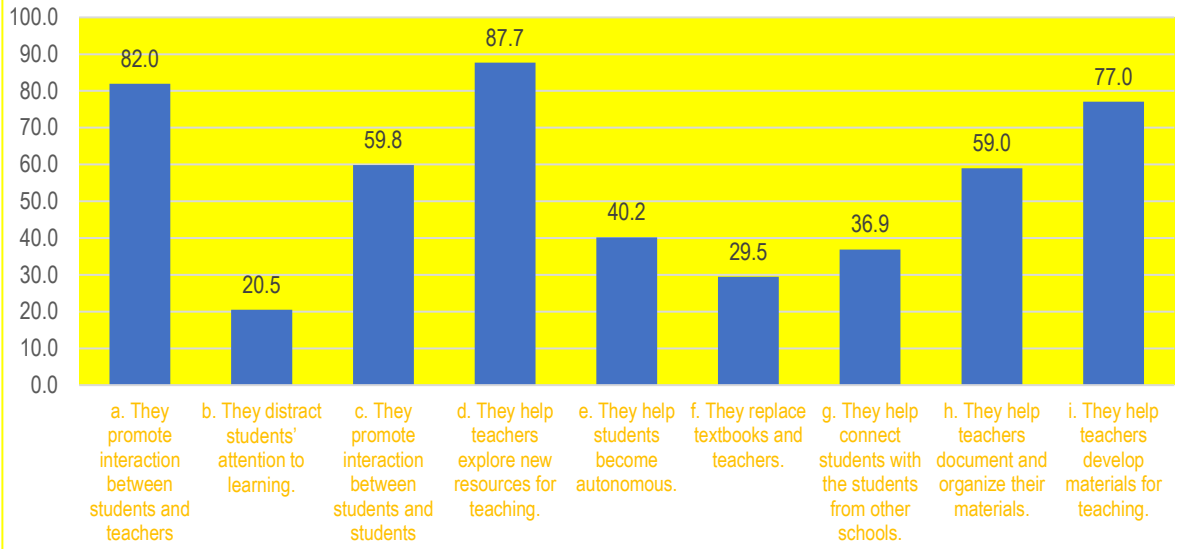


The data suggest that teachers are using ICT devices for a limited numnber of activities such as communication and watching videos. This implies that they need a continous support and facitilies for the wider applications of ICT in multiple classroom related activities.

3.4 Reasons for using ICT tools in the classroom

The teachers, in this study, were found to be self-aware of the benefits of using ICT tools in the classroom. They provided multiple reasons to describe the importance of using ICT tools in the classroom. For example, a significant percentage of teachers (87.7%) said that ICT tools help them 'explore new resources for teaching' (see Figure 20). Giving an example, one of the teachers from Province 2 stated that "I teach Health and Population Studies. I should provide students with information related to the census studies, health issues and population data. Textbook does not provide recent data. So I browse the internet at home and download materials that I use in the classroom." For her, "ICT tools are necessary to update teachers' knowledge." Likewise, 82 percent of teachers argued that ICT tools 'promote interaction between students and teachers' while 59.8 percent of them have said that these tools 'promote student-student interactions'. In this regard, one of the teachers from Province 6 said that "If we use ICT tools in the classroom, students show their interest in learning. They talk with teachers and ask questions. I have shown a movie *Jhola* to my students by using a multimedia projector. I found that students were very critical and curious to ask a number of questions related to social issues while viewing the movie."

Figure 20 : Reasons for using ICT in the classroom



As seen in Figure 20, 77.0 percent of teachers beleive that ICT tools help them 'develop materials for teaching' and 59.0 percent of them said that they could 'document and organize their materials' by using ICT tools. Sharing his experience, one of the teachers from Province 7 said that "I can develop creative materials such as lesson plans, word charts, and videos clips by using ICT tools." For him, ICT tools can help teachers "integrate photos, texts and recent information in lessons. I use Google images to explore photos […] related to my lessons and show them to my students." Another teacher from Province 1 said "ICT tools help me enrich my lessons. I explore related games and brainstorming [warm-up] activities from the internet and use them in the classroom."

One of the striking findings of the study is that 40.2 percent of teachers believe that the use of ICT tools 'help students become autonomous' and 36.9 of them have said that these tools help students 'connect with the students from other schools' as well. Giving an example of the 'Connecting Classrooms project, one teacher from Province 1 said that "ICT skills give opportunities to connect our schools with the schools from around the world. Both schools and students are benefitted from the use of ICT tools."

In focus group discussions, the teachers also highlighted how ICT tools have helped their students become 'independent learners'. One teacher from Province 5, for example, said "I don't have to teach everything to my students. I can ask them to do research by using the internet. They can explore multiple resoruces on the topic of teaching." Likewise, teachers from other provinces have similar opinions. For example, one teacher from Province 6 shared "I've asked my students to practise how to pronounce English words by using an online dictionary. They've tried and improved their pronunciation." Another teacher from Province 4 gave an example of how ICT tools have helped his students become independent learners:

> I teach Science. In my subject, there are many factual information related to body, ecology and enviromnent, for example, how our heart works. I've asked my students to watch YouTube videos and learn more about the heart. Those who didn't understand information given in the textbook understood better. There are many things that students can explore themselves with the help of ICT tools.

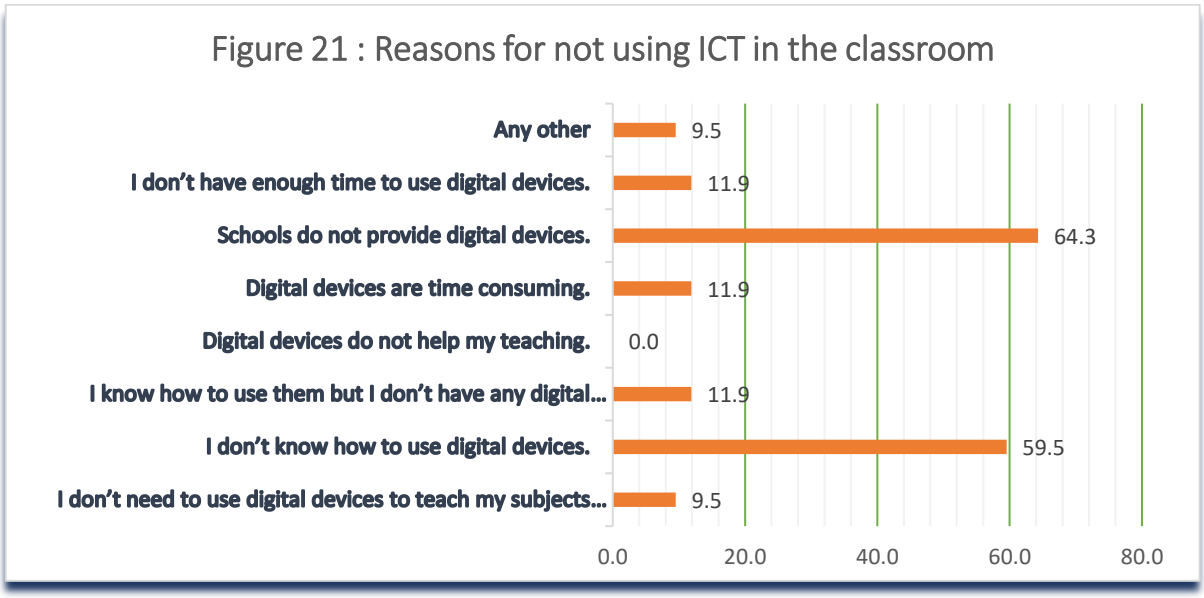
However, some teachers (20.5%) believe that the use of ICT tools distract students' attention from learning. Regarding this, one of the teachers from Province 6 said "students don't pay attention to lessons if they are allowed to use digital devices. I've seen that students also watch unncessary things on Facebook. They play games for fun but don't focus on learning." For her, students should be made 'aware of the use and misuse of digital tools."

The teachers in this study are found to be aware of the benefits of ICT, and they are interested to use ICT, in some ways, in the classroom. The following interview excerpt highlights how teachers have started to realize the benefits and effects of technology-integrated teaching and learning:

> I attended a three-day training on using ICT in the classroom. After learning some digital skills, I realized that my teaching was boring for my students. I understood that I should change my teaching by using ICT tools. Teaching with a lecture method and textbook-dependecy make teaching-learning boring. […] ICT tools are important in teaching for me. I had taught a lesson on 'endangered species' by using [PPT] slides. I had prepared PowerPoints and showed my students the images and information about different endangered species. My students showed an interest to learn more about endangered species. Next day, they prepared a list of 12 endangered species. They explored informations from the internet. They were self-motivated to learn. I feel that my workload has been reduced, after I taught students how to use the internet. If I use textbook only, I don't know whether my students have understood what I teach. Textbook-based teaching is monotonous. But the use of ICT has made my students active. They participate in learning activities more than before. Due to [the use of] ICT tools, I am able to teach by using multiple teaching methods. I can show them lesson-related videos as well. Using pictures and videos help my students understand lessons better. ICT has opened multiple possibilities to make my own teaching effective. (a teacher from Province 7)

3.5 Reasons for NOT using ICT tools in the classroom

As mentioned above, digital tools have not yet been integral part of classroom pedagogies for a significant number of teachers; very few teachers use digital devices regularly. There are multiple reasons for NOT using ICT tools in the classroom. As seen in Figure 21, a majority of teachers (64.3%) have said that they do not use ICT in the classroom because their 'schools do not provide digital devices'. A significant number of teachers (59.5%) have said that they do not use ICT in the classroom because they 'don't know how to use digital devices' effectively. Similarly, 11.9 percent of teachers have said that due to not having 'enough time' they do not use digital devices in the classroom. The same percentage of teachers do not use ICT in the classroom because they 'don't have any digital devices', and they think that using 'digital devices is time consuming'. Some teachers (9.5%) said that they 'don't need to use digital devices to teach the assigned subjects to them'. However, all teachers disagree with the statement that 'digital devices do not help their teaching.'



In focus group discussions, the teachers from all provinces shared their perspectives and reasons for NOT using ICT tools in the classroom. One of the teachers from Province 6 shared his story as follows:

> I have attended a couple of ICT training and workshops organized by an NGO. I learned how to use different online resources in the classroom. I would like to use a multimedia projector and the internet in my class. I can make my class interactive by using digital devices. But our school has very limited resources. We have only one projector. We don't have personal laptops for teachers. So it isn't convenient to use ICT tools in the classroom.

