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RESEARCH PAPER

New Technologies and Digital Literacy in Education: A Shifting Paradigm

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PAPER INFO	ABSTRACT
	The newly emerging concept of Digital Literacy requires an entirely new set of skills, as pointed out by Eshet, including the emotional and cognitive ones, to be better able to work in a digitally oriented environment. With the advent of modern time, the use of technology has become a crucial element in all spheres of life. This study endeavors to look at the level of digital literacy of the teachers, their beliefs and attitudes towards incorporating into their pedagogy, anxiety in using digital gadgets, and perceived problems during this process in Pakistani academia. Drawing insights from the skill-based theoretical framework proposed by Eshet (2004), this qualitative study aims to answer questions regarding the role of digitalization for education in current times. Moreover, it intends to highlight the importance to integrate the use of technology in Pakistani academia, evaluating the digital literacy of academics. The sample population for the study has been selected from six public sector educational institutions and data is collected from 12 teachers through the interview schedule. The collected data is analyzed by adopting the thematic approach. Findings revealed that teachers need more training to be shifted on the new system of E-literacy

Introduction

The newly emerging concept of Digital Literacy encompasses a set of skills including sociological, emotional, and cognitive skills to be better equipped to work in a digitally-oriented environment and be convenient with digital gadgets. Moreover, it offers better user-friendly fast learning opportunities. In this modern age of technology, one cannot survive without digital literacy and it becomes difficult to achieve success in any field of life without a good command on it. The

influence of technology has permeated into all facets of life and educational settings are no exception to it. Everything is digitalized in the current times including education, whether contemporary or religious knowledge is being imparted through technology. Gadgets, devices, software applications, machines, and computers along with the internet are all kinds of technology widely in use. Poore (2011) states that collective liberating intelligence, cannot be achieved until we can achieve collective digital literacy and now we have, perhaps, more than ever the opportunity and the technologies to help us in the human project of modeling, shaping, creating, and developing for ourselves as trainers of our culture. To this end, we must create the conditions for people to become wise in their way. The ability to cope with the digitally-oriented environment with a set of cognitive,

sociological and emotional skills is called "Digital Literacy" as defined by Eshet, (2004) that the digital literacy does not involve only the ability to use digital devices or software but multiple skills including cognitive, emotional and sociological ones are required by the users to handle the digital environment successfully. He further elaborates that the activities required in this context include, for example, the reading of instructions from graphic screens in user interfaces; use of digital reproduction to create new and significant materials from existing ones; building knowledge from a non-linear and hypertext navigation; evaluating the quality and validity of the information; and having a mature and realistic understanding of the "rules" that prevail in cyberspace. As the influence of technology has permeated into all facets of life including education, learning should be redefined in terms of the context in which it takes place. Apart from it being the part of the mental process, it also includes the process of negotiation between the society and the individuals (Hutchinson and Waters, 1987: 72). Over the passage of a few decades later, technology has become a vital part of everyday life, be it official matters or a household chore, technology plays an important role. Technology improves individual learning and helps retain knowledge. It also gives the learner a chance to learn useful life skills. It creates interest as a media technology is more appealing and engaging for learners as compared to the conventional methods of learning i-e from books or blackboards. The use of technology not only benefits the teachers but also makes the classroom more vibrant, active, and interesting with the help of different apps, software, and tools.

Digitalization in Pakistan

Technology, if used appropriately and creatively, can bring a positive and encouraging change to the classroom environment and hence to the whole teaching-learning process. Regarding the state of affairs in digital literacy, The Frontier Post, Pakistan reports that Pakistan is ranked lower than India, Iran, Sri Lanka, and even Bangladesh and the non-optimal web accessibility and poor literacy rates both have led the country to the second-lowest score in the digital literacy environment indicator. Although programs have been launched by the Punjab government to propagate digital literacy, it is not much helpful due to a

