DIGITAL LITERACY AMONG TEACHER TRAINEES AT SECONDARY LEVEL

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PREFACE

Information and Communication Technology (ICT) has lot of potential to change the system of school and teacher education. Both pre-service and in-service teachers must have to develop skills and competencies of using digital devices and application in the teaching learning process. Teacher education institutes have taken initiatives for integrating ICT in teacher education curriculum with intention to make all trainees digitally literate. Because future learners are digitally native who required education through digital devices and applications. In this context, this study was undertaken by RIE Bhubaneswar to find out the level of digital literacy of teacher trainees at secondary level.

This research report has given a detailed discussion on concept of the digital literacy, recommendations of the different committees on use of ICT, rationale of the study, method, sample, tools, data analysis, major findings and educational implications. This report will be great use for the teacher education administrators, principals, teacher educators, teacher trainees and researchers in education. Further findings of the study can be utilised for revising the curriculum of pre-service and in-service teacher education.

Date:26/03/2018   **R. Mohalik**

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1. INTRODUCTION

Digital literacy is the engine of the modern civilization and the driving force of the information age. Today the meaning of literacy is not just the ability to read and write. It extends to effective application of all those activities in which literacy is normally assumed. The modern meaning has been expanded to include the ability to use language, numbers, images, computers, and other basic means to understand, communicate, gain useful knowledge, solve mathematical problems and use the dominant symbol systems of a culture. In this context, digital literacy has become much more than the ability to handle computers, just like traditional literacy and numeracy, it comprises a set of basic skills which include the use and production of digital media, information processing and retrieval, participation in social networks for creation and sharing of knowledge, and a wide range of professional computing skills. Digital literacy improves employability because it is a gate skill, demanded by many employers when they first evaluate a job application. It also works as a catalyst because it enables the acquisition of other important life skills.

The origin of the word *literacy* refers to the ability to read and write. Early descriptions of computer-related literacies also focus on the acquisition of sets of rules and technical capabilities. However, by the end of the 20th century, this definition had expanded considerably. According to the working definition, agreed at the UNESCO (2003) Expert Meeting in Paris, "literacy is the ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society." (UNESCO, 2004)

Digital literacy is an umbrella concept for important skill clusters whose names are often used as synonyms; their content, however, is not exactly the same. ICT literacy refers to a set of user skills that enable active participation in a society where services and cultural offerings are computer-supported and distributed on the internet. Technological literacy and computer literacy entails a deeper understanding of digital technology and comprises both user and technical computing skills.

Information literacy focuses on one of the key aspects of our Knowledge Society: the ability to locate, identify, retrieve, process and use digital information optimally. The term digital literacy retains a close connection with other basic literacies (e.g. reading and writing, mathematical competence) that are integral parts of education.

Different committees and commissions has strongly recommended for uses of ICT and digital technology in the education system for increasing its efficiency. The National Policy on Education 1986, stressed the need to employ educational technology to improve the quality of education. The significant role ICT can play in school education has also been highlighted in the National Curriculum Framework 2005 (NCF) 2005. Use of ICT for quality improvement also figures in Government of India's flagship programme on education, Sarva Shiksha Abhiyan (SSA). Again, ICT has figured comprehensively in the norm of schooling recommended by the Central Advisory Board of Education (CABE), in its report on Universal Secondary Education, in 2005. With the convergence of technologies, it has become imperative to take a comprehensive look at all possible information and communication technologies for improving school education in the country. The comprehensive choice of ICT for holistic development of education can be built only on a sound policy. For improvement of digital literacy among students, GOI frame a national policy on Information and Communication Technology in School Education in 2012.The initiative of ICT Policy in School Education is inspired by the tremendous potential of ICT for enhancing outreach and improving quality of education. This policy endeavors to provide guidelines to assist the States in optimizing the use of ICT in school education within a national policy framework. Through the digital literate learners have accessing, managing, evaluating, integrating, creating, and communicating information individually or collaboratively in a networked, computer supported, and web-based environment for learning.

Teacher education needs to orient and sensitize the teacher to distinguish between critically useful, developmentally appropriate and the detrimental use of ICT.For seeing the importance of digital technology in today's world many commissions and committees emphasis on proper infrastructure in teacher education institutions and their appropriate use in teaching learning process as well as for administration purposes. NCFTE, 2009

says that ICT can be imaginatively drawn upon for professional development and academic support of the pre-service and in-service teachers. Justice Verma Commission (2012) recommended that ICT may be utilized and materials developed in a decentralized and contextualized mode with participation of teachers and teacher educators for more sustained benefits. ICT should not be perceived as an 'efficiency mechanism' for large scale outreach only, as that assumes a 'broadcast' model in which the creation/control is central and the peripheries are seen as 'consumers/users'. The real power of using ICTs is to decentralize the curricular and pedagogical processes that are currently existent.

National Council for Teacher Education (NCTE) 2014 regulation laid down guidelines about availability of ICT infrastructure in teachers training institutions. In accordance with regulation, several specialized courses shall be offered in B.Ed. programme to enhance professional capacities of a student- teacher such as courses on language and communication, drama and art, self-development and ICT. A course on critical understanding of ICTs shall be offered as an important curricular resource, according primacy to the role of the teacher, ensuring public ownership of digital resources, and promoting constructivist approaches to privilege anticipation and co-creation over mere access to ICTs. It also gives emphases on ICT Resource Centre in the teacher educating institute and also there shall be ICT facilities with hardware and software including computers, internet, TV, Camera; ICT equipment like ROT (Receive Only terminal), SIT (Satellite Interlinking terminal) etc. ICT must be integrated in different theories & practicum paper to develop skills and competency of prospective teachers.

In teacher education, digital literacy involves the development of knowledge and skills for using general computer applications, learning specific software programmes and Internet tools confidently and competently. It comprises a number of aspects, including technological awareness, technical vocabulary, components of computer, concepts of data and programmes, ways of computing, working on files, documents and pictures, working with multimedia, evaluating resources and communicating with others.

As per the recommendations of the NCTE regulation 2014, all states have revised their curriculum, incorporated ICT in the teaching learning process and provided ICT

facilities in the teacher training institute with intention to develop digital skills of trainees.

2. RATIONALE OF THE STUDY

The present age is digital age. Digitalization has influenced all the aspects of human life including teaching learning. It has great potential for quality improvement of education in schools. Hence, teachers of digital era should not have only content knowledge, but they should have pedagogic as well as technological knowledge so that they can transact knowledge to students in an advanced way. Teacher should also use the digital technology for their preparation for delivering the lesson as well as can use inside the classroom to make the students better understanding of the particular lesson. Teacher can also use technology for assessment purpose as like digital portfolio. Hence, the prospective teacher must possess digital literacy for effectively dealing with digital native students in future. In this context, the government of India and states has provided ICT facilities to all teacher training institutions. The curriculum of all teacher education courses has been revised and ICT components are included. It is high time to examine the level of digital literacy of teacher trainees so that suitable intervention can be planed.

Recently many researchers have taken interest on uses of digital devices and applications in teacher education. Some of the relevant studies are discussed in the following paragraph.

Devim, M. (2016) conducted a study on ICT Literacy among B.Ed Teacher Trainees. The study found that there was no significant difference between male and female B.Ed Student teachers on ICT Literacy. There was no significant difference between Tamil and English B.Ed student teachers on ICT Literacy. There was significant difference between Rural and Urban B.Ed student teachers on ICT Literacy. Hence, B.Ed student trainees' had moderate level of ICT literacy and the urban B.Ed teacher trainees mean scores was higher than the rural.

Bulfin Scott (2016) reported that many secondary schools engage their students in learning with the use of digital technology inside classroom but there are also some schools which neglect the use of digital technology in teaching learning process.

Armistead, Stuart (2016) found that digital technology has significant potential to enhance learning opportunity which a student needs to be successful in his /her life.

Li lan (2015) found that use of digital technology is significantly correlated with self efficacy, perceived computer skill and technology access and support for both teachers and students.

Oloyede Soloman Oyelekan (2015) studied ICT Literacy among student teachers and stated that there was no significant difference in the level of ICT literacy between male and female student teachers. The student teachers in the northcentral zone of Nigeria have an average ICT literacy.

Sivasankar, A. (2014) conducted a study on ICT awareness among Higher Secondary School Teachers in Tirunelveli District. This study reveals that the higher secondary school teachers from English medium, teachers from urban areas and matriculation higher secondary school teachers are better in their ICT awareness than their counter parts.

Tabasum, S. (2014) conducted a study on Digital Literacy awareness among Arts and Science College Students in Tiruvallur District and found that majority of the students are average in computer literacy level. Majority of male students spend daily on computers and majority of the female student's usage computer weekly. Majority of students can use MS-Word among various offices software. Excel is more used by female students whereas power point is used more by male undergraduate students. 91.57% of male students and majority of female students make use of audio materials. Majority of arts and science students make use of internet, search engines, e-mail, multimedia and simulations / animations.

Nowell (2014) found that students in the initial stage are facing difficulties in connecting their personal media use with its usefulness in educational tools. So the teachers have the responsibility to facilitate the students, how to use the digital media as learning tools.

Wang, Shiang kwei (2014) found that digital natives misleading and disconnect student's inside and outside classroom technology experience.

Hatlevik (2013) found that digital competency among secondary students is due to different factors like classroom teaching methods, home environment, language integration and academic aspirations etc.

Gurung, Binod (2013) found that students digital engagement was not only inside the classroom but also with their family, friends and siblings and this digital use was subjective, progressive, proactive, multidimensional as well as problematic.