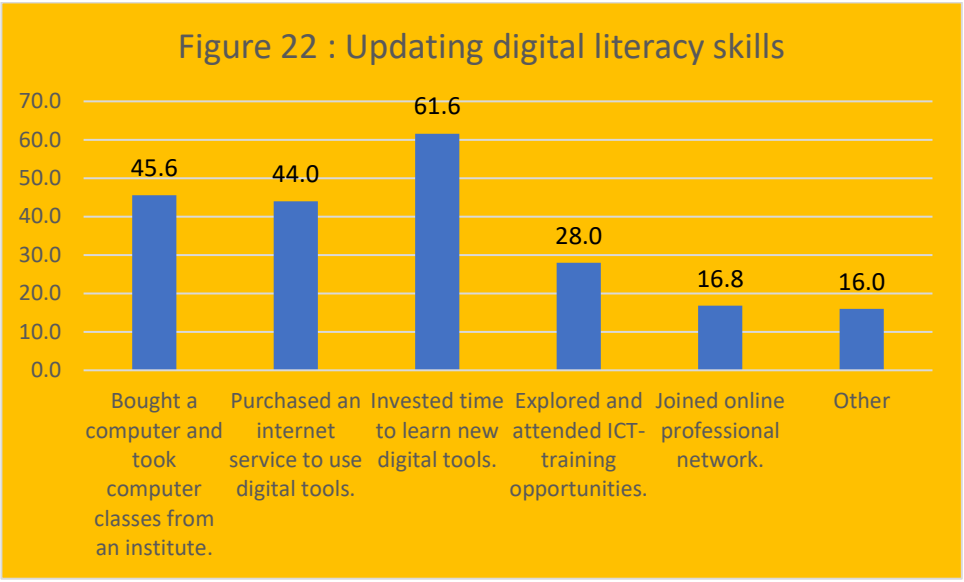
Another teacher from Province 2 said that "We should finish our course [in time]. If we use the digital devices, we may not finish the course [in time]. Digital devices are useful but I feel comfortable to teach in a traditional way." Likewise, a teacher from Province 5 said "I've taught for many years without ICT devices. They are important but I don't know how to use them effectively. I'm retiring after some years so I am not interested to introduce new technologies." In a similar note, one of the head teachers from Province 6 (Karnali) said that teachers' workload is also responsible for lack of ICT use in the classroom. He said that "the total teaching load for a teacher is at least 5 periods a day, and if they have to use ICT, then the teaching load must be reduced […] 30 periods a week is good. If we reduce the workload, then teachers have time to explore ICT tools and use them in the classroom."

The analysis of the reasons for not using ICT in the classroom gives an insight that although teachers are motivated to learn and use ICT in the classroom, there are a number of constraints they face in schools, hindering them from applying technological tools in their teaching. A majority of teachers are aware of the benefits of using ICT in teaching. However, two major issues should be addressed for the sustainable use of ICT in teaching: a) technological infrastructure and uninterupted ICT facilties in the school and classroom, and b) a continuous ICT support and training to the teachers.

3.6 Updating digital literacy skills

The respondent teachers in this study were found motivated towards upgrading their digital literacy skills. Despite limited institution support, the teachers have put their own efforts to learn digital skills. As seen in Figure 22, 61.6 percent of them have 'invested time to learn digital

tools' while 45.6 percent of them have 'bought a computer and took classes in a private institute'.



Furthermore, 44.0 percent of teachers have 'purchased an internet service to use digital tools' and 28.0 percent have 'explored and attended ICT-trainings'. Likewise, 16.8 percent of them have 'joined online professional networks' and 16.0 percent have done 'other' activities such as 'learned digital skills from friends and family members'. Teachers' own efforts for ICT learning and updating new knowledge and skills is encouraging. Yet, there is need for reinforcing their self-learning efforts through training supports as well as through creating ICT-friendly school environment to apply teachers' ICT knowledge and skills in teaching.

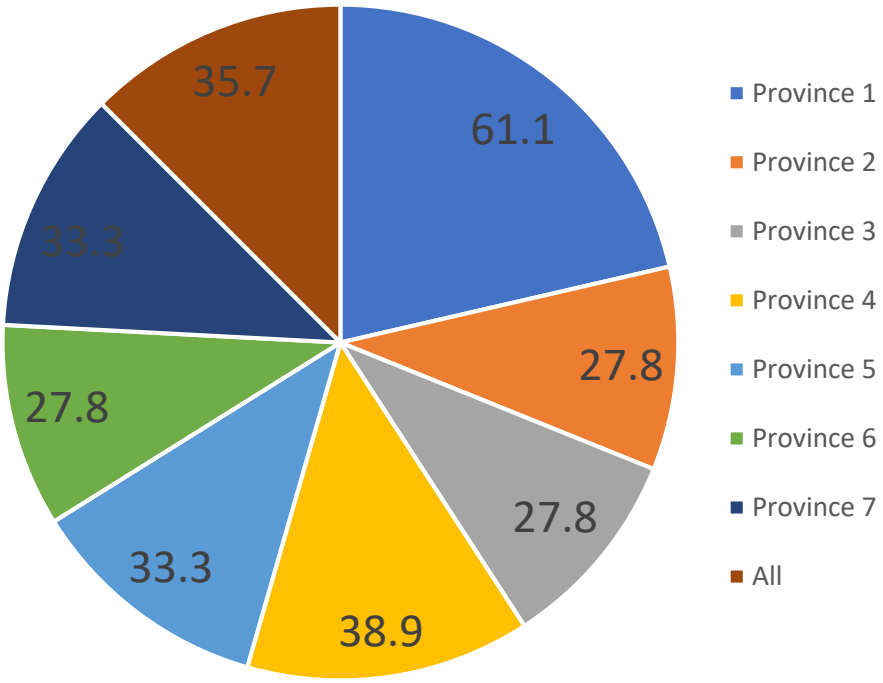
Chapter 4: Digital Literacy Training: Effectiveness and Implementations

Investment in ICT training is of little importance unless it is transferred into the classroom and used for supporting students' learning. This study collected the data to assess the existing practices of ICT training and their effectiveness in classroom teaching. For this purpose, the teachers were asked questions around the existing ICT training in general and the training provided by ETC/MoEST. They were asked to comment on the existing practices of ICT training and their implementation in the classroom. This chapter focuses on the effectiveness and challenges of implementation of ICT training.

4.1 Situation of the existing ICT training

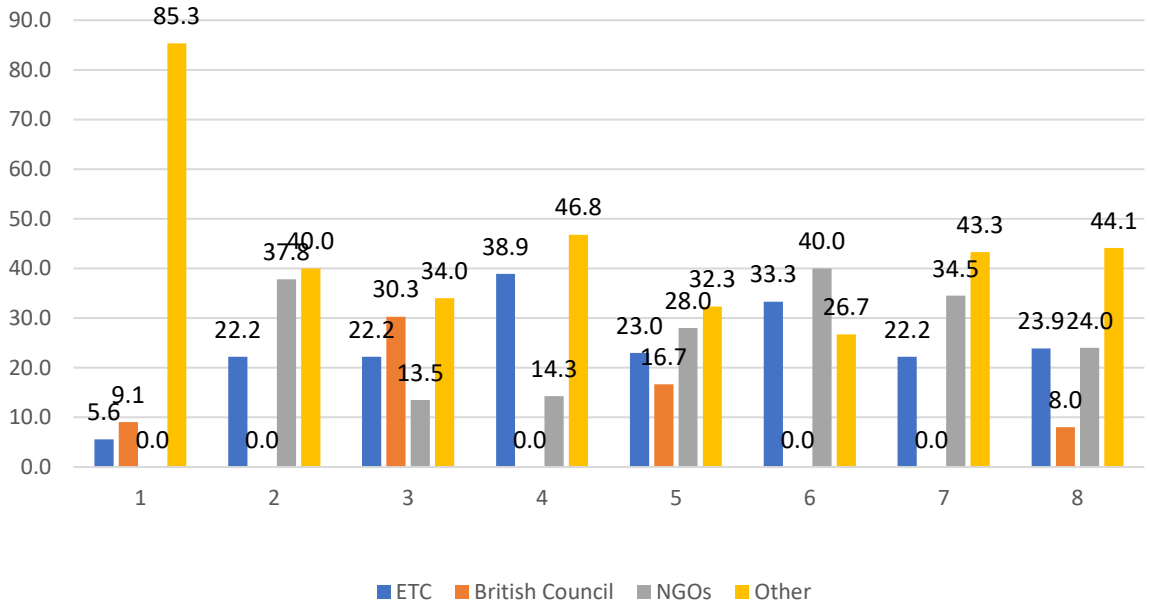
Teacher training and support is necessary to update teachers' knowledge and skills to use ICT tools in the classroom. The data show (Figure 23) that 61.1 percent of teachers from Province 1 have received some sort of ICT training and 38.9 percent from Province 4 have received ICT training. In Province 5 and 7, 33.3 percent of teachers have attended ICT training and 27.8 percent of teachers from Province 2, 3 and 6 have participated in ICT training. Overall, only 35.7 percent of teachers have received ICT training.

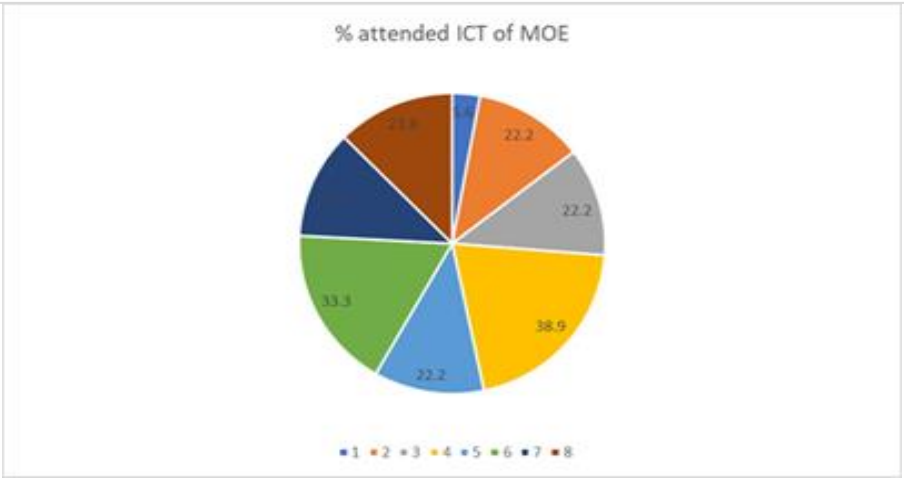
Figure 23: ICT training for teachers

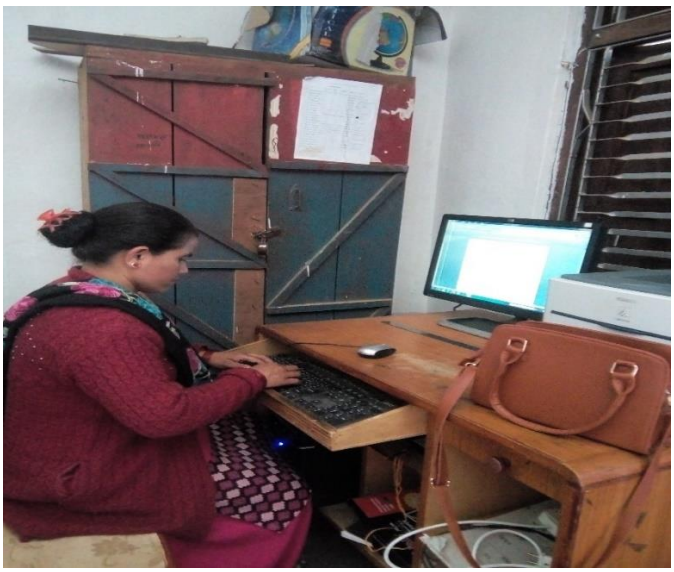


The data show that the teachers have received training from ETC, British Council, NGOs and other agencies. Most teachers (44.1%) have received training from different agencies 'other' than ETC, British Council and NGOs. Such 'other' agencies include teachers' associations, PABSON, N-PABSON, and local school networks. Similarly, 24.0 percent of teachers have received training from NGOs and 23.9 percent of them have attended ICT training organized by ETC. A few teachers (8.0%) have also received ICT training from British Council.