lack of resources. Sometimes the schools do not have internet access, other times the teachers are not trained enough to use digital technology efficiently. For example, Intel tech was launched in 2002 in collaboration with Pakistan and Intel containing blended teaching modes for teachers like "Thinking with Technology" etc. The partner in learning (PiL) was started in 2004 through an MOU between Microsoft Corporation and the Federal Ministry of Education and Professional training, NICT in 2006. The main objective of these initiatives was to integrate technology in education and train the teachers to cope with these programs successfully. Moreover, a program under the title "E-Learning" has been launched by the Punjab government to spread and improve learning with the help of digital technology. The project was initially introduced in 50 schools of Punjab on a trial basis. The beneficiaries of the project were the students and teachers of those schools. The program consisted of online resources and apps that could be accessed by teachers and students. The schools were provided with 2 tablets (i-pad) each, to be used by teachers whereas students did not have access to the apps. Since the class size in public sector institutes is usually large and it was not possible to provide gadgets and digital resources for all. Owing to this, the teachers had to take prints of the online tasks and give out as worksheets, which failed to meet the true essence of digital literacy. Talking of higher education in Pakistan, the Government and HEC offers access to digital technology but to a varying extent, depending on college/university policies and resources. Some institutes are using digital technology as a medium of instruction, for example, multimedia. But still, the students have limited or no access to digital labs or digital libraries. Therefore, to meet the challenges of a large Social Sciences or ELT class, the only resource available with the teachers and learners at public sector institutes is multimedia and that too mostly at the postgraduate level. The teachers and students use multimedia to give presentations focusing on the four major aspects of language skills, grammar, and relevant concepts. Although digital technology is being used in higher education to a varying extent, it is the need of the hour to implement it on school education level too. Given the challenges faced by Pakistan, lack of resources, poor infrastructure along with the diverse nature of education systems working in the country technology integration, and E-Learning are imperative. Despite many initiatives for digitalization, Pakistan is lagging far behind in digital literacy therefore, it is imperative to look into the matter and find out the reasons for this lacking. In Education, teachers and students are major stakeholders. Teachers at all levels in this part of the world generally lack the skills and the requisite know-how about digital tools. Their beliefs, attitudes, anxiety results from digitalization and fear of inability to use them successfully for teaching purpose, have a far greater impact on their pedagogical practices and motivating the learners living in the digital era. Digital literacy including all sociological, cognitive, and emotional skills for both, teachers and students, is imperative to transform teaching and learning in a new context.

Review of the Literature

A literature review is a systematic inquiry that helps in understanding the research problem and finding the research gap. Therefore, the researcher has focused on reviewing the literature related to digital literacy, information literacy, integration of technology in education encompassing studies at the national and international levels. Technology, if used appropriately and creatively can bring a positive and encouraging change to the classroom environment and hence to the whole teaching-learning process. Pope (1999) reflected that teachers need to be critical technology consumers, as well as the students, tending to be thoughtful users who reflect, question, and retract on the best moments and methods of integrating technology. Bull et al. (2003) deduced that technology in some instances makes it possible to go beyond the current curriculum and address material that would otherwise be unavailable. Pope and Golub (2000) are of the view that teachers who integrate technology, improve their learner's training, and change the very nature of their instructions. They furthermore opine that the main objective is to teach and learn English language arts; technology is a means of achieving that objective. We need to construct what we know from studies and practice to infuse this technology. They view technology as a literacy tool that has a critical role in English language teaching programs and technology has a major role to play in how we write, read, and view and represent information visually. The study also reveals that technology already affects writing and teaching writing just as it influences language and reading. The way we teach writing is significantly influenced as learners use computers more frequently to compose.

The students, who used the internet more, according to research by Jackson et al. (2006), were discovered to have higher scores and grades. Jackson et al. (2011) conducted another research to analyze the impact of technology and found out that the use of the internet and technology had a positive impact on social conduct and children's academic performance. According to them, the findings of the study that focused on different parameters under the influence of technology concluded that children and female with excessive use of internet were faster readers as compared to the male and children with lesser use of the internet. Similarly, frequent users of mobile phone children were found to have higher social self-esteem as compared to the ones who do not. Moreover, high-frequency mobile users and IT users had higher overall self-esteem as compared to the children who are from less affluent households respectively.

Muwanga-Zake, Parkes, & Gregory (2010) conducted an exciting survey on the use of the blog aspart of college ICT use. They stated that it is suggested that universities create a pedagogical blog to promote professional development in ICT pedagogical use. Suarcaya (2011), who performed studies on listening class in the EFL context, using web-based audio equipment, carried further research on learning websites. His research disclosed that during the listening class the learners liked and were interested in internet activity. To move on with the use of technology tools for interactive learning is, to blog, a website where the pictures,