Guha (2013) studied on teacher's perspective of the use of computer and revealed that workload and time management as barriers in implementing computer in classroom instruction. Further, lack of knowledge, lack of time, lack of equipment, maintenance, insufficient funds was another factor that is the hindrance in the use of ICT in Education

Beena and Mathur (2012) conducted a study on ICT awareness of M.Ed. Trainees and found that male M.Ed. students possess significantly higher awareness of ICT in education than female M.Ed. students and management of the M.Ed. College does not effect on the awareness of use of ICT in education.

Rajiv K. Pancham & Milind S. Gawande (2012) conducted a study on enhancing learning and teacher education through ICT in changing scenario. The findings of the research revealed that ICT in education promote Active Learning, Collaborative Learning, Creative Learning, and integrative Learning Evaluative.

Pattee, Andy (2012) found that digital technology helps a teacher for being an effective technology user, a lifelong learner in advanced ways, make effective technological Pedagogical Content Knowledge as well as an effective mentor and facilitator.

Kumar et al, (2009) studied on use and awareness of electronic information resources and services among the teachers and students of Institute of Informatics and Management Sciences Meerut, U.P. (India): A Case Study. The study reveals that 25% of teachers and 41.6% of students prepare course material for teaching/study. About 50% of the teachers and 50% of the students are use electronic information resources to update research work purpose and 37.5% teachers and 16.6% students use for paper publication.

Priya (2007) studied on an analysis of web usage among teacher educators and student teachers and reported that WWW is considered as important learning equipment among the Student Teachers and Teacher Educators. The Student teachers access the Web more

than the Teacher Educators. It shows that the internet has not penetrated fully in every sphere of life, particularly in the academia.

The above discussion reveals that attempt has been made by the researcher to examine the use of digital technology and devices in schools, colleges and teacher education institutes by the teachers and students. Mostly researches were conducted in abroad. Few studies were conducted on digital literacy of teacher trainees and teacher educators. In this context, study on digital literacy of teacher trainees is relevant.

3. STATEMENT OF THE PROBLEM

The present problem was stated as "Digital Literacy among Teacher Trainees at Secondary Level".

4. OPERATIONAL DEFINITION OF THE TERMS USED

Digital Literacy: For this study digital literacy refers to the awareness of trainees about different types of digital devices like smart phone, tablet, computer, laptop, scanner, printer etc and software and applications. Further, it covers the uses in teaching learning and internship activities.

Teacher Trainee: It refers to the last year trainee teachers of secondary teacher training Institute of Utkal University, Odisha.

5. OBJECTIVES OF THE STUDY:
- To study the level of digital literacy among teacher trainees
- To study the process of using digital devices and apps for teaching learning by teacher trainees

6. METHODOLOGY OF THE STUDY

Method:
Survey method was used for studying the level of digital literacy and uses among trainees. Survey was most suitable method to examine the current status of any event/ phenomenon/ affairs in education.

Population:

Population for the present study consists of all the secondary teacher trainees of Utkal University, Odisha. There are four Institutes that offer secondary teacher education under Utkal University.

Sample:

The sample for the present study consists of 170 trainees of secondary teacher training institutes of Utkal University, Odisha. Out of 170 trainees, 50 are from Nalini Devi Womens College of Teacher Education, 50 from RIE Bhubaneswar and 70 from Radhanath Institute of Advance Studies in Education. This sample was selected randomly from trainees under Utkal University (NDWCTE, RNIASE, CTE and RIE).

Tools:

Self developed questionnaire based on different aspects of digital literacy and its uses was used for collection of data. This questionnaire is intended to assess the level of Digital Literacy and process of its use by the teacher trainees at secondary level. It consists of 28 items based on five aspects such as access of ICT devices and Apps, skills and competency of using ICT, general awareness of ICT, using ICT for teaching learning and barriers for using ICT. The tool has both closed ended and open ended items based on the selected aspects. Initially, investigators prepared the items by consulting available literature and researches. The draft tool was circulated among involved faculty members for their comments and suggestions. On the basis of the comments and suggestions, the tool was finalized. The tool is annexure in Appendix-A.

Techniques of Data Collection and Analysis:

The investigators personally visited secondary teacher training institutes for collecting data. After getting permission from the Principal, the purpose of the study and process of responding the tool was explained to the trainees. Trainees were asked to respond independently and provide frank opinion. The collected data was coded numerically and entered in MS Excel for analysis. All the items were analysed in terms of frequency and percentage and accordingly interpretation was made. The detailed analysis is given in following section.

7. DATA ANALYSIS AND INTERPRETATION

The collected data are analysed as per the objectives of the study by using frequency and percentage and qualitative descriptions. The detailed analysis and interpretation is presented in following pages.

Table-1: Availability of Digital Devices

Sl No.	Digital Devices	Available in Residence (Frequency & %)	Available at Institute (Frequency & %)
1	Desktop Computer	60 (35.3)	170 (100)
2	Laptop	105 (61.8)	51 (30)
3	Tablet	24 (14.1)	5 (2.9)
4	iPad	6 (3.5)	2 (1.2)
5	Smartphone	150 (88.8)	32 (18.8)
6	Interactive Whiteboard	0 (0)	52 (30.6)
7	Digital Camera	39 (22.9)	25 (14.7)
8	Internet Connection Devices	72 (42.6)	170 (100)
9	Scanner	16 (9.4)	66 (38.8)
10	Printer	24 (14.1)	170 (100)
11	Computer Lab	0 (0)	170 (100)

The table-1 indicates that 35% of trainees have desktop computer in home and all institutes have desktop computers. Further, the table reveals that 61.8% of trainees have laptop in home and 30% of institutes have laptop. 88.8% of trainees have smart phone at home and 18.8% of institutes have smart phone. No (0%) trainees have interactive whiteboard at home while 30.6% of institutes have whiteboard. 42.6% of the trainees have internet connections in home and all institutes have internet connection devices. No trainees have computer lab at home and all institute have computer lab.

It can be said that 64.7% of trainees do not have desktop computer, 38.2% of trainees do not have laptop, 11.2% of trainees do not have smart phone, 57.4% of trainees do not have internet connections and 85.9% of trainees do not have printer in home. Further, all institute have desktop, printer, computer lab and internet connections.

Figure-1: Availability of Digital Devices in Home

Desktop Computer: 35.3
Laptop: 61.8
Tablet: 14.1
iPad: 3.5
Smartphone: 88.8
Digital Camera: 22.9
Internet Connection: 42.6
Scanner: 9.4
Printer: 14.1
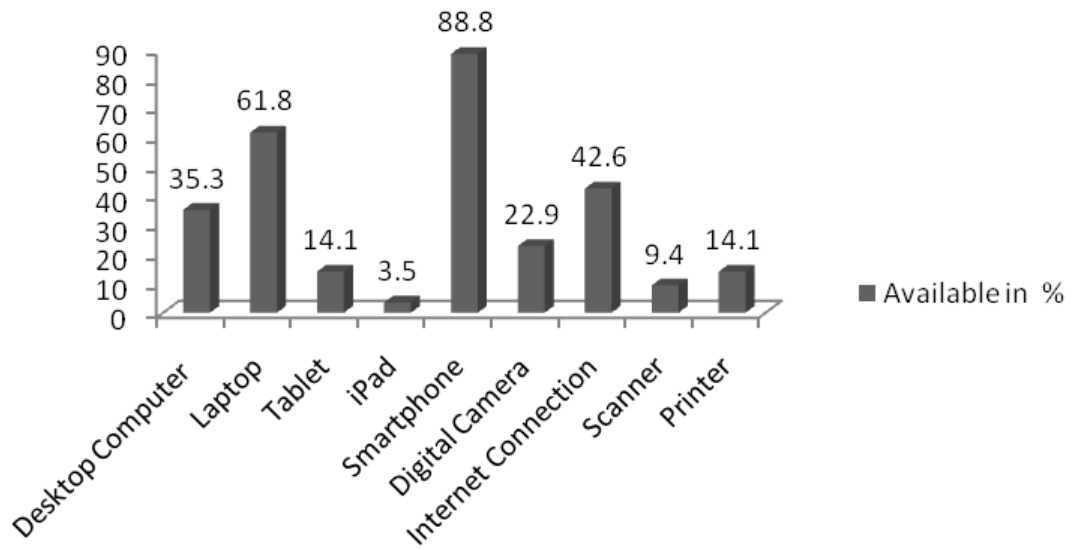
■ Available in %

Figure-2: Availability of Digital Devices in Institute

Desktop Computer: 100
Laptop: 30
Interactive Whiteboard: 30.6
Digital Camera: 14.7
Internet Connection: 100
Scanner: 38.8
Printer: 100
Computer Lab: 100

■ Available in %
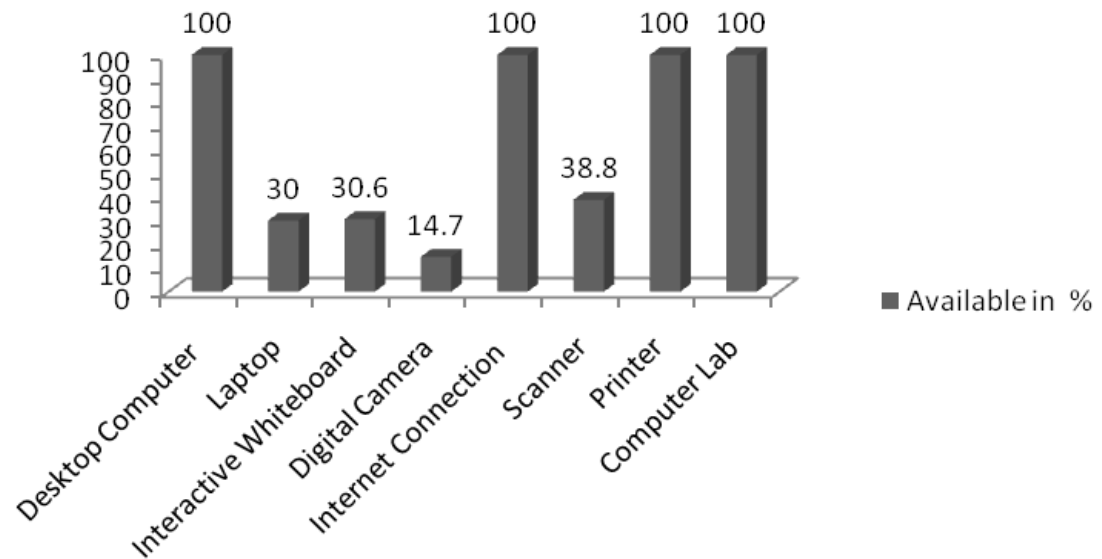
Table-2: Skills of Using Digital Devices

