Digital Literacy
A Comparative Study of Schools

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Abstract

The rapid advances recently made in digitalisation have very important implications for the entire society. Education which is the most powerful tool for the economic, social and cultural development across the globe is also being affected by the use of digital resources. The challenge that confronts our education system today is how the curriculum and the teaching learning process can be transformed in order to provide the learner with skills to function effectively in today's information rich and continuously changing environment. These days, education is at the confluence of powerful and rapid shifting political, technological and educational forces that would shape structure of educational systems across the world for the remainder of this century. Many countries are involved in rigorous efforts to bring changes in the pedagogical processes in order to prepare the learners information and technology based society. It requires that the learners should make meaningful use of digital knowledge to develop, among themselves a critical skills to achieve long term educational goals. The present study aims to examine the integration of digital resources in to teaching learning by school teachers. The study also compares the knowledge and the use of digital resources by government and private school teachers. A sample of 200 teachers was selected from these schools in Delhi. Two checklists of software and hardware were developed and the responses of teachers were analysed qualitatively using percentage. The findings reveal that the awareness of government and private school teachers about the software and hardware used in teaching is satisfactory barring few of these digital resources. However, while comparing the use of software among both the category of teachers the performance of private school teachers was found better than their counterparts in government schools except in case of

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use of e module, TPACK and Youtube which are being used by government teachers more in comparison to the private school teachers. In nutshell the use of digital resources is not satisfactory in both types of schools, the situation of government schools is miserably poor in spite of the fact that the government is making all efforts to maximise the use of digital resources. The researcher is of the view that the schools or government should make extensive arrangements of in service training programmes not only to digitally equip the teachers but also, equally important, to correct their mindset which also seems to be a great impediment in the use of digital technology.

Introduction

The informed, efficient and critical user of ICT requires digital literacy and competencies. These capabilities are significant due to digitalisation of content (Sharma, 2010). To develop the competencies required in the digital world it is necessary to include digital literacy related components in school education (Ankita and Husain, 2017). Even though, efforts were made to include these components in school curriculum, one can commonly observe uneven practices in its integration an implementation in teaching learning process. Today is the time when teacher has to transform a typical 'teacher centric' classroom, and rote learning in to a classroom to develop critical learning and promoting 'learning by doing' among the learners and hence, it needs disruptive change. "ICTs have the potential to create that disruption, where teachers have to unlearn their habits and re-learn what it is to engage children in authentic learning. For this, ICTs will have to be integrated in teaching-learning as a facilitative tool, rather than a separate activity that is practiced in computer lab" (Tiwari, 2014).

Contemporary education system is facing a variety of challenges, where the role of teacher is not confined only to impart knowledge within the boundaries of the prescribed text books rather the teacher has to create an environment where the learners seek information even beyond the school hours outside the four walls of a classroom. In a fast changing world not only that a teacher needs to update their own understanding of the knowledge, concepts and issues which they have to share with their students, they also need to integrate digital resources in their pedagogical interventions. However, for digital integration in the teaching learning process, it is necessary for the teacher to develop their own competence and skills to learn digital devices to use them in teaching. Although, there are several digital gadgets and devices abundant in the institutions, but the perception of the investigator is that neither the teachers are aware about these resources, nor are they willing to integrate them in teaching learning. Due to fast technological advancement in almost all walks of life its use is inevitable. Be it corporate

sector, government organisations, industries or education proper growth is not possible without the use of digital resources. The manpower requirement of such organisation necessitates that the incumbent at various positions in these organisations is fully trained in latest technologies to discharge their role efficiently. A pertinent question that arises is as to from where such a manpower, possessing all required technological skilled would be available. The answer is 'educational institutions' which are responsible for developing all necessary skills to handle any challenging role in the market not only to satisfy their employers' expectations but also the changing requirement of the ultimate consumer of goods and services. Here the role of educational institutions is very prominent. As the schools is the foundation for habit and skill formation, the greater responsibility lies with the teachers.

Digitalisation makes knowledge to reach the unreached at a very low cost and without consuming much of the time of the learner. "Digitalisation means providing not only connectivity through the world of web but also providing high quality e-content free of cost to all learners in the country" (Dutta, 2018).

In a number of disciplines, due to lack of required number and qualified faculty, it requires that the institutions have large number of digital resources in their libraries so that the shortage of teachers is compensated by providing technological resources to the learners.

Today is an era of cut throat competition, where the learners regardless of the discipline, level or subject, have to prove their excellence over the others so that the market industry may offer them a suitable position. The industry in turn, expects high quality of products and services from these incumbents to satisfy the market demand. Today's market has gone remarkable change due to very advanced technology which has not only changed the taste of the buyers but requires frequent changes in the market products and services. This scenario has created challenges for the service producers, government organisations, judiciary, teaching organisations and the other employers. The high expectations of the industry and the prospective learners who are the prospective employees also needs to be addressed by the schools and colleges by introducing latest technological resources which need to be integrated in teaching learning process.