Figure 24: Training provider

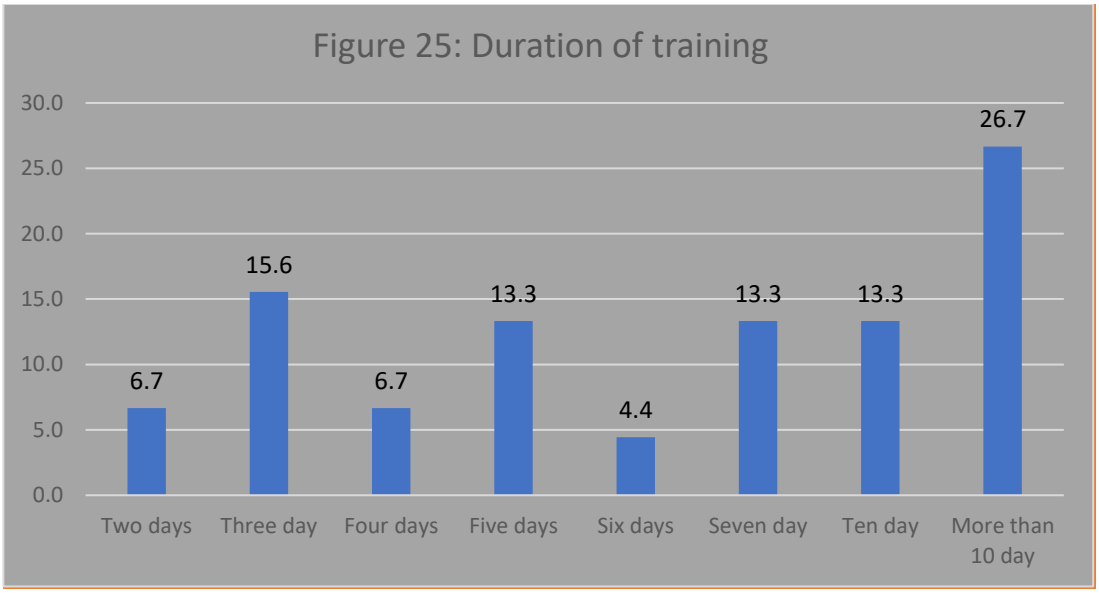






A teacher working on a desktop computer in Basanta Secondary School, Dailekh

In terms of Province-wise data (see Figure 24), only 5.6 percent of teachers from Province 1 have attended ICT training of ETC while 22.2 percent from Province 2,3,5 and 7 have attended such trainings. Similarly, 38.9 percent of teachers from Province 4 and 33.3 percent from Province 6 have attended ETC trainings. The data show (Figure 25) that 26.7 percent of teachers have attended ICT training for more than 10 days. 15.6 percent of them have a three-day teacher training experience while 13.3 percent of them have attended training for five, seven and ten days. Some teachers (6.7%) have also attended ICT training for 2-4 days. Only 4.4 percent of teachers have attended ICT training for six days.



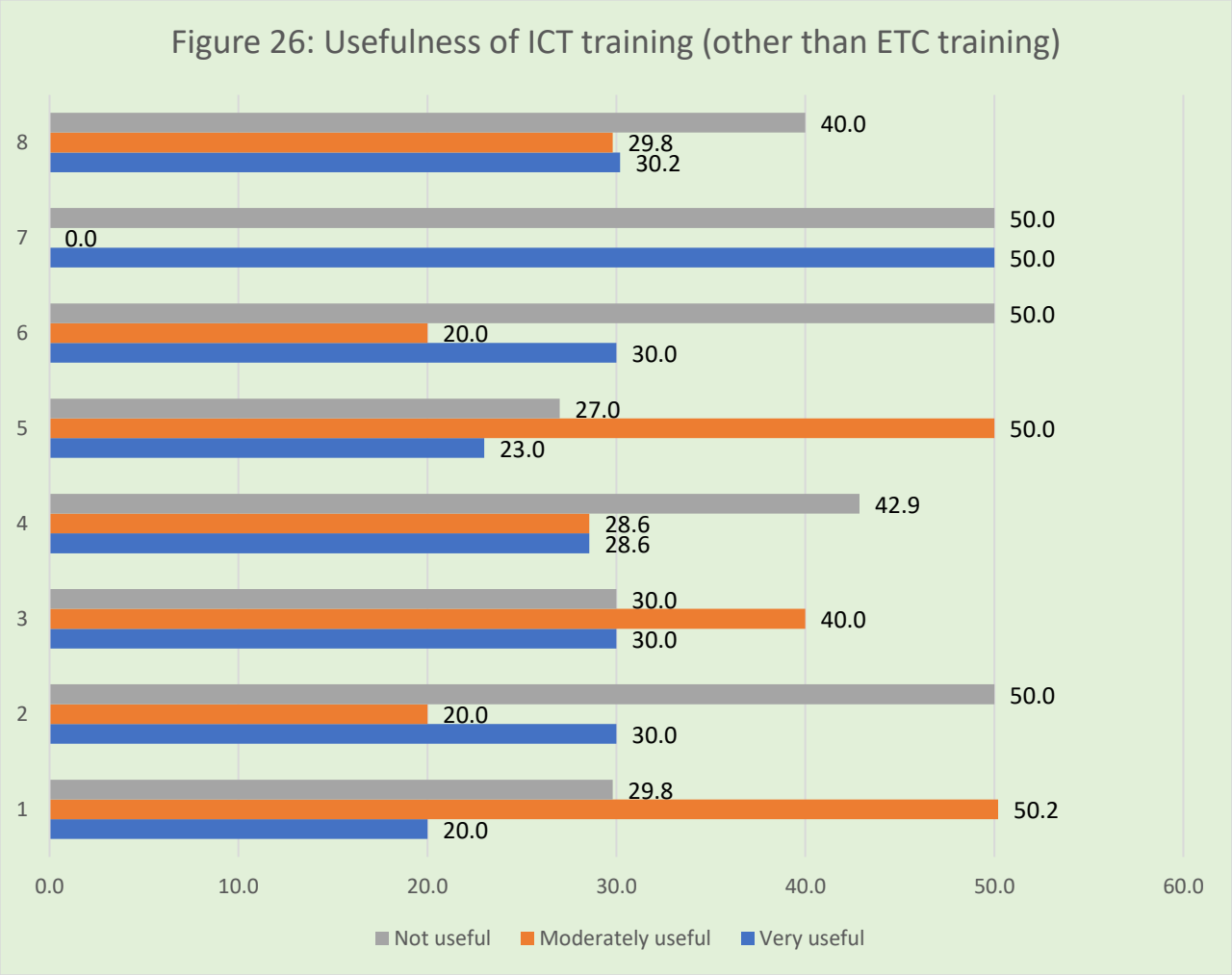
While most teachers have received ICT training from ETC and other non-governmental organizations, the coverage and volume of this training is minimal. As suggested by the teachers in focus group discussions, the training should be made a continuous and integral part of teacher professional development program. In addition, each school should be supported to develop their own plans and programs to upskill their teachers' ICT skills.

4.2 Usefulness of ICT training (other than ETC training)

Teacher training becomes meaningful only when the knowledge and skills are transferred into the classroom. The teachers in this study were also asked to comment on the effectiveness of the ICT training they have received from different agencies, other than ETC. As seen in Figure 26, 40.0 percent of teachers said that the trainings, they have received, was 'not useful' while 30.2 percent of them found them 'very useful'. During focus group discussions, teachers highlighted the following major points for not being ICT trainings effective:

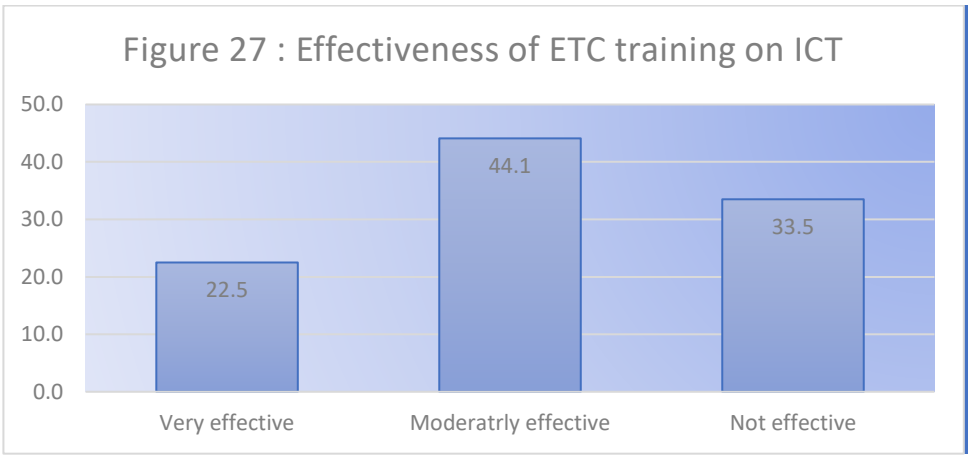
- Trainings were too general—they were about ICT skills, but not about how to integrate them in teaching.
- The number of digital devices (e.g. laptop) was not enough for the participants.
- The participants did not get opportunity to practice digital skill—the training was theoretical.
- The number of participants was too large—the participants did not get time to work with trainers on a one-to-one basis.
- The instructions of trainers were not quite clear—the participants need simplified and step-wise instructions to perform tasks.

Likewise, 29.8 percent of teachers found ICT trainings 'moderately useful'. The Province-wise data show (Figure 26) that 50.0 percent of teachers from Province 2, 6 and 7 consider the ICT training they have received 'not useful'. In Province 1 and 5, some 50 percent of respondent teachers found ICT training 'moderately useful'. In Province 7, 50 percent of teachers found ICT training 'very useful', but in Province 1, 2, 3 and 4, only 20, 30, 30 and 28.6 percent found such trainings 'very useful', respectively. Likewise, in Province 5 and 6, only 23 and 30 percent of teachers have found ICT trainings 'very useful'. As most teachers found ICT training they received from non-governmental organizations useful in a varied degree, the involvement of such organizations for supporting teachers should be continuous.



4.3 Effectiveness of ETC training on ICT

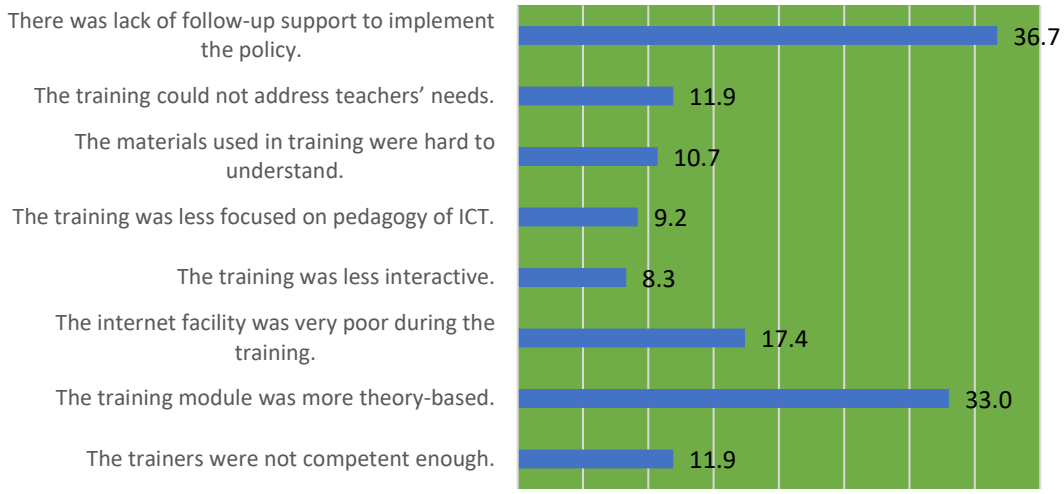
ETC provides training to the public-school teachers for their professional development. As an agency of MoEST, ETC is responsible for developing training modules and implement them. ICT training has been one of the major components of ETCs' professional development training. In this study, only 22.5 percent of teachers found ICT trainings of ETCs 'very effective' while 44.1 percent of them found them 'moderately effective' (see Figure 27). More strikingly, 33.5 percent of teachers said that the trainings were 'not effective'.