Sl No.	Items	Yes (Frequency & %)
1	Do you understand the basic functions of computer	150 (88.8)
2	Do you have a personal homepage or a personal portfolio on the web?	35 (20.7)
3	Do you use keyboard shortcuts?	151(89.3)
4	Do you use the computer for learning purposes?	164 (96.5)
5	Do you find it easy to learn something by reading it on the computer screen?	145 (84.8)
6	Do you find it easy to learn something by watching it on the computer screen?	159 (94.6)
7	Do you use social networking services?	153 (91.1)
8	Do you have any online friend you have never met in person?	110 (64.7)
9	Do you feel competent in using digital learning	124 (74.7)
10	Do you have mobile applications you use for	162 (95.9)

The table-2 indicates that 88.8% of trainees have understanding of the basic functions of computer, 20.7% of trainees have a personal homepage or a personal portfolio, 89.3% of trainees use keyboard shortcuts, 96.5% of trainees use the computer for learning purposes, 84.8% of trainees learn something by reading it on the computer screen, 94.6% of trainees learn something by watching it on the computer screen, 91.1% of trainees use social networking services, 64.7% of trainees have online friend to whom they have never met, 74.7% of trainees feel competent in using digital learning resources and 95.95**%** of trainees have mobile applications you use for learning.

It can be concluded that majority of trainees are using digital devices such as understanding of basics of computer, using shortcuts, use mobile of reading and learning but only 64.70% of trainees feels competent in digital devices.

Figure-3: Skills of Using Digital Devices
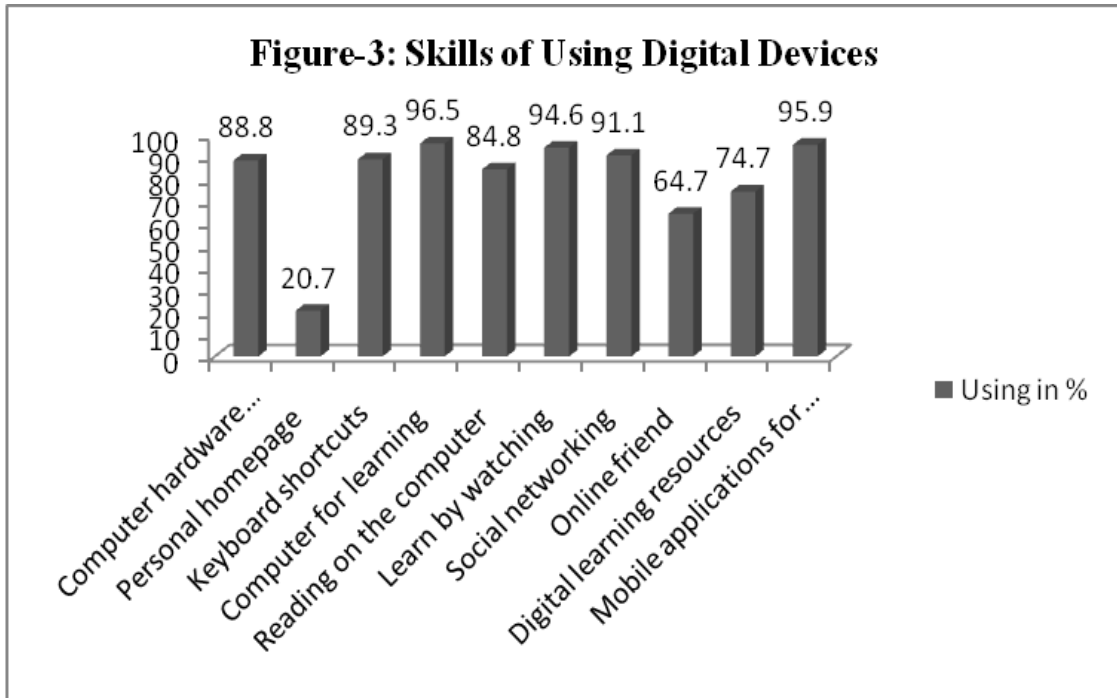
Table-3: Skills of Using Computers

Sl. No.	Items	Yes (Frequency & %)
1	Can you change computer screen brightness and contrast?	155 (92.3)
2	Can you minimize, maximize and move windows on the computer screen?	157 (92.9)
3	Can you use a 'search' command to locate a file?	160 (95.2)
4	Can you scan disks for viruses?	126 (75.4)
5	Can you write files onto a CD, a DVD or a USB drive?	107 (65.2)
6	Can you create and update web pages?	59 (35.8)
7	Can you create and update web pages?	140 (83.3)
8	Can you record and edit digital sounds?	92 (54.8)
9	Can you record and edit digital videos?	92 (55.4)
10	Can you download and use apps on digital devices?	154 (91.7)

The table-3 indicates that 92.3% of trainees change computer screen brightness and contrast, 92.9% of trainees minimize, maximize and move windows on the computer screen, 95.2% of trainees use a search command to locate a file, 75.4% of trainees scan disks for viruses, 65.2% of trainees write files onto a CD, a DVD or a USB drive, 35.8%

of trainees create and update web pages, 83.3% of trainees create and update web pages, 54.8% of trainees record and edit digital sounds, 55.4% of trainees record and edit digital videos and 91.7% of trainees download and use apps on digital devices.

It can be said that majority of trainees are familiar in working with computers. But 35% of trainees do not know process of writing CD, 65% of trainees does not know creating web page, 45% of trainees does not know editing digital sound and videos.

Figure-4: Skills of Using Computer
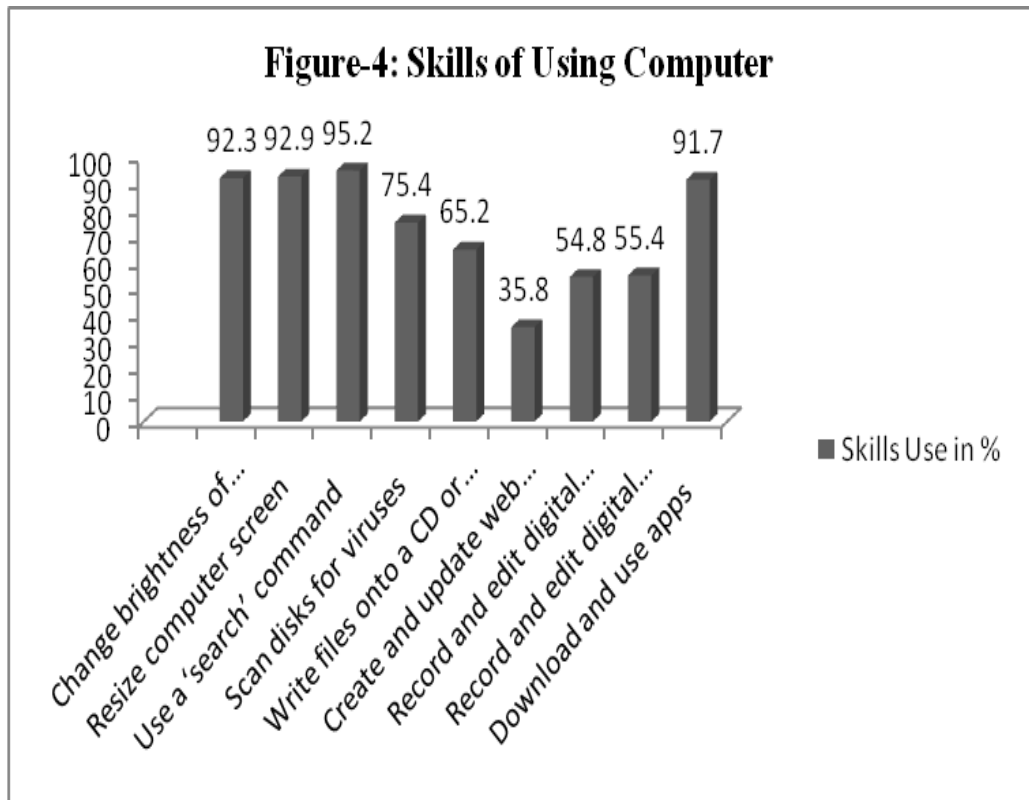
Table-4: Frequency of Using Applications