In the light of this theoretical formulation, it can be said that digital technologies are becoming an inseparable part of learning process. Integration of digital technology in educational institution will enable students to develop capabilities (skills and knowledge) required to work in an increasingly digitalising environment and actively participate in the knowledge economy.

Review of Related Literature

Korakakis, Boudouvis, Palyvos and Pavlatou (2011), aimed to look into the use of 3D visualisation in the teaching of scientific concepts. The findings show that there is a relation between the age and use of technology. Hammond, Zielelzinski and Goldman (2014) found that students demonstrate a positive attitude towards school and stronger engagement with learning processes when they are engaged in content-creation project. According to Internet and Mobile Association of India (IAMAI, 2017), "mobile devices are the tools of using internet and technology for 60 per cent populations of internet users". Researches show that there exists a large gap between the internet users even at mobile phone. According to Hew and Bush (2007), teacher's knowledge and skills are important factors in the use of technology in the classroom. Lack of specific technological skills is a common reason teachers give for not using technology.

Need for the Study

The present digital age has been many changes on account of technology. These changes range from the ways and means in which knowledge is imparted, to the attitude with which learning takes place, to the extent of collaboration and information sharing between not only students but also between educators, managers and administration (Shubhra 2016). There are variety of issues which are involved in teaching learning through technological tools and techniques including the proper use of digital resources. The investigator, being a teacher and teacher educator is of the opinion that in spite of policy direction which says that "the schools would be provided with at least one computer lab with at least 10 networked computer access to begin with. Each lab will have a maximum of 20 access points, accommodating 40 students at a time. There would be one printer, scanner, projector, digital camera, audio recorders. part of infrastructure (National Policy on ICT in School Education, 2012), teachers in the schools are not using digital resources. Teachers' awareness about the digital resources, lack of technical skills to use such resources and sometimes non availability of digital resources in the schools, skill to relate appropriate technology to the specific content(s) are some of the reasons for not using the digital resources in their teaching. Cornoy (2004) reported that teachers' resistance to technology integration is one of the reasons for the failure of integration of the technology into classrooms.

In the context of schooling, there is no effective use of technology which could improve students' performance and achievements. Due to this reason, even schools that are having better access to technology are not able to use technology effectively. This may be because of lack of training to the teachers who do not possess required

ICT skills and feel uncomfortable with the usage of digital learning resources in the classroom (Cornoy, 2004). Theoretical formulations, empirical evidences and the personal observation of the researcher indicate that in spite of countless benefits of the digital literacy there seems to be lots of reluctance of the teachers in the use of such resources in the classroom across the globe. It has been reported by Cornoy (2004) that teachers' lack of digital literacy is the single barrier to the effective integration of technologies into education. The researcher is therefore keen to investigate the issue in the context of Indian classrooms of government and private schools. In this backdrop, the present study has been proposed with the following objectives:

Objectives of the study

1. To study the awareness among school teachers aboutdigital resources.
2. To study the use of digital resources in teaching learning process by school teachers.
3. To compare the status about the use of digital resources between government and private school teachers.

Population

All government and private schools of Delhi and their teachers constitute the Population of the present study.

Sample

The sample for the present study was 10 government and 10 private schools which were selected on convenience basis. So total 20 schools were selected and it was convenient sample. One hundred (100) teachers, each from government and private schools teaching at senior secondary level have been selected, making sure that the teachers are from all disciplines such as; science, social science, languages and commerce. It was a purposive sample. Hence, 20 schools and 200 teachers constitute the sample for the present study. However, inspite of very sincere efforts of the researcher, she was able to collect the data from only 180 teachers, i.e., 87 from government and 93 from private schools.

Tools of data collection

Check lists of software and hardware were developed for the teachers and they were asked about their awareness of e-resources given in the check list. The check list was prepared consulting the list of the e-resources published by UNESCO. However, some modifications were made consulting few latest research studies in the area.

Another check list was also developed by the researcher keeping in view the prevalent e-resources being used in teaching learning in the Indian context, to ascertain as to what extent these resources are being used by sampled group of teachers.

Analysis of the data

Analysis of the data was done quantitatively by using percentage to show the responses of the teachers.