The teachers have reported multiple reasons for ICT trainings NOT being effective. As presented in Figure 28, 36.7 percent of teachers said that the trainings are not effective

because 'there is lack of follow-up support' for teachers and 33.0 percent said that the trainings were 'more theory-based'. Similarly, 17.4 percent of teachers said that 'the internet facility was very poor during the training' while 11.9 percent of them stated that the trainings 'could not address teachers' needs' and 'the trainers were not competent enough'. Some teachers also said that 'the materials used in training were hard to understand' (10.7%) and that the trainings were 'less focused on pedagogy of ICT' (9.2%). In addition, 8.3 percent of teachers said that the trainings were 'less interactive'. These data imply that as a major governmental organization for providing ICT training to teachers, ETC should be continually revise its existing ICT training modules, based on the needs of the teachers in schools.

Figure 28 : Reasons for not being training effective



4.3.1 ETC trainers' opinions regarding the effectiveness of ETC trainers

ETC trainers' experiences also provide insights into understanding the effectiveness of existing ICT trainings for enhancing students' learning, and in this context, they have admitted that ETC trainings have not been as effective as it is expected. ETC trainers have pointed out some major reasons for not being the existing trainings effective. ETC trainers have highlighted the top-down policies; lack of monitoring; lack of appropriate infrastructures; and trainers' competencies as major factors affecting the implementation of ICT trainings in the classroom. One ETC trainer, from Province 6, for example, critiqued the centralized and top-down nature of training as follows:

> TPD trainings on ICT have been developed in a top-down manner. They are supply-based. In many cases, they don't address teachers' needs. I would rather prefer a *school-based training*. Schools should have its own training wing. In addition, in the existing practices, there is no *monitoring or evaluation* of TPD trainers. I think, in each school, there must be a TPD trainer, who collects teachers' needs, develops training packages, and provides regular supports to the teachers.

Another ETC trainer from Province 5 stated that

> As far as challenges are concerned, there is lack of competent ICT trainers. ETCs don't have ICT-specific trainers for each subject. They invite teachers from local campuses and schools, who [they think] have ICT skills, as trainers. They also invite trainers from private computer institutes. The contents and materials of training are decided by the

> trainers. There is lack of comprehensive curriculum for ICT training. Training sessions are too general as well. When I was invited as a trainer, I developed my own course. I had covered PowerPoint presentations, Google drive, and learning management system. But many participating teachers had no basic computer knowledge and skills as well. They needed help on how to open a word file and type and compose a text. But some teachers had an advanced computer knowledge. They needed help on using learning management system. So, the training was not effective due to the diverse group of teachers [in terms of their digital literacy] in the same training session.

Similarly, ETC trainer from Province 3 focused on the lack of infrastructures being one of the major issues in ICT training. He shared his experiences as follows:

> In the training hall, there was lack of a smooth internet facility. Teachers could not even download and browse websites during the training sessions. I could not demonstrate practical ideas. I just explained the processes of using different ICT tools and their applications in the classroom. Teachers just took notes. But it was not easy to train teachers without enough digital tools. Teachers did not bring their personal laptops. In ETC, there were some desktop computers, but they were not enough for the participants.

In addition, ETC trainers said that ICT training curricula are developed on an 'ad-hoc' manner and they are not 'needs-based'. They pointed out that some teachers have a low level of motivation to attend ICT trainings. For him, 'some teachers attend ICT trainings just for formality. They don't focus on learning new ideas'. Some ETC trainers have also said that the duration of ICT training is too short. In this regard, one ETC trainer from Province 1 said:

> ICT is included as one of the components of the whole TPD training package. I have facilitated a three-day ICT training. The training was overwhelming for the participants. Many things should be covered in three days. I should teach a range of activities such as how to create a Word file, Excel file and PowerPoint slides. There was no time for on-site practice. Some teachers understood but some did not. […] The training was not subject-specific.

One of the major issues that emerged from the discussions with ETC trainers was the lack of *regular support and monitoring* to the teachers. Sharing his experiences of training teachers in Province 4, one ETC trainer shared that

> There is lack of *regular support and monitoring*. After training, there is no *teacher support* to implement ICT knowledge in teaching. Teachers face problems to implement ICTs in their class. If they don't get support, teachers are not motivated to integrate ICT in teaching-learning activities. They just teach in traditional ways. So, the existing ICT trainings are *just like a formality*.

ETC trainers have also pointed out that the existing TPD training is not focused much on ICT for teaching-learning activities. As commented by one ETC trainer in Province 2, ICT is "only integrated into other training components." He further commented:

> The training is more theoretical and because of lack of sufficient devices, training is not effective. Such training should be run in *an ICT lab* with enough computers and high-speed internet. In one training, for example, I taught skills to use snipping tools to cut the

> picture from a large content, but the teachers could not practise it because they did not have personal laptops.

The above anecdotes suggest that the training provided by ETCs is not much effective due to several constraints. For enhancing the effectiveness of ICT training, a bottom-up approach is required which explores the possibilities and needs from the individual schools, first and maps out a realistic training plan tailored to the teachers' needs of particular Grades and subjects.

4.3.2 Teachers' assessment of the effectiveness of ICT training

Teachers and head teachers have also commented on the effectiveness of ICT training from different perspectives. For example, one teacher from Province 3 said that "ICT training is ineffective as teachers with different levels of motivation and ICT skills are taught the same training contents." She further said "the existing trainings are not subject-specific. So, teachers do not know how to use ICT tools to teach the contents in their courses."

Some teachers also considered language as a factor affecting the effectiveness of the existing ICT trainings. One teacher from Province 6 shared her experiences as follows:

> There is lack of ICT materials in *Nepali* or *other local languages*. Training materials are in English. So, for Nepali subject teachers it is not easy to understand ICT training materials and instructions.

Furthermore, the teachers in this study pointed out that there is "lack of follow-up and monitoring system" in the existing ICT training policies. As one teacher from Province 4 said "we do not get any support after training is over. Even a small technical issue creates problem for using ICT in the classroom. Without a regular support, it is not possible to implement ICT trainings into the classroom." In this same way, teachers also pointed out that there should a needs-based approach in ICT training. They suggested that before the training is organized, teachers should know the contents of the training so that they can decide whether or not they should be attending the training. In this regard, one teacher from Province 4 said:

> I should know the contents of training before I attend any ICT training. I am telling this because I have observed that ICT trainings have focused on the same contents. Different trainers have focused on the same thing. There is a *repetition of training contents.* If there is nothing new, then teachers are not interested to attend the training.

Teachers' experiences suggest that ICT trainings should not be the same to all teachers as they have different subject-specific needs and levels of ICT knowledge. They pointed out that the contents of ICT trainings are repetitive. More importantly, the teachers have said that there is lack of incentive and reward policies to encourage teachers to use ICT in the classroom. In this regard, one of teachers from Province 2 suggested:

> ICT-integrated teaching should be part of teachers' performance evaluation. Teachers should be rewarded for their efforts to integrate ICT in teaching-learning activities. If they introduce innovative ideas by using digital devices in the classroom, teachers should be rewarded. If we do this, teachers will be motivated to use digital devices in the classroom. But the existing system does not have such a policy.

These observations imply that teachers' efforts to integrate ICTs in their teaching should be encouraged by providing them with incentives. Such incentives include, as suggested by the

teachers, reduced workload, financial and technical support for innovations, and the recognition in their performance evaluation.

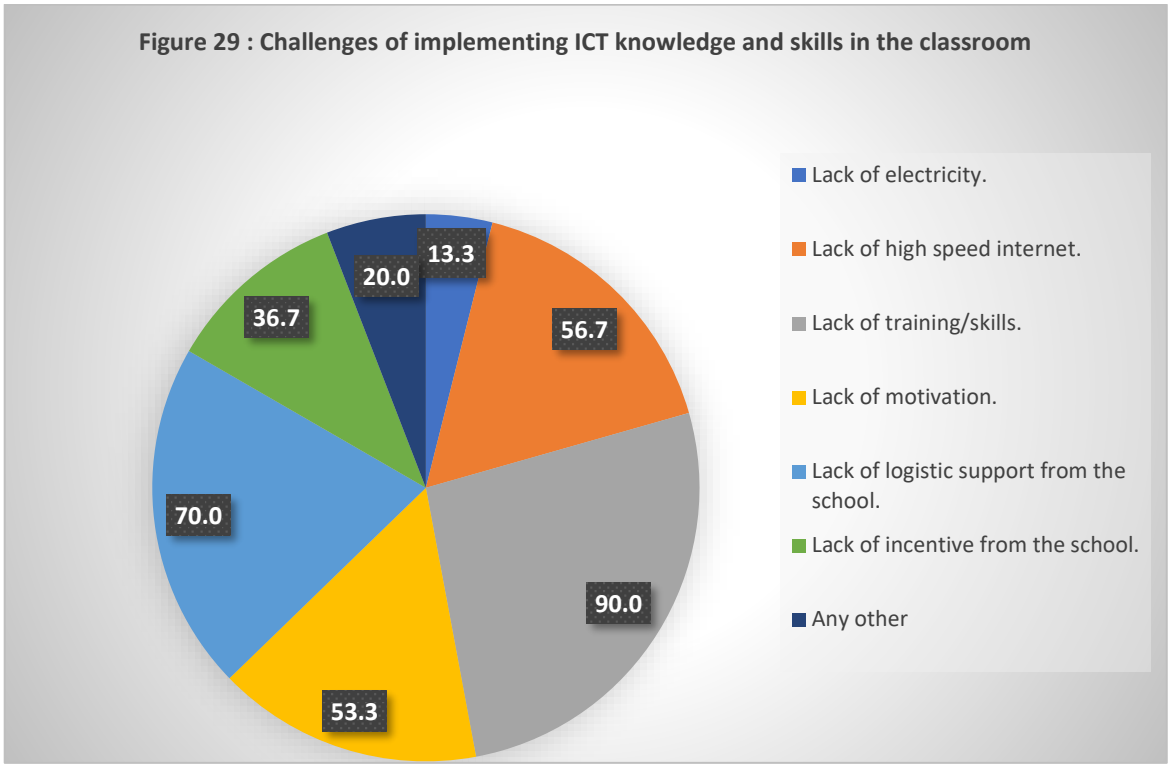
4.4 Challenges of implementing ICT trainings

The teachers in this study have pointed out various challenges of implementing ICT trainings in the classroom. A majority of teachers, 90 percent (see Figure 29), said that ICT trainings have not been implemented in the classroom effectively due to 'lack of training/skills' of teachers. As mentioned, since all teachers in school are not trained, the use of ICT tools has not been effective in the classroom. Similarly, 70 percent of teachers have said that due to 'lack of logistics support from the school' the ICT knowledge and skills have not been translated into practice. Some 56.7 percent of respondent teachers also said that 'lack of high-speed internet' is one of the major factors contributing to the non-implementation of ICT in the classroom. Similarly, 53.3 percent of teachers have considered 'lack of motivation' as one of the major factors affecting the implementation of ICT tools in the classroom.