Sl No.	Items	Frequently (Frequency & %)	Occasionally (Frequency & %)	Rarely (Frequency & %)	Never (Frequency & %)
1	Word processor	66 (40.7)	69 (42.6)	17(10.5)	10 (6.2)
2	Email	126 (74.6)	35 (20.7)	6 (3.6)	2 (1.2)
3	World Wide Web	124 (74.3)	20 (12.0)	14 (8.4)	9 (5.4)
4	Graphics software	17 (10.2)	40 (24.1)	38 (22.9)	71 (42.8)
5	Database	23 (14.7)	39 (25.0)	48 (30.8)	46 (29.5)
6	Spreadsheet/Excel	26 (15.8)	68 (41.2)	53 (32.1)	18 (10.9)
7	Concordancer (for text analysis)	11 (7.4)	27 (18.1)	22 (14.8)	89 (59.7)
8	Learning software (CD-ROM, DVD)	23 (14.4)	53 (33.1)	51(31.9)	33 (20.6)
9	Learning website	106 (63.9)	38 (22.9)	16 (9.6)	6 (3.6)
10	Learning mobile app	127 (76.0)	25 (15.0)	7 (4.2)	8 (4.8)
11	Blog	27 (17.3)	29 (18.6)	37 (23.7)	63 (40.4)
12	Wiki	93 (56.7)	25 (15.2)	9 (5.5)	37 (22.6)
13	Text chatting	127 (76.0)	16 (9.6)	14 (8.4)	10 (6.0)
14	Voice chatting	90(53.6)	38 (22.6)	21 (12.5)	19 (11.3)
15	Video conferencing	69 (41.6)	43 (25.9)	31 (18.7)	23 (13.9)
16	Computer game	57 (34.1)	42 (25.1)	43 (25.7)	25 (15.0)
17	Electronic dictionary	100 (59.5)	32 (19.0)	17 (10.1)	19 (11.3)
18	Slide share	57 (34.1)	62 (37.1)	29 (17.4)	19 (11.4)
19	Twitter	24 (14.5)	21 (12.7)	24 (14.5)	97 (58.4)
20	Facebook	104 (61.2)	32 (18.8)	16 (9.4)	18 (10.6)
21	Digital Library	43 (26.4)	39 (23.9)	31 (19.0)	50 (30.7)
22	LinkedIn	24 (14.8)	22 (13.6)	27 (16.7)	89 (54.9)
23	e-Pathshala	49 (29.9)	25 (15.2)	32 (19.5)	58 (35.4)
24	S Planner	19 (11.9)	18 (11.3)	22 (13.8)	100(62.9)

The table-4 reveals that 40.7% of trainees uses Word processor, 74.6% of trainees uses Email, 74.3% of trainees uses World Wide Web, 63.9% of trainees uses Learning website, 76% of trainees uses Learning mobile app & Text chatting, 53.6% of trainees uses Voice chatting, 59.5% of trainees uses Electronic dictionary and 61.2% of trainees uses facebook frequently. The table also points out that 42.8% of trainees never use

Graphics software, 59.7% of trainees never uses Concordancer (for text analysis), 40.4% of trainees never uses blog, 58.4% trainees never uses twitter, 54.9% of trainees never uses LinkedIn and 62.9% of trainees never uses S planner.

Figure-5: Frequently Used Applications by Trainees

A bar chart showing: Word processor 40.7, Email 74.6, World Wide Web 74.3, Learning website 63.9, Learning mobile app 76, Wiki 56.7, Text chatting 76, Voice chatting 53.6, Video conferencing 41.6, Electronic dictionary 59.5, Slideshare 34.1, Facebook 61.2, e-Pathshala 29.9

Figure-6: Applications Never Used by Trainees

A bar chart showing: Graphics software 42.8, Database 29.5, Concordancer (for text...) 59.7, Blog 40.4, Wiki 22.6, Twitter 58.4, Digital Library 30.7, LinkedIn 54.9, e-Pathshala 35.4, S Planner 62.9
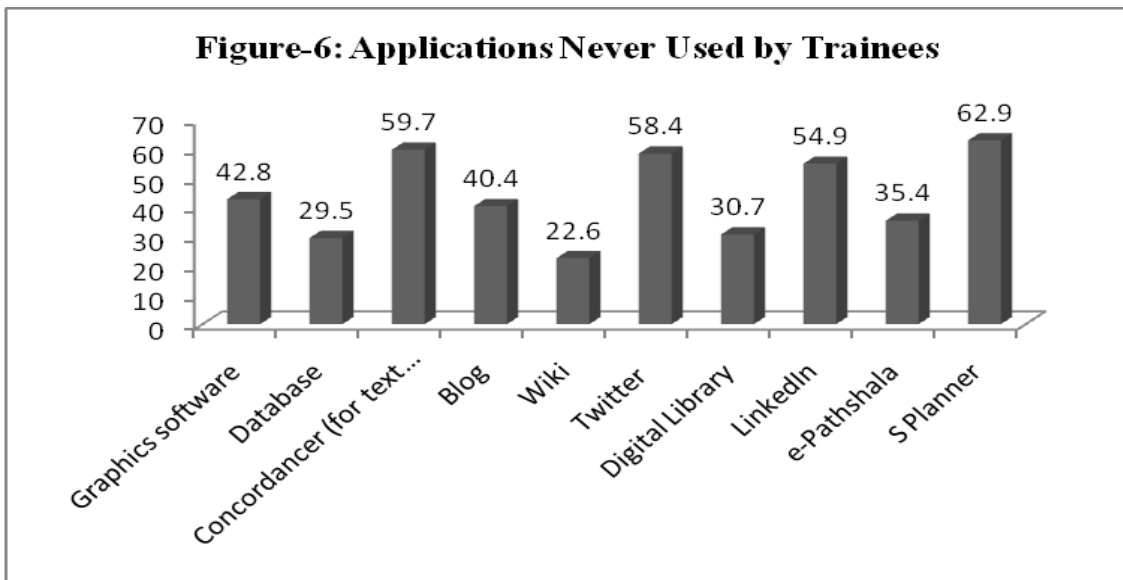
Table-5: Skills for Using ICT Applications

Sl No.	Working with	Good (Frequency & %)	Acceptable (Frequency & %)	Poor (Frequency & %)	Do Not Know (Frequency & %)
1	Word processing applications (e.g., MS Word)	130 (76.9)	34 (20.1)	1 (0.6)	4 (2.4)
2	Spreadsheet applications (e.g., MS Excel)	75 (44.6)	66 (39.3)	16 (9.5)	11 (6.5)
3	Database applications (e.g., MS Access)	27 (16.5)	55 (33.5)	43 (26.2)	39 (23.8)
4	Presentation applications (e.g., MS PowerPoint)	102 (61.1)	43 (25.7)	16 (9.6)	6 (3.6)
5	Communication applications (e.g., Skype)	57 (35.0)	34 (20.9)	27 (16.6)	45 (27.6)
6	Learning management systems (e.g., Moodle)	13 (8.1)	28 (17.5)	24 (15.0)	95 (59.4)
7	Virtual worlds (e.g., Second Life)	12 (7.6)	27 (17.1)	27 (17.1)	92 (58.2)
8	Social networking services (e.g., Facebook)	124 (73.8)	19 (11.3)	13 (7.7)	12 (7.1)
9	Blogs (e.g., Blogger)	20 (12.7)	38 (24.1)	37 (23.4)	63 (39.9)
10	Wikis (e.g., PBworks)	54 (33.5)	37 (23.0)	11 (6.8)	59 (36.6)
11	Podcasts (e.g., Apple Podcasts)	9 (5.6)	19 (11.7)	27 (16.7)	107 (66.0)
12	File sharing sites (e.g., Dropbox)	44 (26.7)	43 (26.1)	20 (12.1)	58 (35.2)
13	Photo sharing sites (e.g., Picasa)	67 (40.9)	42 (25.6)	18 (11.0)	37 (22.6)
14	Video sharing sites (e.g., YouTube)	125 (74.0)	16 (9.5)	11 (6.5)	17 (10.1)
15	Web design applications (e.g., Dreamweaver)	22 (13.7)	17 (10.6)	30 (18.6)	92 (57.1)
16	Web search engines (e.g., Google)	145 (86.8)	11 (6.6)	2 (1.2)	9 (5.4)
17	Dictionary apps (e.g., Dictionary.com)	135 (79.9)	19 (11.2)	5 (3.0)	10 (5.9)

The table-5 indicates that 76.9% of trainees have good skills of using Word processing applications (e.g., MS Word), 61.1% of trainees have good skills of using Presentation applications (e.g., MS PowerPoint), 73.8% of trainees have good skills of using Social networking services (e.g., Facebook) , 40.9% of trainees have good skills of using Photo sharing sites (e.g., Picasa), 74% of trainees have good skills of using Video sharing sites (e.g., YouTube), 86.8% of trainees have good skills of using Web search engines (e.g., Google) and 79.9% of trainees have good skills of using Dictionary apps (e.g., Dictionary.com). The table also reveals that 59.4% of trainees do not know skills of using Learning management systems, 58.4% of trainees do not know skills of using Virtual worlds (e.g., Second Life), 66 % of trainees do not know skills of using Podcasts (e.g., Apple Podcasts), 35.2% of trainees do not know skills of using File sharing sites (e.g., Dropbox) and 57.1% of trainees do not know skills of using Web design applications (e.g., Dreamweaver).