links, video, and texts can be placed and the comments can be added by the readers or like to the blog site. The same strategies and sites can be used for educational purposes in class, schools, or individually. Research has shown that most teachers still resist the integration of technology into the classroom. Mac Callum, & Jeffrey, (2014) conducted a study and found out the factors that affect the use of mobiles for earning purposes. The researchers concluded that despite the use of mobiles, its use by the teacher was limited. He also concluded that two aspects, in particular, have been constantly encountered to affect the adoption of technology by teachers. The first aspect that has shown to influence the adoption of new technologies is the beliefs of the teachers. In particular, it is the perceived value of the new technology (perceived utility) and the perceived effort necessary to learn how to use the new technology (perception of ease of use) which has established itself as an important role in the adoption of technology. The second main aspect that influences adoption is the teachers' ability to use digital technology (referred to as digital literacy) and the ability necessary to integrate it into their teaching (teaching self-sufficiency. Gunuç and Babacan (2017) conducted a study on technology integration in pedagogy and they talked about some issues faced in the integration of technology in an ELT classroom, they opine that an issue with the inclusion of technology is time for teachers. Teachers need time to prepare multimedia resources and incorporate technology into classes. Some educators do not find extra time, while others do not efficiently handle technology and face anxiety. Another problem for educators is how to manage the classroom technology is being used. Because classroom management expertise and experience is a requirement to be updated in institutes where technology is being used. Technology can lead to motivation and attention as well as time management, control in the classroom, communication disturbance, and distraction, particularly when the teacher does not integrate technology effectively, as stated by Yunus et al. (2013).Therefore, digital literacy for integrating technology is imperative and needs caution as any inefficiency may result in adverse effects on the learning process of the learners. All these studies show that apart from the planning, policies, and availability of gadgets, academics readiness, skills, and training are highly important factors for the success of any program being launched to digitalize education.

Studies in the Relevant Field in Pakistan

The study by Ameen and Gorman (2009) aimed to investigate the overall state of information and digital illiteracy (IDL) in developing countries and the impact of its absence on the growth of nations and individuals both. The case of Pakistan should be used as an example to illustrate the endemic state of poor information and digital literacy. It also aims to discuss the general disadvantages of effective IDL in developing Asian countries. To achieve the objectives of the study, the review of the literature and the result of the surveys at the national and international levels are used to indicate the status of IDL between university students and faculties in a country, integrating these results with the discussion. It has been found that in Pakistan, as elsewhere, the practice and training of IL / IDL

are not the norms in libraries or education; they are not operational priorities. The low level of IL / IDL among educated classes contributes to the status quo of information illiterate citizens. It also states that becoming "critical consumers" of information is essential for personal and national empowerment. These studies call for appreciation for making IL / IDL an integral part of learning programs at all levels.

The studies reviewed here showed that social media, website, blogging, software, mobiles, and other different technologies can be used for learning and teaching purposes successfully. Moreover, these technologies can be used effectively for students ' active learning.

Nevertheless, there is a dearth of literature regarding DL and scarcity of research on technology integration, practice, and digital competence in the Pakistani scenario. This situation calls forth for more studies on DL and technology integration to raise awareness regarding teaching and learning distinct language learning skills using different technologies hence knowing the problems come during the process. More research on technology integration and technology instruments is still required to enrich education research, such as more technology fields that need to be explored, for example, finding more diverse kinds of technology to be used in language teaching abilities. The present study is an attempt to fill this research gap.

Material and Method

The present study is essentially descriptive qualitative research. Drawing insights from the skill-based theoretical framework proposed by Eshet (2004), the purpose of the study was to investigate the level of digital literacy acquired by the academics in higher education, to identify the beliefs and attitudes of the teachers towards digitalization and to probe into and find out a link between teachers' anxiety in using digital tools and its impact on their pedagogical practices. The sample population for the study has been selected from six public sector educational institutions and data is collected from 12 teachers through the interview schedule. The collected data is analyzed by adopting a thematic approach. These interviews were recorded, transcribed, and coded systematically to extract themes. However, quantification of data is made possible at some places to have a holistic view at a glance for a better understanding of data.

Table 1
Distribution of Participants according to Gender and Education level

Educational Level	Gender		Total
	Female	Male	
M.A	2	2	4
M. Phil	2	2	4
Ph. D	2	2	4

Total	6	6	12

The analysis revealed that there exist no significant differences in digital literacy between male and female participants. However, significant differences have been found among the varying degree of qualification and the digital skills of these participants. The single most discernible factor, perhaps, was in terms of readiness and ICT anxiety that needs to be overcome through proper planning and training. The following themes emerged after a careful analysis of data.

Digital Literacy (DL) of the Participants

The majority of the teachers was found to be technology literate and had basic command and knowledge of the required skills needed for inducing technology effectively. Most of the participants (n=8) believe in the usefulness of technology in the teaching process and they possessed the basic computing and mobile use skills. They informed about their ability to use MS Word, MS PowerPoint, emails, texting, and calling through mobiles but were found to be using technology for social and routine business transactions and rarely for teaching. Whereas, the rest of the participants (n=4) claimed to have a working knowledge of mobile apps but not advanced computing skills. They use Skype, Viber, Watsapp, and Facebook with friends and relatives and sparingly for teaching purposes.(Both groups \Majority of them) were unaware of Podcast, Moodle, blogging, Zoom Cloud meeting app, and use of other software for teaching purposes. Email is reported to be used for personal and official purposesand professional connectivity. They used technology to provide reference material through emails, receiving assignments, etc. but none of them used digital technology for formal collective teaching.