Lack of appropriate infrastructures is another major factor affecting implementation of ICT trainings. Here is what one of the ETC trainers, from Province 4, said:

> Teachers are motivated during training sessions, but when they go back to school, teachers aren't motivated. The main reason is that teachers don't have appropriate ICT infrastructures and facilities in their schools. They don't have the internet, laptop, and multimedia [projector]. When [ICT] skills are not used for long, they are useless. Teachers are interested to take part in ICT trainings, but such trainings should not just be [as it is now] for the sake of training. […] Teachers have interest to use ICT tools, but their skills and knowledge are not updated due to the lack of facilities and regular support [in school].

In addition to poor infrastructures, teachers' motivation and mindset has also been a challenge for implementing ICT tools in the classroom. ETC trainer from Province 7, for example, has said "low motivation and traditional mindset of teachers, mostly old ones, is creating challenges to integrate ICT in teaching. The experienced teachers say 'we are retiring soon, so ICT training is not for us'."



As mentioned above, the quantitative data also show that 'lack of incentive from school' is another reason that some teachers (36.7%) think is affecting the implementation of ICT in the classroom, and 13.3 percent of teachers have said that 'lack of electricity' also creates a problem for implementing ICT in the classroom. 'Other' factors creating the challenges to implement ICT include 'negative perceptions of parents and teachers' and 'heavy workload'. In this regard, one of the teachers from Province 4 (Gandaki) shared his experience as follows:

> We need to change our mentality. We talk about the importance of ICT in teaching but we still ban the use of mobile phones and the internet in school. I have seen that schools don't allow teachers and students to use the internet in the classroom. I have also seen head teachers turning off Wi-Fi because they think their teachers do not focus on taking classes but on watching videos and Facebook. It's important to change our mentality, first, that ICT tools are an integral part of teaching-learning activities.

The teachers from other provinces have a similar experience. For example, one teacher from Province 2 shared that the internet is 'used only by the head teacher, but teachers are not given access to the internet'. Overall, lack of effective and regular need-based training to teachers, lack of infrastructures, and ICT facilities in schools/classrooms and lack of supportive school management, regular monitoring and formalized recognition and reward system are major challenges for the application of ICT in teaching.

Chapter 5: Major Findings and Recommendations

Based on the analysis of both qualitative and quantitative data, the findings and recommendations are suggested as follows:

5.1 Major findings

The major findings of the study are summarized below:

5.1.1 Existing situation of ICT infrastructures and digital devices

- All sample schools have some sorts of digital devices such as computers and multimedia projectors. However, they are not adequate for each individual teacher to use ICT in the classroom.
- There is a huge disparity between the 'model schools' and other schools in terms of receiving support for ICT infrastructure and teacher development. Model schools have more sophisticated ICT tools, better labs and adequate number of digital devices, but other schools do not even have basic ICT devices such as the internet and computers. However, the teachers from model schools also need regular support on ICT-integrated pedagogies.
- Teachers have a wide range of digital devices such as laptop, TV, and smartphone. But very few of them have a good knowledge and skills to use them for the classroom purposes.
- The percentage of 'non-user' of computers teachers is negligible. However, the percentage of teachers who use digital applications 'frequently' in the classroom is not encouraging. A noticeable percentage of teachers have 'never' used digital applications for the classroom purposes.
- The percentage of teachers with a 'frequent' access to the internet at home is higher than the teachers having access to the internet in school. A majority of them use the internet for social media, browsing websites and searching resources related to topics of teaching.
- Most teachers have an email ID and use it mainly for communication and the purpose collecting and sharing materials related to teaching.
- Mobile phone is the most frequently used digital device among teachers.
- The percentage of teachers with 'beginner' digital competency is higher than the percentage of teachers with 'expert' and other competencies.

5.1.2 Motivation and awareness in using digital devices

- The teachers are interested in learning ICT skills. They are also aware of the importance of using ICT in the classroom. However, the motivation for applying digital skills and knowledge into the classroom is not quite significant.
- The degree of motivation for using ICT in the classroom varies between young and experienced teachers, and between 'model' and other schools. Young teachers are more motivated to learn and apply ICT tools in the classroom than the experienced teachers. Similarly, the teachers from model schools receive more support and facilities to use ICT in the classroom.
- A majority of teachers use digital devices 'rarely' (less than once a month) while very few use them 'every day' in the classroom.
- Poor infrastructures and insufficient ICT knowledge and skills are major factors contributing to the infrequent use of ICT tools in the classroom.

- Most teachers use digital devices to watch videos, communicate with the fellow teachers and post and comment pictures on social network sites.
- Most teachers use ICT tools to explore new resources for teaching, interacting with their students and developing materials for teaching.
- Unavailability of digital devices in school and lack of teachers' knowledge to use them are major reasons for not using ICT tools in the classroom.
- Heavy workload and textbook-based teaching approaches are not supportive for teachers to use ICT in the classroom.
- Teachers have put their own efforts to learn and update their ICT skills. Such efforts include: the purchase of personal computers and taking classes in private institutes.

5.1.3 ICT training and implementation

- A great number of teachers have not received ICT training from ETC/MoEST. Most of them learned ICT skills in their own efforts.
- A majority of teachers have considered the existing ICT trainings 'not useful'. There are several reasons pointed out by the teachers and ETC trainers. Some major reasons are as follows:
    - Lack of follow-up support mechanisms and supervision for teachers.
    - Theory-based training; the existing ICT training is top-down and not fully based on the needs of teachers.
    - Lack of subject-specific ICT-trainers.
    - Insufficient infrastructures, lack of adequate computers and poor internet connectivity during training sessions
    - The same training for mixed ability and different subject teachers.
    - Too short and non-focused ICT training sessions.
    - Traditional mentality (focuses on textbook-based pedagogy) which resists ICT integration in everyday teaching.
- The teachers have also pointed out some challenges of implementing ICT tools in the classroom. Those challenges are as follows:
    - Lack of technical persons who can look after digital devices and support teachers to operate digital devices smoothly.
    - Unavailability of materials and ICT tools in the Nepali/local language.
    - Lack of high-speed internet and adequate digital devices such as multimedia projectors and laptops in school.
    - Lack of incentive and a regular support system for teachers.
    - Lack of subject-specific ICT training modules.
    - Heavy workload and insufficient ICT infrastructures in school.
    - Lack of teachers' adequate ICT knowledge and skills for teaching-learning purposes.

5.2 Suggestions and recommendations

The teachers and ETC trainers have suggested some major points for the improvement of the existing ICT training for teachers. Their recommendations are as follows:

- Teachers, who do not have basic ICT literacies, need support to develop their ICT skills before they are trained to integrate ICTs into their pedagogies.
- Teachers should be provided with a regular ICT training. Such trainings should be based on schools' needs and the teachers' prior ICT knowledge.

- The duration of the existing ETC trainings should be expanded. Teachers should be given with opportunities to practise their ICT skills on-site.
- ICT trainings should be practical and subject-specific. Comprehensive ICT curricula for each subject should be developed.
- The scope of ICT training, which mostly focuses now on MS Word, Excel and PowerPoint, should be expanded, and emphasis should be given to the activities, materials and pedagogies related to specific subjects.
- A system should be developed to provide teachers with regular ICT training and other necessary support.
- Training materials should be developed in Nepali and other local languages as well.
- School-based training is necessary to help teachers implement ICT skills in the classroom.
- Bottom-up approach to ICT training is required. Such an approach should address teachers' subject-specific needs
- At least one technical person who can take care of ICT related issues and support teachers to use ICT smoothly should be hired in each school.
- A meaningful support and incentive system are necessary so that teachers feel that their efforts are recognized for their own professional development. There should be continuous support to schools from central, provincial and local government to equip them with ICT tools and necessary digital devices.
- The government should make ICT knowledge and skills as a key component of teacher hiring policies.
- ETCs should prepare and update the list of ICT trainers based on their knowledge and competencies and should focus on developing competent and subject-specific ICT trainers.
- Teachers from non-model schools should be given equal priorities in strengthening their ICT skills.

Annexes

Annex-1 Questionnaire

A. Background information

School: Municipality:

Teacher's name: Teaching experiences (in year):

Gender: (karar/neeji/Rahat): Types: Permanent/Non-permanent

Age: Educational Qualification:

Subject(s) you teach:

B. Availability of Digital Technology

1. What digital devices and infrastructures are available in your school?

Computer (desktop) ☐

Computer (laptop) ☐

Internet (regular/WiFi) ☐

Multimedia projector ☐

ICT lab ☐

Smart board ☐

Microphone ☐

Radio ☐

Tape-recorder ☐

Digital camera ☐

TV ☐

Other (please specify)_____

2. What digital devices do you have personally?

Computer (desktop) ☐

Laptop ☐

TV ☐

Mobile (smart) ☐

Mobile (regular) ☐

Internet (regular/Wi-Fi) ☐

Internet (data) ☐

Microphone ☐

Radio ☐

Tape-recorder ☐

Digital camera ☐

Other (please specify) _____

C. Existing knowledge and awareness

1. How do you rate your computer literacy skill? Circle one option.

   a. Good b. Basic d. Non-user

   [Note: Good—can turn on/off computer, use office applications (word, excel PowerPoints) and the internet, search and download online materials, print documents from the computer, and use communication tools (Skype, email); Basic—can turn on/off computer and use office applications and Non-user—never used computer personally.]

2. Which of the following applications can you use? Please tick all that apply

   a. Email
   b. Microsoft word
   c. Excel
   d. PowerPoint
   e. Google drive
   f. Other (please specify)___

3. How often do you use these applications for classroom teaching and learning?

   a. Frequently b. Sometime c. Never

   (Note: Frequently—if teachers use any of these devices in majority of their classes (at least 4 days a week); sometime—they use these devices at least twice a week; and never—they do not use these devices at all.)

4. Do you have an email ID?

   a. Yes b. No

5. If 'yes', what devices do you use to check your emails? (please check all that apply)

   a. Mobile phone b. Tablet c. Desktop computer d. Laptop

6. For what purpose do you use email? Please share as many thoughts as possible.

   a. _____
   b. _____
   c. _____
   d. _____

7. Do you think that ICT-tools are necessary in your classroom?

a. Yes b. No

8. If 'yes', please indicate, why? Choose all that apply.
   a. They promote interaction between students and teachers
   b. They distract students' attention to learning.
   c. They promote interaction between students and students
   d. They help teachers explore new resources for teaching.
   e. They help students become autonomous.
   f. They replace textbooks and teachers.
   g. They help connect students with the students from other schools.
   h. They help teachers document and organize their materials.
   i. They help teachers develop materials for teaching.

D. ICT-related skills

1. Are you able to do the following activities? (Note: there is a demonstration session for teachers as well)

Skills	**Yes**	**No**
Turn on and turn off the computer		
Develop a text (typing)		
Create and save files		
Use basic applications (e.g., Word, Spreadsheet)		
Create/design documents by using office software		
Search the saved files from the computer		
Copy-paste, edit and delete the saved items from the computer		
Use PowerPoint		

Use excel		
Use Skype		
Use Facebook		

2. How often do you use the internet at home?

   a. Frequently b. Sometime c. Never

   (Note: Frequently—use every day; sometime—less than 3 days a week; never—do not use at all.)