Figure-7: Good in Working with Computer Apps
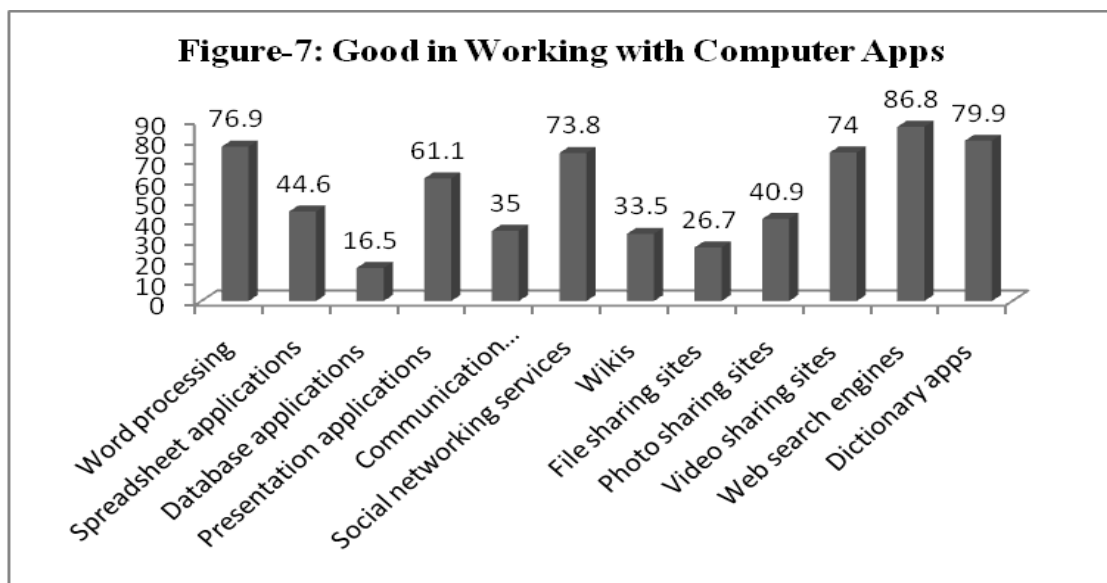
Table-6: General Awareness on ICT

Sl. No.	Items	Yes (Frequency & %)
1	Which device do you need to install on your computer in order to have a video conference with your friends?	159 (93.5)
2	Where does a Digital Camera store its pictures	152 (89.9)
3	Which technology is the process of converting spoken words into text	79 (46.5)
4	What is Bluetooth	165 (97.1)
5	Which of the following does not need to be asked when evaluating information provided on websites	18 (10.6)
6	What is the term for junk email or unsolicited messages sent over the internet	132 (77.6)
7	What is the process of confirming your user name and password on the computer	128 (75.3)
8	What is the fraudulent attempt to acquire sensitive information such as passwords and card details in an electronic communication	57 (33.5)
9	Which of the following is not considered to be safe password practice?	104 (61.2)

The table-6 indicates that 93.5% of trainees responded about the device needed need to install on your computer in order to have a video conference with your friends, 89.9% of trainees knows about picture storage in digital camera, 46.5% of trainees responded the technology is the process of converting spoken words into text and 97.1% of trainees knows about Bluetooth. The table also shows that 75.3% of trainees responded the the process of confirming your user name and password on the computer and 61.2% of trainees knows about be safe password practice.

Table-7: Uses of ICT for Teaching and Learning

Sl No.	Items	Yes (Frequency & %)
1	Do you have a common email-id of your class	96 (56.8)
2	Do you have group WhatsApp for your class	159 (93.5)
3	Are you regularly using that group for discussion related to teaching or any academic work	157 (92.4)
4	Are you using a common email-id /Group with your batch mates and teachers	117 (69.2)
5	Have you shared any study materials with your class on that group email/ Whatsapp	148 (87.6)
6	Have you ever created any teaching material digitally (Audio/Video/Images/Documentary movie)	88 (52.1)
7	Have you done any online course	25 (14.8)
8	Have you attended any seminar online	12 (7.1)

The table-7 indicates that 56.8% of trainees reported that they have a common email-id for class, 93.5% of trainees have group Whatsapp for class, 92.4% of trainees regularly use the group for discussion related to teaching or academic work and 69.2% are using a common email-id /group with batch mates and teachers. The table also points out that 87.6% of trainees shared study materials with class in group email/ Whatsapp and 52.1% of trainees have created teaching material digitally (Audio/Video/Images/Documentary movie). 14.8% of trainees have done online course and 7.1% have attended seminar online.

Figure-8: Uses of ICT for Teaching
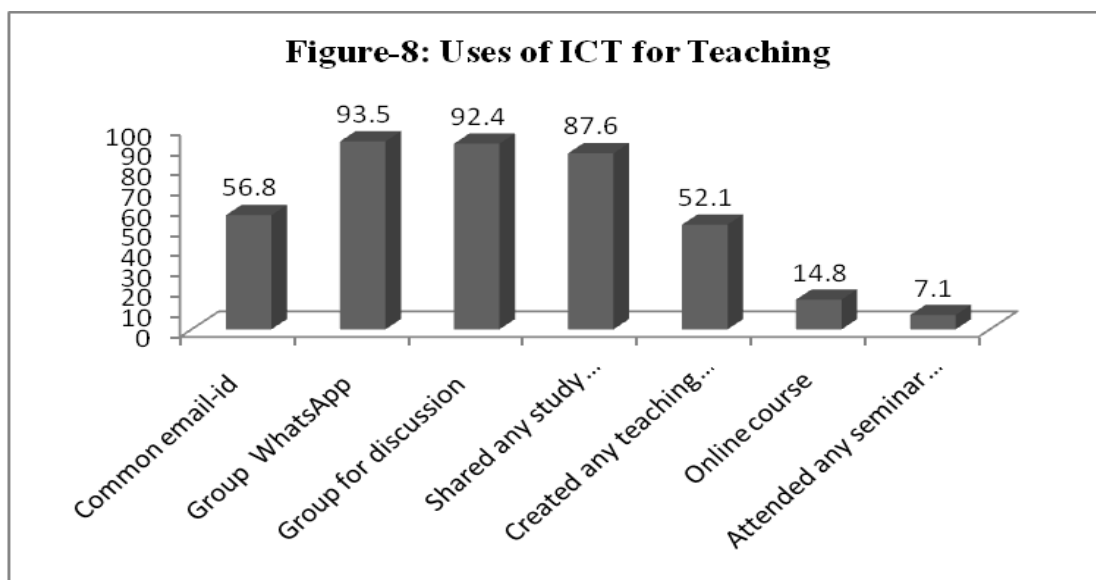
Table-8: Using ICT during Internship in Teaching

Sl No	Items	Never (Frequency & %)	Sometimes (Frequency & %)	Always (Frequency & %)
1	Search internet to collect information to prepare lesson plan	15 (8.8)	60 (35.3)	95 (55.9)
2	Search internet to collect resources to be used in teaching	4 (2.4)	43 (25.3)	123 (72.4)
3	Use PPT for teaching	57 (34.1)	85 (50.9)	24 (14.4)
4	Create digital learning materials (audio/video) for students	43 (25.4)	95 (52.2)	30 (17.8)
5	Prepare exercise and tasks for students	31 (18.2)	69 (40.6)	69 (40.6)
6	Use ICT to provide feedback to students	95 (57.6)	56 (33.9)	14 (8.5)
7	Communicate online with students regarding lessons	124 (73.8)	36 (21.4)	8 (4.8)
8	Uses different online library for subject related information	62 (36.9)	70 (41.7)	36 (21.4)
9	Use video clips for teaching	19 (11.2)	91 (53.8)	57 (33.7)
10	Share notes with students online	113 (66.9)	41 (24.3)	14 (8.3)

The table-8 shows that 55.9% of trainees always search internet to collect information to prepare lesson plan, 72.4% always search internet to collect resources to be used in teaching and 40% of trainees always prepare exercise and tasks for students. The table also indicates that 57.6% of trainees never use ICT to provide feedback to students, 73.8% never communicate online with students regarding lessons and 66.9% of trainees never share notes with students online. 50.9 % of trainees sometimes use PPT for teaching, 52.2% create digital learning materials (audio/video) for students and 53.8% use video clips for teaching.
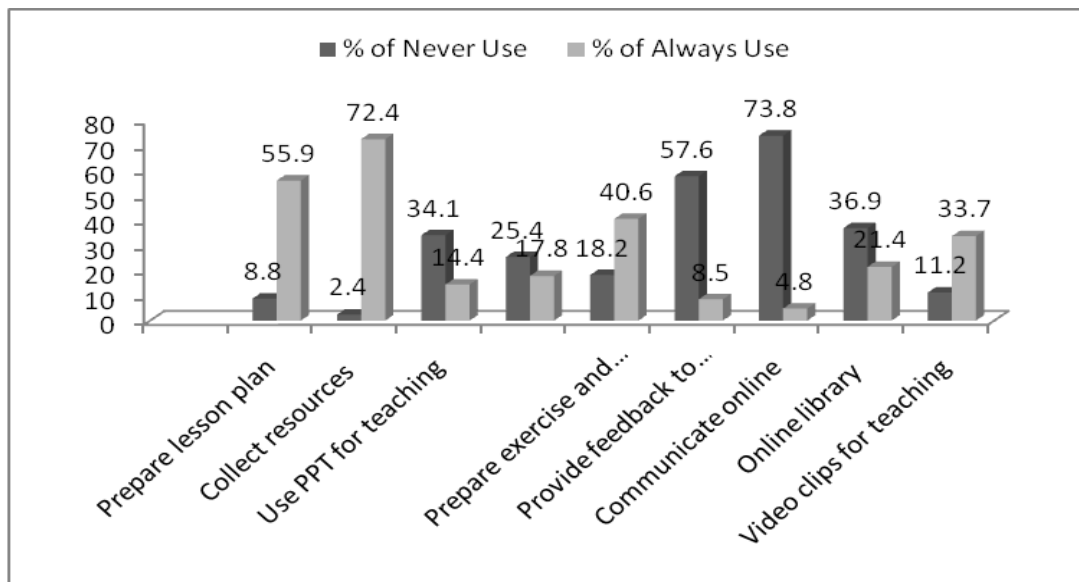
Figure-9: Uses of ICT during Internship

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Table-9: Barriers for Using Digital Technology for Teaching Learning

Sl No.	Barriers	Yes (Frequency & %)
1	Insufficient Time	114 (68.3)
2	Lack of skills	86 (51.8)
3	Lack of Resource at Institute	122 (72.6)
4	Lack of Interest	41 (24.8)
5	Problem in internet Access	87 (52.4)
6	Lack of Technical support	130 (77.8)
7	Lack of Pedagogical support	97 (59.1)
8	Pressure to prepare for examination	86 (51.2)
9	Any other	45 (34.1)

The table-9 reveals that 68.3% of trainees responded insufficient time, 51.8% of trainees responded lack of skills, 72.6% of trainees lack of resources at institute, 77.8% of trainees says lack of technical support are the barriers for using digital technology for teaching learning. The table also shows that 59.1% of trainees stated that lack of pedagogical support and 51.2% of trainee's responded pressure to prepare for examination are the barriers for using digital technology for teaching learning.