Accessibility of Technology

Another factor in incorporating learning technology in some countries is the accessibility of technology or resources. Pakistan is not an exception in this regard. Although teachers have access to social media like Twitter and Facebook, the use of digital technology at the classroom level is still not much in practice though, in private sector institutes, the use of technology is observed and reported somewhat in implementation with the help of specially designed curricula. Moreover, some highly affording institute in Pakistan has purpose-built infrastructure and equipment to facilitate digital literacy, for example, updated and well-equipped computer labs, smart boards and LED screens in classrooms to display visuals and access to the internet but in Public sector institutes that ratio is still very low as compared to other private sector institutes. Moreover, the participants talked about the plight in public sector institutes where there are minimal use and facilities of digital technology.

Beliefs and Attitudes

The majority of the respondent (n=10) believed in the soundness of traditional pedagogical practices. They viewed technology being useful but expressed their belief in the face to face interaction with the students considering it important and that teachers cannot be replaced by technology as technology can be failed many times. One of the participants was of the view that the teacher-learner interaction in such set up is supposed to be smooth and beneficial for learners. However, the class size in most of the public sector colleges is large, keeping in view the available resources and infrastructure. Due to that, it becomes difficult for teachers to manage classes that involved the integration of technology in the form of A/V aids. Some of the respondents were of the view that blended learning (a mix of digital & traditional face to face interaction) was a better option in Pakistani scenario where there are opportunities for professional growth and departmental training are almost nonexistent and they receive no motivation or appreciation from higher-ups and colleagues for the extra efforts they put in their teaching practices. Poor socio-economic background of teachers and students, non-availability of smart phones, internet connectivity in remote areas, power failures, etc were some of the issues these respondents reported of.

Anxiety

The majority of the participants (n=7) revealed that lesson planning on multimedia takes a long time and that most of the time they failed to arrange multimedia for their classes that resulted in embarrassment. Four participants reported not to have that facility in their institutes while five of them expressed their fair of damaging the machines while using therefore they mostly managed their lessons without it. The participants have basic DL but mostly they do not use it to improve their teaching and enhance the learning of the learners because of some anxiety and uncertainties regarding technology and its tools.

Discussion and Conclusion

The integration of technology in the classroom or Digital Literacy in Pakistan has yet to achieve recognition at all levels. It is evident from the responses gathered from the participants that the use of technology can help improve communicative and digital competence resulting in better performance of the students. There have been instances shown in literature where a positive impact has been observed in learners who are taught using digital literacy. Seeing these statistics, it is necessary to take steps in this regard and digital literacy must be made an integral part of the National curriculum. Educators and education consultants are of the view that it is very important to inculcate digital literacy in our school courses. The children at the primary level must be introduced with digital technology and how to use it efficiently. This is the digital era and to excel in today's digital world, one needs to be a proficient and a competent digital citizen and must possess the necessary digital skills, which refer to the ability to

find, evaluate, utilize, share, and create content using information technologies and the Internet. Findings also revealed that there exists a significant relationship between teacher's digital literacy, skills to handle the digital gadgets, readiness to integrate these gadgets into their practice. Moreover, teachers' beliefs, attitudes, and anxiety with these tools have an impact on the motivation and intentions to integrate technology into their pedagogy.

A number of important conclusions can be drawn from the analysis and themes emerged from it. Lack of prior good skills in DL, ICT anxiety, beliefs in the usefulness of integrating technology in teaching practices, lack of training, motivation, appreciation, non-accessibility of digital tools in institutions are the most important factors hampering the successful implementation of the vision "Digital Pakistan."

Recommendations

The results of the present study are significant and can help the policymakers as a springboard for a long term strategy for integrating technology in education, improving the digital literacy of the stakeholders, arranging useful training thus resulting in better academic performance. The studies have shown that a good command of DL has a positive impact on the pedagogical practices and beliefs of the teachers. Resultantly they are eager to inculcate technology in teaching. Therefore, the situation calls forth careful planning, need analysis, and implementation of policies with true letter and spirit in educational institutions at all levels. Readiness and preparedness of academics were found to be the single most important factor to be addressed. Teachers training in blended teaching, getting them ready for the change, production of user-friendly digital tools, and their accessibility should be made possible.

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