3. How often do you use the internet in school?

   a. Always b. Sometime c. Never

   (Note: Frequently—use every day; sometime—less than 3 days a week; never—do not use at all.)

4. What do you use the internet for? Tick all that apply.

Activities	**Yes**	**No**
To check and send emails		
To browse websites		
To search and download resources on specific topic		
To use social media such as Facebook		
To communicate with friends and family members using Skype		
To communicate with friends and family members using Viber		
To create personal websites and blogs		
To update own knowledge for professional development		

Others (please specify)	

5. Which of the following social media site do you use? Please check all that apply.
   a. Facebook b. Twitter c. Instagram d. TikTok e. YouTube d. Any other_____

E. Use of digital devices in the classroom

1. Do you use digital devices in your classroom? (if 'no', please go to Q. 5)
   a. Yes b. No
2. If 'yes', how often?
   a. Everyday
   b. Once a week
   c. Twice a week
   d. Once a month
   e. Twice a month
   f. Any other (please specify)_____
3. If 'yes', which devices do you use? Please check all that apply
   a. Mobile phone
   b. Computer (desktop)
   c. Laptop
   d. Multimedia projector
   e. Tablets
   f. Digital camera
   g. Radio
   h. Any other (Please specify)____
4. Which of the following digital devices do you use mostly? Please tick one.
   a. Mobile phone
   b. Computer desktop
   c. Laptop
   d. Multimedia projector
   e. Another other____

5. For what purposes do you use ICT-devices in the classroom?
   a. To provide students with additional information on the content of teaching.
   b. To increase students' participation in learning

c. To help students develop their commination and collaborative skills.
d. To show the lesson-related audio-video materials to the students.
e. To develop lesson plans.
f. To communicate with the students.
g. To communicate with the teachers.
h. To update my own knowledge on the methods of teaching.
i. To develop creative ideas of teaching in the classroom.
j. To connect my schools with other schools.
k. Any other (please specific)_____

6. If 'no', why?
   a. I don't need to use digital devices to teach my subjects (textbooks are enough).
   b. I don't know how to use digital devices.
   c. I know how to use them but I don't have any digital devices.
   d. Digital devices do not help my teaching.
   e. Digital devices are time consuming.
   f. Schools do not provide digital devices.
   g. I don't have enough time to use digital devices.
   h. Any other (please specify)_____
7. Have you received any ICT-related training? If 'No', please go to Q. 13.
   a. Yes b. No
8. If 'yes', when did you take the training?
   a. Before_____week(s)
   b. Before_____month(s)
   c. Before _____ year(s)
9. If 'yes', who was the training provider? Please check all that apply.
   a. ETC b. British Council c. NGOs (please specify)_____ d. Other (please specify)_____
10. What was the duration of training (in days)?
    a. 1 b. 2 c. 3 d. 4 e. 5 f. 6 g. 7 h. 10 i. More than 10 days (please specify)___
11. If 'yes', what did you learn from the training? Please list as many as possible.
    a. _____
    b. _____
    c. _____

d. _____

e. _____

12. To what extent, the training was useful in your own teaching?

a. Very useful b. Moderately useful c. Not useful at all

13. What aspects of training were useful for the classroom purposes?

a. _____

b. _____

c. _____

d. _____

14. Why was the training not useful at all? Please share your thoughts.

a. _____

b. _____

c. _____

d. _____

15. If 'No', would you like to receive an ICT training?

a. Yes b. No

16. If 'yes', why?

a. _____

b. _____

c. _____

d. _____

17. What training do you like to receive?

a. _____

b. _____

c. _____

d. _____

18. Have you ever browsed any website?

a. Yes b. No

19. If 'Yes', what websites? Please list as many as possible.

a. _____ b._____ c. _____ d._____

20. What was the purpose of browsing the website?

a. _____

b. _____

c. _____

d. _____

e. _____

F. Motivation and Professional Development

1. Are you interested in learning digital skills? (Note: if you already have some skills, whether you are interested in learning more.)
   a. Yes b. No
2. If 'yes', why? Please provide many ideas as possible.
   a._____
   b._____
   c._____
3. If 'no', why?
   a._____
   b._____
   c._____
4. Personally, what have you done to update your digital literacy skills?
   a. Bought a computer and took computer classes from an institute.
   b. Purchased an internet service to use digital tools.
   c. Invested time to learn new digital tools.
   d. Explored and attended ICT-training opportunities.
   e. Joined online professional network.
   f. Other (please specify)_____
5. Have you joined any professional mailing list/group?
   a. Yes b. No
6. If 'yes', how do you benefit from the group activities?
   a. By receiving news about professional development activities (such as training and scholarship)
   b. By participating in discussions on specific topic related to teaching.
   c. By exchanging resources related to teaching.
   d. By sharing individual ideas on classroom teaching.
   e. Any other (please specify)_____

7. Have you done the following activities by using digital devices? Please check all that apply.

Activities	**Yes**	**NO**
MOOC		
Skype conversation/meeting		
Google hangout meeting		
Created file by using Google doc		
Browsed YouTube to watch videos		
Created classroom videos (using phone, camera etc.)		
Communicated with fellow teachers		
Communicated with students		
Organized personal files		
Organized teaching related documents		
Created and managed a blog		
Posted a picture of social network site and commented on others' page		

G. Challenges and suggestions related to the use of ICT in the classroom

1. Have you attended any ICT-related training provided by the Ministry of Education (e.g. ETC)?

   a. Yes b. No

2. If 'yes', how effective was the training for your own teaching?
   a. Very effective b. Moderately effective c. Not effective at all
3. What aspects of training were effective?
   a. _____
   b. _____
   c. _____
   d. _____
4. Why was the training not effective at all?
   a. The trainers were not competent enough.
   b. The training module was more theory-based.
   c. The internet facility was very poor during the training.
   d. The training was less interactive.
   e. The training was less focused on pedagogy of ICT.
   f. The materials used in training were hard to understand.
   g. The training could not address teachers' needs.
   h. There was lack of follow-up support to implement the policy.
5. What are the major strengths of the existing ICT training framework?
   a. _____
   b. _____
   c. _____
   d. _____
6. What are the major weaknesses in the existing ICT training policies/practices?

   a._____

   b._____

   c._____

   d._____

7. What are the major challenges for you to use ICT in your own classroom? Please check all that apply.
   a. Lack of electricity.
   b. Lack of high speed internet.
   c. Lack of training/skills.
   d. Lack of motivation.
   e. Lack of logistic support from the school.

f. Lack of incentive from the school.

g. Any other (please specify)_____

8. Should ICT be an integral part of classroom teaching?

a. Yes b. No

9. If 'yes', why?

a. _____

b. _____

c. _____

d. _____

10. If 'no', why?

a. _____

b. _____

c. _____

d. _____

11. What suggestions do you provide to improve the existing situation of ICT in your school?

11.1 Infrastructure development

a. _____

b. _____

c. _____

11.2 Resource development

a. _____

b. _____

c. _____

11.3 Pedagogical support

a. _____

b. _____

c. _____

Annex-2: Focus group discussion guideline with teachers and head teachers

After the questionnaire is filled up, organize a focus group discussion with the teachers and head teacher. Discuss the following questions and audio-record the discussions. Also take a detailed field note. Be open and ask follow-up questions where necessary.

Background information

School:_____ Municipality:_____
Date:_____ Discussant:_____
Participants:

a. _____(M/F)
b. _____(M/F)
c. _____(M/F)
d. _____ (M/F)

Questions:

1. What is the existing situation of ICT in the school? Infrastructures such as lab, multimedia and other devices? (Head teacher)

2. What is the existing situation of the use of ICT in the classroom? Do teachers use ICT in the classroom? Why? Why not? (Teachers/head teachers)

3. What is the motivation of teachers to use ICT in the classroom? Are they motivated? Why? Why not? (Head teacher)

4. What is the existing situation of teachers regarding their knowledge and skills to use ICT in the classroom? Are they all trained to use ICT in the classroom? Why? Why not? (also ask follow up questions if necessary) (head teacher)

5. Do you think that ICT-tools are necessary for teaching? Why? Why not? Please share a classroom story (if you have used ICT in your classes) of using ICT in the classroom. How did it go? Did it help to achieve the objectives of the lesson? Ask them to share their impression about the use of ICT in the classroom. (Teachers)
6. Do you think that ICT tools should be used in teaching? Why? Why not? (Teachers)
7. What support systems is available for teachers to use ICT in the classroom? Are they encouraged to use ICT in the classroom? Are their trained? What's the future plan? (Head teacher)
8. What are the major challenges regarding the use of ICT in the classroom? (Teachers)
9. What suggestions to you provide to improve the existing situation of ICT in your school? (Teacher/Head teacher)
   9.1 Infrastructure/resource wise:
   9.2 Pedagogy (teaching-learning):
10. Is the existing content and practices of ICT-training for teachers effective? What are the good aspects? What are the gaps? (TPD)
11. How can we improve the existing ICT training then? Please suggest.

Annex-3: Interview guideline with ETC trainers

Name_____ Gender:_____

District:_____ Experience as a trainer (years):_____

Date: _____

---

1. The government has focused on ICT skills in teacher professional development (TPD) and teaching/learning. Why do you think that ICT skills should be part of teacher professional development? (Please ask follow-up questions, if necessary)

2. Have you trained teachers on using ICT for teaching? What does the training cover? How did the teachers receive it? What was the feedback? Please share your experiences with specific examples.

3. How do you find the motivation of teachers, in this district, to learn digital skills and use them in the classroom? Please provide specific examples. (Note: The use of digital skills could be both online and offline. For example, teachers can use internet at home to develop lesson plans and other necessary materials.

4. How do you find the existing TPD training for teachers on ICT skills? Are they theoretical or practical? Are there any gaps that you can see? Please provide specific examples.

5. What are the challenges of implementing the existing ICT-related TPD training? Please be as specific as possible.

6. What are your personal suggestions to improve the existing ICT-related TPD curriculum?

Annex-4: Focus Group Discussion with Students

School:_____ District:_____

Date:_____ Discussant:_____

Participants:

a. _____(M/F)
b. _____(M/F)
c. _____(M/F)
d. _____(M/F)
e. _____(M/F)

Questions:

1. What digital devices do you use? Why do you use them?

2. Do you think that digital tools should be used in the classroom? Why? Why not?

3. Do you think that the use of digital devices support learning? Yes/No? How?

4. How often do your teachers use digital devices in your class? For what purposes do they use? Please provide specific example.

5. How effective was the use of digital devices in the classroom? Did it facilitate learning? Did it help you develop creativity and collaborative skills? (please ask follow up questions if necessary)

6. Does your school promote the use of digital devices in classes? Yes/No? How? What are the challenges?

7. Do you wish your teacher to teach by using digital devices? Why?

Annex-5: Classroom Observation Checklist

Observe one class of the teachers who have filled up the questionnaire. Request the teacher and the head teacher first. The purpose of this observation is to gather information regarding how teachers use digital devices for pedagogical purposes. The classes of the teachers using ICT tools will be observed to document how they integrate digital devices in the classroom. The field researcher will take detailed notes of what actually happens in the classroom. The observation notes will be used to develop case studies of the existing situation of digital literacy in schools.