Figure-10: Barriers in Using ICT
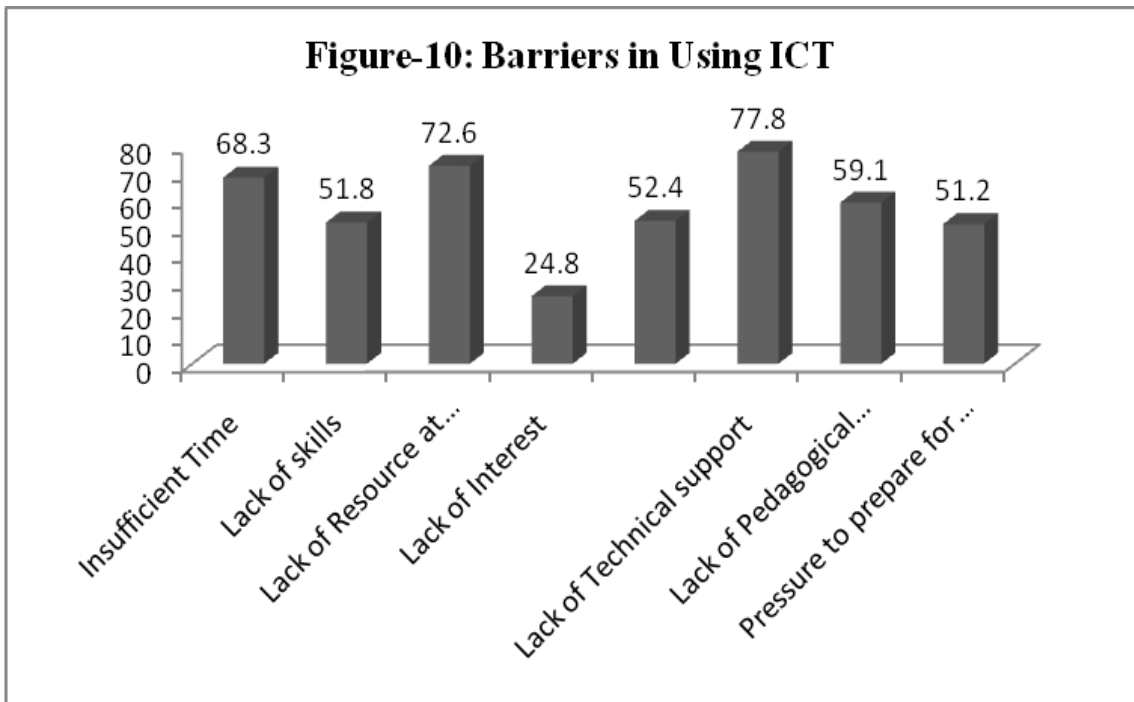
8. MAJOR FINDINGS OF THE STUDY

Availability of Digital Devices

- 64.7% of trainees do not have desktop computer, 57.4% of trainees do not have internet connections and 85.9% of trainees do not have printer in their home whereas 88.8% of trainees have smart phone and 61.8% of trainees have laptop.
- All the institute have desktop computer, printer, and computer lab as well as internet connection but 70% of institute have no laptop, 69.4% of institute have no interactive whiteboard, and 61.2% institute have no scanner.

Skills of Using Digital Devices

- 11.2% of trainees do not understand the basic functions of computer. 79.3% trainees do not have personal homepage or a personal portfolio on the web. 25.3% of trainees do not feel competent in using digital learning resources.
- 89.3% of trainees using keyboard shortcuts. 96.5% of trainees using the computer for learning purpose and 95.9% trainees have mobile applications for learning purpose.

Skills of Using Computers

- 7.7% trainees cannot change computer screen brightness and contrast and 7.1% trainees cannot minimize, maximize and move window on the computer screen.
- 64.2% trainees cannot create and update webpage. 24.6% trainees cannot scan disks for virus. 91.7% trainees download and use app on digital devices.

Frequency of Using Applications

- 40.7% of trainees frequently use word processor while 6.2% of trainees never use the word processor.
- 74.6% of trainees frequently use and 20.7% of trainees occasionally use the Email.
- 42.8% of trainees never use and 22.9% of trainees are rarely use the graphic software.

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- 22.9% of trainees occasionally and 9.6% of trainees rarely use Learning website.
- 76% of trainees frequently use Learning mobile app & Text chatting. 59.7% of trainees never use Concordance (for text analysis). 40.4% of trainees never use blog.
- 58.4% trainees never use twitter and 14.5% trainees rarely use twitter. 54.9% of trainees never use LinkedIn and 62.9% of trainees never use S planner.

Skills for Using ICT Applications

- 76.9% of trainees have good skills of using word processing applications (e.g., MS Word) and 20.1% of trainees have acceptable skill to using the word processor.
- 39.3% of trainees have acceptable skills in spreadsheet application (MS Excel) whereas 9.5% of trainees are poor and 6.5% do not know the skills of using spreadsheet application.
- 26.2% of trainees have poor skills and 23.8% of trainees do not have skill to use database application.
- 61.1% of trainees have good skills of using presentation applications (e.g., MS PowerPoint).
- 59.4% of trainees have no skill of using learning management system. 58.2% of trainees have no skill in using virtual worlds.
- 22.6% of trainees do not have skills for using photo sharing sites (e.g., Picasa). 74% of trainees have good skills of using video sharing sites (e.g., YouTube).
- 10.1% of trainees do not have skills of using web search engines (e.g., Google).
- 79.9% of trainees have good skills of using dictionary apps (e.g., Dictionary.com).
- 66 % of trainees do not know the podcasts (e.g., Apple Podcasts). 35.2% of trainees do not know skills of using File sharing sites (e.g., Dropbox).
- 57.1% of trainees do not know the skills of using web design applications (e.g., Dreamweaver).

General Awareness on ICT

- 53.5% of trainees do not know the name of application that used to convert spoken words into text.
- 65.5% of trainees are not aware about the phishing in electronic communication. 38.8% of trainees are not aware the safe practices in using online services.

Uses of ICT for Teaching and Learning

- Majority of trainees reported that their class have common email id and whatsapp group for sharing information about the course.
- 87.6% of trainees shared study materials with class in group email/ Whatsapp.
- 47.9% of trainees have not created teaching material digitally (Audio/Video/Images/Documentary movie).
- 85.2% of trainees never done any online course and 92.9% of trainees never attended online seminar.

Using ICT during Internship in Teaching

- 35.3% of trainees sometimes search internet to collect information to prepare lesson plan. 2.4% of trainees never and 25.3% of trainees sometimes search internet to collect resources to be used in teaching.
- 34.1% of trainees never and 50.9% of trainees sometimes use PPT for teaching. 57.6% of trainees never use ICT to provide feedback to students. 73.8% of trainees never communicate online with students regarding lessons.

Barriers in Using ICT

- 68.3% of trainees responded that insufficient time, 51.8% of trainees responded lack of skills, 72.6% of trainees said lack of resources at institute, 77.8% of trainees revealed lack of technical support, 59.1% of trainees stated that lack of pedagogical support and 51.2% of trainees responded pressure to prepare for examination are the barriers for using digital technology for teaching learning.

9. EDUCATIONAL IMPLICATIONS

1. This study indicated that fair number of teacher trainees have digital devices such smart phone, laptop, tablet and ipad etc. Hence they must be oriented in the process of using these devices for learning and teaching. Further, they must be encouraged and motivated to use for the creating, sharing, reading, and education related matters.

2. Teacher educators have to play great role in motivating and engaging trainees in digital devices for teaching and learning. Hence training of all teacher educators must be organized so that they can use digital devices in teaching and assessing. They must demonstrate the uses of different digital devices in the field of school education and teacher education.

3. Present day education focuses on collaboration in learning. The ICT can be utilized for collaboration among students and teacher educators. Hence different social networking apps like Whatsapp, Twitter, Blog, Facebook etc can be utilized for sharing and commenting in educational problems and issues so that trainee will develop skills and competencies of using for learning and teaching.

4. Most important skills for effective use of digital devices and services are safe practices. All the trainees must be oriented and educated in safe practices in using online services like banking, email, facebook etc. Specially how to create password for different accounts.

5. Internship is one of the significant elements of teacher training programme where is the scope for utilizing digital devices and apps. Trainees must be motivated to use digital devices and apps for effective teaching and learning. The teacher education institute must make it compulsory for trainees to deliver specific number of lessons by using ICT. Trainees can use ICT form preparing lesson plan, preparing new teaching resources, video and audio clips and that can be utilized during teaching.

6. Different MS applications such as word processor, spreadsheet, data base etc has important role in education context. All the trainees must develop skills

and competencies in using all these MS application which can help them in creating learning resources and other activities.

7. ICT can be utilized for providing open educational resources to trainees and teacher educators. The trainees must be familiar with MOOC, NROER, e-pathasala and other online resources / libraries created by national and international agencies. Trainees must utilize these open education resources for learning and teaching.