The data depicted in the following tables are the responses of the overall respondents (both types of schools).

walks of life. Knowledge of teachers about Modem (66%), Portal (58%), and Sensor (67%), and Flash drives (58%) was found satisfactory. Moreover, approximately 80per cent to 93% respondents are aware about CD ROMs (80%), Digital library

Table 1
Knowledge of teachers about the hardware used for digital resources (N-180)

Contents	Have Knowledge	Don't Have Knowledge
WiFi	180 (100)	–
Modem	119 (66)	61 (33.89)
CDs/DVDs	180 (100)	–
CD ROMs	144 (80)	36 (20)
Portal	105 (58.33)	75 (41.67)
Digital camera	180 (100)	–
Digital Library	167 (92.78)	13 (7.22)
Web publishing	155 (86.1)	25(13.89)
e-mail publishing	160 (88.89)	20 (11.11)
Smart Class	180 (100)	–
Desktop	180 (100)	–
Tablets	180 (100)	–
Hard disk drives	146 (81.11)	34 (18.89)
Routers	39 (21.67)	141 (78.33)
Sensors	120 (66.67)	60 (33.33)
Memory cards	180 (100)	–
Flash drives	104 (57.78)	76 (42.22)
Data projectors	136 (75.56)	44 (24.44)

(Figures in parentheses indicate percentage)

Table 1 indicates that 100 per cent teacher respondents are fully aware of Wi-Fi, CD/DVD, digital camera, smart class, Desktop, Tablet and memory card which are the important digital resources and are used by the persons in almost all

(92.7%), web publishing (86%), e-mail publishing (88%) and hard disk drives (81%). From the point of view of the awareness, performance of teachers of all the schools is good. Knowledge of teachers about Routers and Print on demand is, however, poor.

Table 2
Knowledge of teachers about software used for digital resources (N-180)

	Have Knowledge	Don't Have Knowledge
e-Journal	180 (100)	–
e-Books	180 (100)	–
Internet	180 (100)	–
Blogs	98 (54.44)	82 (45.56)
Online data base	106 (58.89)	74 (41.11)
Electronic link	111 (61.67)	69 (38.33)
T-PACK	160 (88.89)	20 (11.11)
e-Module	84 (46.67	96 (53.33)
PPT	180 (100)	–
WhatsApp	180 (100)	–
SMS	180 (100)	–
YouTube	178 (98.89)	2 (1.11)
Simulations	50 (27.78)	130 (72.22)
Chats	172 (95.56)	8 (4.44)
iCloud	12 (6.67)	168 (93.33)
Google Scholar	150 (83.33)	30 (16.67)
Zoom	5 (2.78)	175 (97.22)

(Figures in parentheses indicate percentage)

Table 2 discloses the awareness of the teachers about the software which are used in teaching learning. The responses of the teachers indicate that 100 per cent teachers are well aware about the e-journal, e-books, Internet, PPT, WhatsApp and SMS. About the awareness of Blogs, electronic link, e-module, YouTube and chat and Google scholar was found to be approximately 54.44 per cent, 61.7 per cent, 46.67 per cent, 98.9 per cent, 95.57 per cent and 83.33 per cent respectively. Awareness about some of the software was found to be below 50per cent which include e-Module (46.67%), simulation (27.78%), and about iCloud (6.7%) and Zoom (2.78%) the performance was very disappointing.

Table 3
Usage of Software by Private and Government school teachers (N-180)

	Frequently	Often	Rarely	Never
Internet	180 (100)	–	–	
PPT	150 (83.33)	–	30 (16.67)	
e-Journal	48 (26.67)	–	90 (50)	42 (23.33)
e-Books	36 (20)	–	–	144 (80)
CD ROMs	35 (19.44)	–	–	145 (80.56)
Whatts App	180 (100)	–	–	–
SMS	180 (100)		–	–
Blogs	46 (25.56)	–	–	134 (74.44)
Online data base	21 (11.67)	–	–	159 (88.33)
Electronic link	39 (21.67)	–	–	141 (78.33
TPACK	78 (43.33)	12 (6.67	–	90 (50)
Smart classroom	68 (37.78)	28 (15.56	–	84 (46.67
e-Module	44 (24.44)	–	–	136 (75.56)
Digital library	57 (31.67)	–	–	123 (68.33)
YouTube	115 (63.89)	–	–	65 (36.11)
Simulations	10 (5.56)	–	–	170 (94.44)
Chats	91 (50.56)	14 (7.78)	–	75 (41.67)
iCloud	08 (4.44)	–	–	172 (95.56)
Google Scholar	120 (66.67)	–	–	60 (33.33)
Zoom	0 (0)	–	–	180 (100)

(Figures in parentheses indicate percentage)

Table 3 shows the responses of teachers about the use of the software in their classroom teaching. It is to note that responses on 'frequent' and resources used 'often' have been clubbed together.