Checklist

Tools/activities	**Yes**	**No**	**Pedagogical use (document the details of activities that teachers and students do in class by integrating ICT activities)**
Teachers used ICT tools			0-5 Minutes:
Used a multimedia projector			6-15 minutes:
Used PowerPoint			16-26 minutes:
Introduced the additional materials downloaded			27-37 minutes:

from the Website			
Presented on-line lesson-related videos			38-45 Minutes
Used off-line materials			Your reflection:
Assigned a project work to the students that require them to use ICT tools			
Any other activities___			

Annex-6: Digital skills assessment tool

Connecting Classrooms-Baseline Study

Digital skills assessment

Background

This is a digital skills assessment tool to be used for the baseline study of British Council's Connecting Classrooms project. Each task is scored according to the standardized rater scales (see Annex III). (Note: British Council has copyright of this tool—please do not reproduce this tool without permission from the British Council.)

Parts of the test

Part 1: The teachers create a document and write some sentences (at least five) about themselves (name, profession, hobby etc.) in and then save it with their name as the file name (3 tasks – 3 mins)

a. They show they can find and reopen the

file

b. They show they can change fonts/sizes

d. They show they can save the file to a new folder with a different file name

Part 2: The researcher gives data and teachers fill out the information into a spreadsheet (Excel) and save it called 'library record1' (2 tasks – 3 mins)

a. They show they can reopen the file and create a new

column/row

b. They show they can change and delete a row

c. They show they can sort/reorder the data

Part 3a: Teachers make an MS PowerPoint presentation with information about themselves and some Clip art images to illustrate the text (2 tasks – 7 mins)

Part 3b: Teachers present the information of PowerPoint in English or Nepali (one task – 2 mins)

Part 4: Teachers search the internet for the history of Kathmandu Valley/the country of the first female prime minister in the world. (2 tasks – 3 mins)

a. They show they can make a note of the information and the source where they found it. (Note: make sure whether the teachers are aware of the URL)

Total time required: about 18 mins

Notes on administration of the test

- The assessment should be administered in a quiet place, with a table and two chairs, for the researcher and the teacher.
- The researcher should have printed sheets of Annex A and Annex B (attached here) ready to use.
- The examiner should have a laptop and a dongle for internet which should be tested before the testing is done. Check that there is sufficient battery or power supply if applicable.

Notes on the conduct of the test

- Give clear instructions in the teachers' mother tongue in order to prompt the teacher's action against the tasks.

- Act sensitively towards the teacher, who may be nervous and have never taken a digital test before.

- If the teachers do not understand the instructions, repeat instructions/or give backup instructions.
- All teachers should be given a chance to complete the different parts of the test. If the teacher cannot perform a task, move on to the next task. If, for example, the teacher cannot find where to open a document, the researcher should open it for her/him to allow a chance to complete the later task. However, if the teacher is not able to start the input and saving tasks within one minute, move on to the next part of the test.

Part 1 (3 mins)

Give the following data to teachers.

Template A (see Annex I)

My life
My name is
I live in
I am years old.

Please give the following instructions. (Note: these instructions should be provided in Nepali. The teachers can type in Nepali as well while creating a word file, and PowerPoints, and searching information.)

Researcher's instructions (Use Nepali while providing instructions)	***Back up instructions, if needed***	***Notes***
Can you make a document that shows this information? Show Template A. Note: If the teachers cannot open a word document, open it and go to the next task. Only give back up instructions if necessary i.e. if the teacher is very hesitant, unsure or unwilling to ask.	*'Create a new Word document, please'.* *If I want to create a document to write about myself, I can use MS Word.* *Can you find where I can open a Word document?*	The teacher opens a word document on the laptop.

You may say, *'Good!'* Note: If teachers could not open the documents and cannot type anything, do not continue this task. Go on to Part	*Please type these words and finish the sentences so they are true for you.* (point to separate template)	The teacher copies the text and completes the sentences about herself/himself.
Please save your document in 'My documents.' *Name it [*insert name of teacher*]*		
Can you find and reopen the file you just saved?		
Can you change the type or size of font?		
Can you save this document anywhere other than 'My documents'? *Name it something other than your name*		

Part 2 (3 mins)

Give the following data to teachers.

Template B (see Annex II)

Name	**Number of books**
Deepa	4
Kapana	3
Mandira	2
Ratna	7
Total books	

Give the following instructions.

Researcher's instructions	***Back up instructions, if needed***	***Notes***
'Put this information into a spreadsheet in exactly the same format'. You show Template B. You may say, *'Good!'* Can you sort the table so the girl with most books is at the top? Note: If a teacher cannot open a spreadsheet, you need to open it and go to the next task. Only give back up instructions if necessary i.e. if the teacher is very hesitant, unsure or unwilling to ask.	*If I want to do some calculations with my information, I can use an Excel spreadsheet.* *Can you find where I can open an Excel spreadsheet?* *Please type these words and numbers into the spreadsheet.* (point to separate template)	The teacher opens a spread sheet on the laptop and fills out the information.
Can you add a new column or row?		
Can you delete the column or row that you added?		
Please calculate the total in the box. Point to total box. You may say, *'Good!'*		

Note: If a teacher could not open the spreadsheet and cannot type anything, do not continue the task. *'Please, save the document on the desktop. Call it 'Library record1.'* You may say, *'Good!'*		The teacher saves the document naming it 'Library record 1'.

Part 3a (about 7 mins)

Give the following instructions.

Researcher's instructions	***Back up instructions, if needed***	***Notes***
'Please make a presentation with information about you and your hobbies.' You may say, *'Good!'* Note: If a teacher cannot open the PowerPoint application, the examiner needs to open it and go to the next task. *Can you add some pictures to illustrate what you have written?* You may say, *'Good!'* Note: If a teacher cannot	*Open a new PowerPoint presentation on the laptop.* *Write your name and your hobbies.* *'Please, insert two pictures in your slide.'*	The teacher makes a PowerPoint presentation with information about himself/herself. The teacher chooses how to make it more attractive and / or inserts two images to illustrate the text.

Part 3b (about 2 mins)

Give the following instructions.

Instructions	***Back up instructions, if needed***	***Notes***
Can you show me the slides? You may say, *'Good!'*	*Show me your presentation and tell me about yourself and your hobbies.*	The teacher *uses slide show mode to show (but not necessarily fully present) what she has written.*

Part 4 (about 3 mins)

Material needed: Internet dongle

Connect the laptop to the internet and give the following instructions.

Instructions	***Back up instructions, if needed***	***Notes***
'Please find out the cultural heritages of Kathmandu Say, *'Good!' Now find out the name of the first female prime minister in the world.* Say, *'Good!'*	*Go to Google.com* *Type 'cultural heritage of Kathmandu* *Translate / spell population if needed.* *Go to Google.com* *Type "first female prime minister"*	The teacher searches the internet for the cultural heritages of Kathmandu The teacher searches the internet for *the name of the first female prime minister in the world*.
Can you make a note of this information somewhere and the source where you found it?		

Annex I: Part 1, Word task template (to be printed)

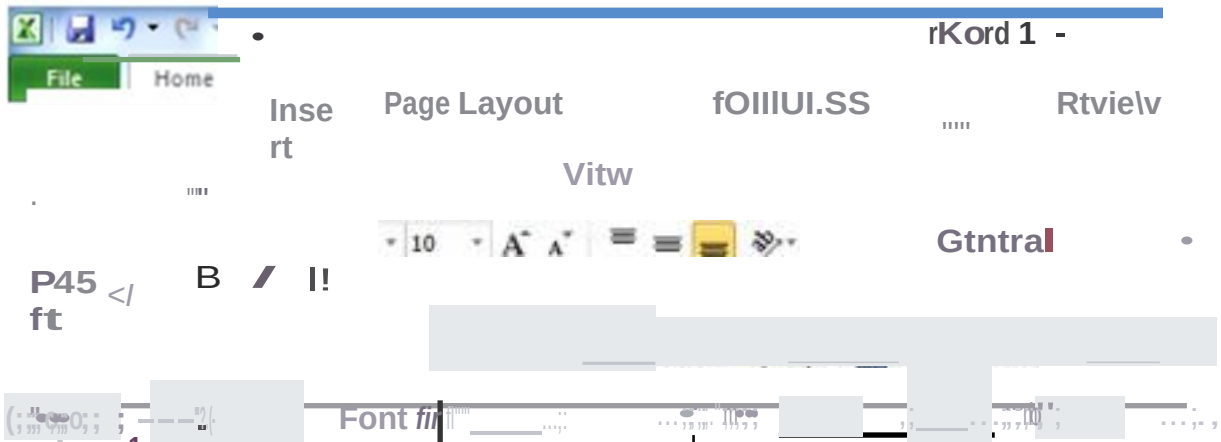
My life

My name is

I live in

I am years old

Annex II:Part 2 (to be printed)



	A	B
1	Name	Number of books
2	Deeoa	4
3	Kapana	3
4	Mandira	2
5	Ratna	7
6	Total books	

Annex III: Rating scales

There are two parts to scoring the digital test.

Firstly, please give teachers a score for each section of the test using the descriptions below.

Part 1

Maximum possible score in this section: 2

Rating	Description
0	The teacher is not able to open a Word document and complete the task
1	The teacher needs help opening/saving the Word document but is able to complete the task successfully
2	The teacher is able to complete the task successfully without hesitation or additional support

Part 2

Maximum possible score in this section: 3

Rating	Description
0	The teacher is not able to open an Excel worksheet and complete the task
1	The teacher is able to open/save the Excel worksheet and type the information, but is not able to complete the other tasks
2	The teacher is able to open/save the Excel worksheet and type the information, but requires help to complete the other tasks successfully
3	The teacher is able to complete all tasks successfully without hesitation or additional support

Part 3a

Maximum possible score in this section: 3

Rating	Description
0	The teacher is not able to open a PowerPoint presentation and complete the
1	The teacher is able to open the PowerPoint presentation and insert information about themselves but is not able to insert images
2	The teacher is able to open the PowerPoint presentation and insert the information, but requires help to complete the other tasks successfully
3	The teacher is able to complete all tasks successfully without hesitation or additional support

Part 3b

Maximum possible score in this section: 2

Rating	Description
0	The teacher is not able to open the slide show mode and complete the task
1	The teacher is able to open the slide show but cannot fully present what is
2	The teacher is able to open the slide show and present the information without hesitation

Part 4
Maximum possible score in this section: 3

Rating	Description
0	The teacher is not able to open Google.com and complete the task
1	The teacher is able to open Google.com but cannot complete the other tasks accurately or on time
2	The teacher is able to open Google.com but requires help to complete some
3	The teacher is able to complete all tasks successfully without hesitation or additional support

Total test score

Secondly, please calculate teachers' test result according to their combined score for all parts of the test.

For example, a teacher may get the following scores for the different parts of the test:
Part 1: 1
Part 2: 2
Part 3a: 2
Part 3b: 1
Part 4: 1

In this scenario their total score is 7 and their test result should be 'Competent'.