8. ICT must be integrated in pre-service teacher education programmes. It must not be taught as separate paper but must be given emphasis in all the papers. Because trainees must realize and understand the scope of using ICT in each papers. The potential of ICT must be utilized in learning of each perspective, pedagogy and filed engagement courses.

9. All the teacher education institute must be equipped with appropriate digital devices and applications. Trainees must be given opportunities in working with computers, smart classes etc so that practical skills can be developed among trainees. Trainees must be oriented in the process of using smart class, smart boards and educational applications.

10. Smart phones have great potential for the quality improvement of teacher and school education. Most of the trainees have smart phone with net connection. Hence, trainees must be familiar with different mobile apps such CS scanner, S Planner, Edmodo, timetable, google classroom, calculator, dictionary apps, general knowledge apps, slide share, Jstore.com, google drive, YouTube etc so that they can use it for education purpose.

11. The future students will be digital native. They have different ways of learning and thinking. They want to use digital devices for everything in life from learning to education. For them, learning is fun making with subjects. Hence, prospective teachers must be equipped with all skills and competencies of using digital devices and applications.

12. The integration of ICT in teacher education programme will only be successful when all activities of the Institute will be carried out by using ICT. All the teacher educators must be oriented in using digital devices and

applications for pre-service and in-service teacher education programmes. Further opportunities must be provided to teacher educators to ICT from different higher educational and technical institutes.

10. CONCLUSION

The use of ICT in the field of school and teacher education has been greatly emphasized by different committees and commissions. The NCTE regulation 2014 has recommended that ICT must be integrated in all teacher education programmes, which can enable teacher trainees for using in classroom teaching. On the other hand, the Government of India has lunched the programmes such as Digital India, e-pathshala, NROER, SWAYAM etc for facilitating use of ICT in education sector. This study has attempted to examine the digital literacy of teacher trainees at secondary level. The result indicates that teacher training institutes are equipped with digital devices and majority of trainees have smart phone with data plan. Trainees must be encouraged and supported for using ICT in the different phases of the course. The study also indicates that trainees are using digital devices during internship in teaching programme for planning lesson, preparing teaching learning materials and presenting in the lesson. The principals of all teacher training institute must promote use of digital devices in admission, administration, internship and assessment of trainees. Further, mobile and mobile based learning applications must be using in teacher education programmes both by trainees and teacher educators.

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QUESTIONNAIRE FOR TEACHER TRAINEES ON DIGITAL LITERACY AND PROCESS OF ITS USE FOR TEACHING LEARNING

Instructions: This questionnaire is intended to assess the level of Digital Literacy and process of its use by the teacher trainees at secondary level. It consists of 28 items based on five aspects such as access of ICT devices and Apps, skills and competency of using ICT, General awareness of ICT, Using ICT for teaching learning and Barriers for using ICT. You are requested to read each item and give answer as per your opinion. Your response will be kept confidential and would be used for research purpose only.

Thanking you in advance for your cooperation.

Investigators

Dr. R. Mohalik, Associate Professor
Prof. B. N Panda, Dean of Research
Prof. P. C. Agarwal, Principal
Dr. R. Sethy, Assistant Professor

Personal Information of Trainees:

Name:

Sex: 1 for Male/2 for Female:

Qualification: 1 for Degree/ 2 for Post Graduate/3 for Other Degree

Stream: 1 for Arts/ 2 for Science/ 3 for Commerce/ 4 for Others

Name and Address of Your Institution:

SECTION-I: ACCESS OF ICT DEVICES AND APPLLICATIONS

1. Which of the following digital devices do you have access in Home/Institute?
   (Please tick the appropriate response).

Digital Devices	Available in Residence (1)	Available at Institute (2)	Purposes of Use by you
Desktop Computer			
Laptop			
Tablet			
iPad			
Smartphone			
Interactive Whiteboard			
Digital Camera			
Internet Connection Devices			
Scanner			
Printer			
Computer Lab			

2. How do you learn computer for the first time?
   1. Trainer   2. Family   3. Friends   4. Self   5. Any other specify
3. How do you know about new Digital technologies?
1. Family 2. Friends 3. News Paper 4. Social Networks 5. Website 6. Any other

SECTION-II: SKILLS AND COMPETENCY OF USING ICT

4. Please respond to each of the following questions by putting a tick (√) in the box at
   the appropriate place: 'Yes' or 'No'.

Sl No.	Items	Yes (1)	No (2)
1	Do you understand the basic functions of computer hardware		
2	Do you have a personal homepage or a personal portfolio on the		
3	Do you use keyboard shortcuts?		
4	Do you use the computer for learning purposes?		
5	Do you find it easy to learn something by reading it on the		
6	Do you find it easy to learn something by watching it on the		
7	Do you use social networking services?		
8	Do you have any online friend you have never met in person?		
9	Do you feel competent in using digital learning resources?		
10	Do you have mobile applications you use for learning purposes?		

5. Please respond to each of the following questions by putting a tick (√) in the box at the appropriate place: 'Yes' or 'No'.

Sl No.	Items	Yes (1)	No (2)
1	Can you change computer screen brightness and contrast?		
2	Can you minimize, maximize and move windows on the computer screen?		
3	Can you use a 'search' command to locate a file?		
4	Can you scan disks for viruses?		
5	Can you write files onto a CD, a DVD or a USB drive?		
6	Can you create and update web pages?		
7	Can you take and edit digital photos?		
8	Can you record and edit digital sounds?		
9	Can you record and edit digital videos?		
10	Can you download and use apps on digital devices?		

6. Please indicate your level of frequency of using each of the followings by putting a tick (√) in the box at the appropriate place: 'Frequently', 'Occasionally', 'Rarely' and 'Never'. If there is any item you do not know, it can be assumed that you do not have any experience with the items.

Sl No. Items	Frequently (1)	Occasionally (2)	Rarely (3)	Never (4)
1 Word processor				
2 Email				
3 World Wide Web				
4 Graphics software				
5 Database				
6 Spreadsheet/Excel				
7 Concordancer (for text analysis)				
8 Learning software (CD-ROM, DVD)				
9 Learning website				
10 Learning mobile app				
11 Blog				
12 Wiki				
13 Text chatting				
14 Voice chatting				
15 Video conferencing				
16 Computer game				
17 Electronic dictionary				
18 Slide share				
19 Twitter				
20 Facebook				
21 Digital Library				
22 LinkedIn				
23 e-Pathshala				
24 S Planner				

7. How would you rate your skills for using each of the followings? Please put a tick
    (√) in the box at the appropriate place: 'Good', 'Acceptable', 'Poor', and 'Do Not
    Know'.

Sl No.	Working with	Good (1)	Acceptable (2)	Poor (3)	Do Not Know (4)
1	Word processing applications (e.g., MS Word)				
2	Spreadsheet applications (e.g., MS Excel)				
3	Database applications (e.g., MS Access)				
4	Presentation applications (e.g., MS PowerPoint)				
5	Communication applications (e.g., Skype)				
6	Learning management systems (e.g., Moodle)				
7	Virtual worlds (e.g., Second Life)				
8	Social networking services (e.g., Facebook)				
9	Blogs (e.g., Blogger)				
10	Wikis (e.g., PBworks)				
11	Podcasts (e.g., Apple Podcasts)				
12	File sharing sites (e.g., Dropbox)				
13	Photo sharing sites (e.g., Picasa)				
14	Video sharing sites (e.g., YouTube)				
15	Web design applications (e.g., Dreamweaver)				
16	Web search engines (e.g., Google)				
17	Dictionary apps (e.g., Dictionary.com)				

SECTION-III: GENERAL AWARNESS ON ICT

The following questions cover general areas of digital literacy. You may/may not know the answer of all questions, but please attempt to answer them without asking others or referring to books.

8. Which device do you need to install on your computer in order to have a video conference with your friends?
    1. Scanner
    2. Webcam
    3. Printer
    4. DVD Player

9. Where does a Digital Camera store its pictures?
    1. Battery
    2. Film
    3. Adapter/
    4. Memory Card

10. Which technology is the process of converting spoken words into text?
    1. Audio Analysis
    2. Audio Compression
    3. Speech Synthesis
    4. Speech Recognition.

11. What is Bluetooth?
    1. A digital tool to add special effects to recorded audios and videos
    2. A program designed to disrupt or damage a computer system
    3. A technology standard for the short-range wireless interconnection of mobile devices
    4. A network security system that controls the incoming and outgoing network traffic

12. Which of the following does not need to be asked when evaluating information provided on websites?
    1. Accuracy
    2. Authority
    3. Computation
    4. Currency

13. What is the term for junk email or unsolicited messages sent over the internet?
    1. Spam
    2. Firewall
    3. Malware
    4. Spyware

14. What is the process of confirming your user name and password on the computer?
    1. Authorization
    2. Authentication
    3. Hacking
    4. Defamation
15. What is the fraudulent attempt to acquire sensitive information such as passwords and card details in an electronic communication?
    1. Synthesizing
    2. Crowdsourcing
    3. Phishing
    4. Streaming
16. Which of the following is not considered to be safe password practice?
    1. Do not share passwords with others
    2. Increase the strength of a password with symbols
    3. Avoid using the same password across multiple user accounts
    4. Generate a password that is easy to guess systematically

SECTION-IV: USES OF ICT FOR TEACHING AND LEARNING

17. Do you have a common **email-id** of your class? (1 for Yes/ 2 for No)

18. Do you have group **Whats App for your class**?(1 for Yes/2 for No)

19. Are you regularly using that group for discussion related to **teaching or any academic work**? (1 for Yes/ 2 for No)

20. Are you using a common **email-id /Group** with your batchmates and teachers? (1 for Yes/ 2 for No)

21. Have you shared any study materials with your class on that group email/ Whatsapp?(1 for Yes/2 for No)

22. Have you ever created any teaching material digitally?

    (**Audio/Video/Images/Documentary movie**) (1 for Yes/ 2 for No)

    If Yes: Please mention the name of the material and for which subject/topic

23. Have you done any online course? (1 for Yes/ 2 for No).

    If Yes: Please mention the name of the course.