It is noticed that the Internet, WhatsApp, and SMS are used very frequently by the 100 per cent teachers in their teaching. Teachers reported that some software are being used by significant number of teachers such as; PowerPoint presentation (83.33%), Google Scholar (66.67%), Smart class (37.78.%), Digital library (31.67%), Chats (50.56%), TPACK (43.33%) and Youtube (63.89%). The other

resources such as e-journals, e-books, CD ROMs, Online data base, Electronic link, e-module and Blogs are being used by less than 50per cent teachers. However, the performance of teachers in using Simulations (5.56%), iCloud (4.44%) and Zoom (0%) was miserably poor. teachers. It reveals that internet, WhatsApp, SMS are very frequently used by 100 per cent teachers of both types of schools. But, regarding the use of PPT, e-journals, e-books and CD ROMs, Online data base, Smart Class, digital library, Chats and Google Library, the performance

Table 4
Responses of Government and Private school teachers about the usage of Software

Government Schools(N– 87)	Private Schools (N–93)	
Internet	87 (100)	93 (100)
PPT	68 (78.16)	82 (88)
e-Journal	16 (18.39)	32 (34.40)
e-Books	12 (13.79)	24 (25.80)
CD ROMs	9 (10.34)	26 (27.95)
Whats App	87 (100)	93 (100)
SMS	87 (100)	93 (100)
Blogs	19 (21.83)	27 (29.03)
Online data base	06 (6.89)	15 (16.12)
Electronic link	12 (13.79)	27 (29.03)
TPACK	48 (55.17)	42 (45.16)
Smart classroom	18 (20.68)	50 (53.76)
e-Module	26 (29.88)	18 (19.35)
Digital library	27 (31.03)	30 (32.25)
YouTube	59 (67.81)	56 (60.21)
Simulations	7 (8.04)	03 (3.22)
Chats	48 (55.17)	57 (61.29)
iCloud	0 (0)	08 (8.60)
Google Scholar	54 (62.06)	66 (70.96)
Zoom	0 (0)	0 (0)

(Figures in parentheses indicate percentage)

Table 4 depicts the comparative view of the usage of digital resources by government and private school of private teachers was found better than their counterparts. However, about the use of TPACK and

e-module, Youtube, simulations the performance, as responded by the teachers, was found to be better in case of government teachers as compared to private school teachers. In nutshell, it is found that there is not adequate use of digital resources; nevertheless, the teachers of private schools are using digital resources more than government teachers. This is an alarming situation for the schools particularly government schools, while the National Policy on ICT for School Education- 2012 stressed "the need to employ educational technology to improve quality of education".

Discussion

The present research project was an effort to evaluate the awareness and the integration of digital resources in teaching by government and private school teachers. However, there seems to be very unsatisfactory state of affairs not only about the digital use but also their awareness about various components of technology which is far from being satisfactory. This situation is more alarming where the awareness of the teachers about some of the resources is remarkably poor such as iCloud (6.7%), Zoom (2.78%) simulations (8%) and similarly the usage On line data (11.67%), simulations (5.56%), iCloud (4.44%) and Zoom (0%).

Such a state of affairs seems to be due to many factors mainly non availability of computers and internet connectivity; secondly it may be attributed to the lack of in service training. Some of the teachers pointed out that due to heavy work load of the curriculum they are reluctant to use ICTs judiciously. Nevertheless, lack of training and lack of will to use digital resources has been cited as one of the reasons for not using them.

Regarding the use both types of teachers are presenting a very disappointing performance. Although the situation in both types of schools is not anywhere near the satisfaction, the performance of government teachers is miserably poor.

This is in spite of the fact that National Policy on ICT (2012) emphasises "to create and manage content using a variety of soft ware applications and digital devices". It also emphasised to establish computer lab with all accessories, internet network, printers and full back up for optimal use of technologies, but the situation seems to be far from the implementation of the policy in its true letter and spirit.

Conclusion

Digital resources which can play a pivotal role in the whole teaching learning process, needs to be learnt, practiced and taught to the students in solving complicated problems of their life. Awareness about digital resources is the basic requirement of the teachers to move further and using these resources in their pedagogy to teach all subjects. In the present study, the result about the awareness as well as usage of software in teaching learning process are not very encouraging.

Still the hope is not lost. The educational institutions have to make arrangement of the in-service training of the teaches not only to equip the teachers digitally but also to motivate them to use these resources so that they themselves become confident in using such resources and also develop the same skills among their students to enable them to utilise such skills in their future life for which they are being prepared by the schools. In an age of globalisation which is technically advanced and endowed with electronic resources to perform day-to-day chores digitally without any manual intervention, schools should rather be more technology friendly, well equipped with latest technologies. The teachers who are off course the backbone of the entire education system should assume the role of a facilitator providing and facilitating the learners with the basic concepts and enabling them to make an effective use of those concepts in decision making.

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