Maximum possible total score for test: 13

Total score	Rating
0	Non-user
1-3	Novice
4-6	Beginner
7-9	Competent
10-12	Proficient
13	Expert

Annex-7: List of schools and participants

Province	Municipalities	Schools	Respondents (Teachers)	Respondents (Students)
1	Khandabari (Sangkhuwashabha)	Mangala Devi Secondary School	Yogendra Kumar Shrestha Debaraj Giri Tulasi Kumar Parajuli Rohini Pokhrel	Anisha Gurung Manjali Chauhan Asmita Chauhan Rajan Rai Rabin Khanal
		Himalaya Secondary School	Bharat Rai Sulochana Sharma Basanta Karki Tara Nath Karki	Suman Karki Mohan Rai Sunil Rai Krishna Sharma Ishwari Rai
		Manakamana Ratna Ambika School	Samar Khadka Uma Bhattarai Dinesh Chapagain Jenisha Bajagain	Pranisha Magar Sushma Karki Roshan Bhattarai Anish Rai Ananta Magar
	Biratnagar (Morang)	Adarsha Secondary School	Tulasi Dulal Santosh Pokhrel Indra Chauhan Rudra B. Karki	Pabitra Rajbangshi Rohit Khatun Awaj Khan Raju Gupta Mohammad
		Janata Secondary School	Shakhar Pokhrel Tikaram subedi Chintamani Rijal Ramesh Adhikari	Dip Tamang Kaushila Khadak Mina Bhujel Radhika Sharma Chotelal Gupta

		Mahendra Secondary School	Anju Khadka Kameshwar Mandal Devi Dahal	Ruchika Paudel Suwat Rajbangshi Khem Kumari Mishra Nilu Devi Jiya Khatun
2	Birgunj (Parsa)	Siddhartha Secondary School	Rajesh Pandey Shasi Lata Giri Aplesh Mishra Rajeshwar Pandey Ram Abadesh Ray	Ranjita Kumari Sharma Neetu Gupta Anil Mahato Summit Yadav
		Shree Nrisingh Secondary School	Anil Kumar Barnwal Nanda Kishor Prasad Kaushal Patel Manju Patel	Saloni Patel Aryan Kumar Chauhan Bisha Kumari Ram Baliram Mandal
		Sharada Secondary School	Ram Narayan Mishra Santosh Kumar Karna Gita Thakur Prajapati Mojahir Pandit	Ruplal Kumar Ram Anushka Kushwaha Sneha Yadav Raj Kumar Gupta Dewanand Mahato
	Bardibas (Mahottari)	Janata Secondary School	Deepak Raj Baral Lila Nath Gautam Govinda Chaudhary Rima Bhandari	Anbisha Acharya Manisha Karkee Anugraha BK Govinda Kumar Mahato Binayak Gautam
		Jana Jagriti Secondary School	Jateshwar Das Kiran Raj Baral Sunil Kumar Yadav	Subasini Majhi Bidhya Basnet Anju BK

			Lekh Bdr. Kalikote	Dipendra Khadka Arun Bista
		Deurali Secondary School	Dhan Bahadur Rai Indra Lal Lama Pradip Kumar Karki Pawan Kumar Wagle Bishes Kumar Baskota	Saraswati Lama Debaka Basnet Rajesh Gajamer Bharat Kumar Mandal Soma BK
3 (Bagmati)	Manthali (Ramechap)	Nagkanya Secondary School	Biddiram Phuyal Arjun Satyal Binaya Kumar Jha Kalpana Shrestha Rita Phuyal	Krishna Budhathoki Jamuna Majhi Samjhana Majhi Kritana Khadka Tulsiram Magar
		Manthali Model School	Chandra Singh Dhami Surendra B. KC Basanta Sudebi Samita Magar	Sangam Bohara Pangking Gole Sagar Magar Rosita Sunuwar Sadiksha Subedi Roshan Dulal
		Bhairabi Secondary School	Gyaneshor Ghimire Kalpana Bhujel Dinesh Karki Nirmala Karki	Kailash Karki Manisha Bhujel Puja Karki Karuna Karki Manish Thapa
	Dhulikhel (Kavre)	Hanuman Secondary School	Devi P. Dhungana Nava Raj Sapkota Raj Narayan Yadav Ran Kumar Bajgai	Gita Lama Raj Kumar Tamang Manika Dahal Priti Bajagain Sushmita Khadka

		Shrikhandapur Secondary School	Dilli Ram Niroula Ranjit Rai Shasikala Kafle Navaraj Timalsina	Somlal Tamang Devi Adhikari Ramita Bhujel Karuna Shreshtha Kalpana Adhikari Jyoti Lama
		Sanjivani Model School	Toshal Dahal Lokendra Dhakal Bhima Tamang Karuna Koirala	Manik Moktan Susan Thapa Amrit Basnet Prabina Thapa Priti Dhakal
4 (Gandaki)	Kusma (Parbat)	Narayan Secondary School	Ambika Ddevi Lohani Yamuna Sharma Prakash Rijal Daya Shankar Upadhyaya Gobinda Dhakal	Sneha Puri Neha Puri Prachi Shrestha Pushpa Pun Mandip Bhushal Balak Shrestha Adishkar Subedi Roshan Sunar
		Mangalodaya Secondary School	Nagesore Upadhyaya Tham Prasad Sharma Ram Bahadur Chetri Pramod Subedi Taranath Sharma	Aarush Sharma Binisha Subedi Amrita Sharma Selisha Giri Rupak Chhetri Sandesh Pokharel
		Shivalaya Secondary School	Bhupendra Chapagai Moti Kumari Pun Bal Krishna Bastola Lok Raj Pokharel Laxmi Sharma	Devaki Subedi Prabina Pun Magar Saraswati Sharma

			Ananda Poudel	Aashish Paudel Asbin Magar Aayush Lamichhane
	Pokhara (Kaski)	Shanta Secondary School	Bishnu Prasad Bhattarai Shankar Raj Adhikari Pabitra Subedi Manoj Banstola Tirtha Raj Dhakal	Saraswati Jalari Melina Thapa Sabita Timilisina Dipika Khadka Leeja Timilsina Bibek Sharma Abhishek Dawadi Manish Thapa Basudev Adhikari
		Barahi Secondari School	Shiva Prasad Bhandari Kamaldip Bajagai Manju GC Tulasi Prasad Bhandari Suresh Kumar Poudel	Kajal Ruchal Indra G. Magar Ram Kuswar Majhi Kalika Bhattarai Sarita Nepali Krishna Pandey
		Bindhyawasini Secondary School	Basanta Raj Pande Bishnu Timilsina Kamal Prasad Lamichane Shiva Prasad Devkota Rekha Subedi Ramji Pd. Poudel	Shilpa Bhujel Kamal Neupane Pabitra Giri Safal Poudel Sharmila Adhikari Om Prakash Poudel Sapana Bhujel
		Bal Kalyan Secondary School	Krishna Dangi Shyam Buda Magar	Manisha Aidi Narendra BK Romiya Acharya

5	Rolpa (Rolpa)		Bishnu Kala Gharti Lekhmani Khadka	Keshav Oli Anita KC Susan Pokhrel Shiva Budha Magar
		Tara Secondary School	Laxman Singh Thakuri Abilal Mahara Madan Kawar Kamala Kawar	Dipa Kanwar Karuna KC Hari B. Nepali Shankar Gharti Magar Kamal Mahara Dilmaya Mahat
		Rastriya Secondary School	Purna B. Magar Jabindra Bista Liladhwaj Panthi Kima B. KC Chameli Kunwar Padam Kumari Mahara	Gita Gharti Jeevan Gharti Narendra Gharti Lali Rokka Pradip Rokka Dipak Gharti
	Ghorahee (Dang)	Padmodaya Secondary School	Ram Prasad Jaisi Shyam Sundar Shah Hem Raj Poudel Yasoda Neupane	Kiran Adhikari Puja Subedi Rupa Lamichane Ashma Choudhari Dipika Giri Basanti Oli
		Bal Bikas Secondary School	Rajendra Shrestha Madhab Chaudhari Narayan Sunar Homkumari Gharti Bimala Thapa	Aakansha Tiwari Laxmi Rokka Sapana Gharti Amrita Gharti Bikas Gharti
		Saraswati Secondary School	Basanta Poudel Yasodha Neupane Kul Shekhar Chaudhari	Basanti Rokka Sisir Rokka Binod Khadka Man Chetri

6 (Karnali)	Narayan Municipality (Dailekh)	Basanta Secondary School	Dharma Bahadur Khadka Bhuwaneshwari GC Ramesh Khadka Tarka Bahadur Shahi	Karishma Malla Prabin Singh Mausam Kumar Rawat Karisma Khadka Yagya Kumari Malla Namrata Thapa
		Janata Secondary School	Parbati Pokharel Roshan Sapkota Raj Kumar Thapa Jagat Bahadur Thapa	Bhagawati Nepali Sandesh Khadka Kamal Nepali Kalpana Bishta Karishma Bi. Ka.
		Tribhuvan Secondary School	Norak Bahadur Tarami Nita Sharma Padam Bahadur Thapa Debendra Bahadur Sijapati	Goma Kumari Pathak Ayushma Malla Narendra Jung Rana Chanas Thapa
	Birendranagar (Surkhet)	Jana Namuna Secondary School	Yam Bahadur Shrestha Khagendra Shahi Minu Bhatta Bhawana Basnet	Sangita Karki Debendra Chaulagai Bimal Budha Ayushma Paudel Santosh Thapa Rajesh Shahi
		Shree Krishna Sankrit and General Secondary School	Yamlal Ghimire Saraswati Basnet Shobha Shahi Man Bahadur Chaudhari	Dhanraj BiKa Pushpa Kamal Dhakal Rupak Sapkota Asmita Acharya

				Yamuna Chanda Tulasi Khatri
		Janasewa Secondary School	Bhakta Bahadur Shahi Topendra Bahadur Shahi Panchratna Sharma Madanraj Jaisi Narendra Khatri Krishna Bahadur Thapa	Sher Bdr. BK Hari Prasad Adhikari Aatmananda Nepal Anisa Shahi Sicha Chaudhari
7 (Sudurpashchim)	Dhanagadi (Kailali)	Dhangadhi Namuna Pravidik Secondary School	Laxman Datta Bhatta Radha Bist Uddhav Kumar Singh Laxmikant Joshi	Rohit Shahi Ranjana Chaudhari Ranjana Rana Hima Shahi
		Janakalyan Secondary School	Tarka Raj Joshi Umakanta Joshi Rekha Kumari Kunwar Anga BahadurBhandari	Dhurba Rana Sejal Khanal Sharmila Tamang Santosh Jaisi Nirmala Bogati Pashupati Bogati
		Panchodaya Secondary School	Harish Ojha Bindu Shahi Rajendra Pokharel Gangaram Ojha	Pawan Bhatta Laxmi Joshi Saraswati Saud Prabin Chand Karan Bohora
	Amargadhi (Daleldhura)	Mahendra Secondary School	Surendra Ayer Ashok Bam Gopal Pandey Tulsi Thakurathi	Log Kunwar Kamal Raj Giri Rajendra Nidal Kanchan Ayer Ritu Bhandari Jyoti Pujara
		Bhageshwor Secondary School	Jaya Prasad Joshi Ramesh Kumar Pal	Bibek Damai Sneha Bhatta Binita Ojha

			Chet Bahadur Rokaya Dharma Raj Bhatta	Khagendra Mahar Laxmi Karki Kamala Ojha Puspa Bhatta
		Ugratara Secondary School	Chandra Bahadur Shahu Ram Datta Joshi Parbati Bogati Hark Bahadur Saud	Suraj Paneru Nirmala Bhattarai Bhuwan Pandey Puspa Pariyar Bhagarathi Bohora