24. Have you attended any seminar online?(1 for Yes/2 for No)

    If Yes: Please mention the name of the seminar?

25. How often do you do the following activities during Internship in Teaching? **Please respond following items by putting (Tick Mark) on appropriate options.**

Sl No	Items	Never (1)	Sometimes (2)	Always (3)
1	Search internet to collect information to prepare lesson plan			
2	Search internet to collect resources to be used in teaching			
3	Use PPT for teaching			
4	Create digital learning materials (audio/video) for students			
5	Prepare exercise and tasks for students			
6	Use ICT to provide feedback to students			
7	Communicate online with students regarding lessons			
8	Uses different online library for subject related information			
9	Use video clips for teaching			
10	Share notes with students online			

SECTION-V: BARRIERS IN USING ICT

27. Which of the following are the barriers for using Digital Technology for teaching learning?

Sl No	Barriers	Yes (1)	No (2)
1	Insufficient Time		
2	Lack of skills		
3	Lack of Resource at Institute		
4	Lack of Interest		
5	Problem in internet Access		
6	Lack of Technical support		
7	Lack of Pedagogical support		
8	Pressure to prepare for examination		
9	Any other		

(If any other obstacles please mention)

28. What technical support you need from Institute to develop your digital skills?

QUESTIONNAIRE FOR TEACHER TRAINEES ON DIGITAL LITERACY AND PROCESS OF ITS USE FOR TEACHING LEARNING

Instructions: This questionnaire is intended to assess the level of Digital Literacy and process of its use by the teacher trainees at secondary level. It consists of 28 items based on five aspects such as access of ICT devices and Apps, skills and competency of using ICT, General awareness of ICT, Using ICT for teaching learning and Barriers for using ICT. You are requested to read each item and give answer as per your opinion. Your response will be kept confidential and would be used for research purpose only.

Thanking you in advance for your cooperation.

Project Coordinators

Dr. R Mohalik, Associate Professor
Prof. B N Panda, Dean ®
Prof. P C Agarwal, Principal
Dr. R Sethy, Assistant Professor

Personal Information of Trainees:

Name:

Sex: 1 for Male/2 for Female:

Qualification: 1 for Degree/ 2 for Post Graduate/3 for Other Degree

Stream: 1 for Arts/ 2 for Science/ 3 for Commerce/ 4 for Others

Name and Address of Your Institution:

SECTION-I: ACCESS OF ICT DEVICES AND APPLLICATIONS

1. Which of the following digital devices do you have access in Home/Institute? (Please tick the appropriate response).

Digital Devices	Available in Residence (1)	Available at Institute (2)	Purposes of Use by you
Desktop Computer			
Laptop			
Tablet			
iPad			
Smartphone			
Interactive Whiteboard			
Digital Camera			
Internet Connection Devices			
Scanner			
Printer			
Computer Lab			

2. How do you learn computer for the first time?
   1. Trainer   2. Family   3. Friends   4. Self   5. Any other specify

3. How do you know about new Digital technologies?

   1. Family 2. Friends 3. News Paper 4. Social Networks 5. Website 6. Any other

SECTION-II: SKILLS AND COMPETENCY OF USING ICT

4. **Please respond to each of the following questions by putting a tick (√) in the box at the appropriate place: 'Yes' or 'No'.**

Sl No.	Items	Yes (1)	No (2)
1	Do you understand the basic functions of computer hardware components?		
2	Do you have a personal homepage or a personal portfolio on the web?		
3	Do you use keyboard shortcuts?		
4	Do you use the computer for learning purposes?		
5	Do you find it easy to learn something by reading it on the computer		
6	Do you find it easy to learn something by watching it on the computer		
7	Do you use social networking services?		
8	Do you have any online friend you have never met in person?		
9	Do you feel competent in using digital learning resources?		
10	Do you have mobile applications you use for learning purposes?		

5. Please respond to each of the following questions by putting a tick (√) in the box at the appropriate place: 'Yes' or 'No'.

Sl No.	Items	Yes (1)	No (2)
1	Can you change computer screen brightness and contrast?		
2	Can you minimize, maximize and move windows on the computer screen?		
3	Can you use a 'search' command to locate a file?		
4	Can you scan disks for viruses?		
5	Can you write files onto a CD, a DVD or a USB drive?		
6	Can you create and update web pages?		
7	Can you take and edit digital photos?		
8	Can you record and edit digital sounds?		
9	Can you record and edit digital videos?		
10	Can you download and use apps on digital devices?		

6. Please indicate your level of **frequency of using** each of the followings by putting a tick (√) in the box at the appropriate place: 'Frequently', 'Occasionally', 'Rarely' and 'Never'. If there is any item you do not know, it can be assumed that you do not have any experience with the items.

Sl No.	Items	Frequently (1)	Occasionally (2)	Rarely (3)	Never (4)
1	Word processor				
2	Email				
3	World Wide Web				
4	Graphics software				
5	Database				
6	Spreadsheet/Excel				
7	Concordancer (for text analysis)				
8	Learning software (CD-ROM, DVD)				
9	Learning website				
10	Learning mobile app				
11	Blog				
12	Wiki				
13	Text chatting				
14	Voice chatting				
15	Video conferencing				
16	Computer game				
17	Electronic dictionary				
18	Slide share				
19	Twitter				
20	Facebook				
21	Digital Library				
22	LinkedIn				
23	e-Pathshala				
24	S Planner				

7. How would you rate your **skills for using** each of the followings? Please put a tick (√) in the box at the appropriate place: 'Good', 'Acceptable', 'Poor', and 'Do Not Know'.

Sl No.	Working with	Good (1)	Acceptable (2)	Poor (3)	Do Not Know (4)
1	Word processing applications (e.g., MS Word)				
2	Spreadsheet applications (e.g., MS Excel)				
3	Database applications (e.g., MS Access)				
4	Presentation applications (e.g., MS PowerPoint)				
5	Communication applications (e.g., Skype)				
6	Learning management systems (e.g., Moodle)				
7	Virtual worlds (e.g., Second Life)				
8	Social networking services (e.g., Facebook)				
9	Blogs (e.g., Blogger)				
10	Wikis (e.g., PBworks)				
11	Podcasts (e.g., Apple Podcasts)				
12	File sharing sites (e.g., Dropbox)				
13	Photo sharing sites (e.g., Picasa)				
14	Video sharing sites (e.g., YouTube)				
15	Web design applications (e.g., Dreamweaver)				
16	Web search engines (e.g., Google)				
17	Dictionary apps (e.g., Dictionary.com)				

SECTION-III: GENERAL AWARNESS ON ICT

The following questions cover general areas of digital literacy. You may/may not know the answer of all questions, but please attempt to answer them without asking others or referring to books.

8. Which device do you need to install on your computer in order to have a video conference with your friends?
    1. Scanner
    2. Webcam
    3. Printer
    4. DVD Player

9. Where does a Digital Camera store its pictures?
    1. Battery
    2. Film
    3. Adapter/
    4. Memory Card

10. Which technology is the process of converting spoken words into text?
    1. Audio Analysis
    2. Audio Compression
    3. Speech Synthesis
    4. Speech Recognition.

11. What is Bluetooth?
    1. A digital tool to add special effects to recorded audios and videos
    2. A program designed to disrupt or damage a computer system
    3. A technology standard for the short-range wireless interconnection of mobile devices
    4. A network security system that controls the incoming and outgoing network traffic

12. Which of the following does not need to be asked when evaluating information provided on websites?
    1. Accuracy
    2. Authority
    3. Computation
    4. Currency

13. What is the term for junk email or unsolicited messages sent over the internet?
    1. Spam
    2. Firewall
    3. Malware
    4. Spyware

14. What is the process of confirming your user name and password on the computer?
    1. Authorization
    2. Authentication
    3. Hacking
    4. Defamation
15. What is the fraudulent attempt to acquire sensitive information such as passwords and card details in an electronic communication?
    1. Synthesizing
    2. Crowdsourcing
    3. Phishing
    4. Streaming
16. Which of the following is not considered to be safe password practice?
    1. Do not share passwords with others
    2. Increase the strength of a password with symbols
    3. Avoid using the same password across multiple user accounts
    4. Generate a password that is easy to guess systematically

SECTION-IV: USES OF ICT FOR TEACHING AND LEARNING

17. Do you have a common **email-id** of your class? (1 for Yes/ 2 for No)

18. Do you have group **WhatsApp for your class**?(1 for Yes/2 for No)

19. Are you regularly using that group for discussion related to **teaching or any academic work**? (1 for Yes/ 2 for No)

20. Are you using a common **email-id /Group** with your batchmates and teachers? (1 for Yes/ 2 for No)

21. Have you shared any study materials with your class on that group email/ Whatsapp?(1 for Yes/2 for No)
22. Have you ever created any teaching material digitally?
 (**Audio/Video/Images/Documentary movie**) (1 for Yes/ 2 for No)
 If Yes: Please mention the name of the material and for which subject/topic

23. Have you done any online course? (1 for Yes/ 2 for No).
    If Yes: Please mention the name of the course.

24. Have you attended any seminar online?(1 for Yes/2 for No)

    If Yes: Please mention the name of the seminar?

25. How often do you do the following activities during Internship in Teaching? **Please respond following items by putting (Tick Mark) on appropriate options.**

Sl No	Items	Never (1)	Sometimes (2)	Always (3)
1	Search internet to collect information to prepare lesson plan			
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