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About the Journal

CIET, NCERT has been a premier institution for development and dissemination of resources and techniques related to Educational Technology (ET) for better understanding of teaching-learning at school level. With renewed thrust on educational technology using digital platforms, need for a quality journal on educational technology in India is felt more than ever. Keeping this in regard, Indian Journal of Educational Technology will be a medium for scholarly presentation and exchange of information between researchers, professionals, and practitioners of technology related field of education. The journal aims at covering disciplinary areas of educational technology (ET) for school education and teachers' education. The specific objectives of this journal are: i) to provide an open access journal for sharing updated and peer reviewed research on Educational Technology for easy access and ii) to promote research on the integration of technology in school and teacher education, promote innovative practice, and inform policy debates on educational technology. This bi-annual open access online peer reviewed journal will be a platform for exchange of ideas and would also become a basis for further innovation in ET in school and teachers' education.

Notes to Contributors

Indian Journal of Educational Technology is a journal especially designed for scholarly discourse of use of various forms of technology in education. Some of the themes encompassed under its broad pervue of are: Education Technology (ET), Information and Communication Technology (ICT) in education, Distance education and technology, Technological integration into pedagogy and content, Open Educational Repositories (OER) and FOSS, Innovation in educational system, Computer-based learning, Audio-video and multimedia in education and issues thereof, Technology cognition and curriculum, Impact of technology in education, Nature of technology and learning, Mobile learning, Learning through social media, Technology assisted evaluation systems, Technology support for differently abled population, Flipped classroom, Virtual and Augmented Reality, Artificial Intelligence, robotics and education, Impact of technology on learning, Social media and children, Economics of technology and its impact on education system, Educational planning administration and technology and Online courses for school and teacher education. We look forward for your contributions in the coming issues. Your feedback and suggestions are also welcome on the following address:

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About the Journal

ii

Editorial

v-vi

Title	Author(s)	Page(s)
Documentation of Sign Languages of North East India	Dr. Melissa G. Wallang	1-15
Faculty @ Facebook - Students' Perspective for Educational Scaffold	Ajita Deshmukh	16-29
Professional Development of Teachers with ICT	Dr. Mamur Ali	30-37
ICT initiatives in School Education of India	Dr. Alka Singh	38-49
New Technology and Education: Contemporary Issues in Education Studies	Jagjit Kaur	50-54

From Blackboard to Artificial Intelligence: Technology in the service of Education

Technology whether as an end in the pursuit of human happiness or a tool to achieve a human purpose has come to play a seminal role in the field of education. Just as the modern world today is unthinkable bereft of technology, education too would fall short of an “enlightening experience” without the use of technology. In order to understand the full impacts of technology on learning, it is of great consequence to understand the nature of technology itself. Technology is perhaps as diverse as the life forms on the planet Earth. The way evolution helps to explain the diversity of life forms, technology as a system can best be understood in terms of the way it has evolved through the march of human civilization. For the sake of convenience, one can distinguish three distinct stages of technological development in the human history. They are (i) tools, (ii) machines and (iii) automation. Tools were the earlier stage of artifacts used by human beings to gather/ hunt food. They primarily used mechanical properties of materials to achieve the desired functionalities. By combining several tools, machines were invented, thereby increasing the efficiency of the work done. It took less time to do a work using a machine. While enhancing the efficiency, it reduced the human involvement further. Period of industrial revolution can be described as an example of machine phase. The modern world belongs to an era of automation driven by the digital technology. While efficiency of doing a work has increased manifold, the involvement of human being is primarily in the development of technology and not in the operations of technology as such. In the most systematic way, technology can be portrayed as a system having several sub-systems/ components with the capacity to harness one or the more natural phenomenon to achieve a human purpose. The Oxford dictionary tells us that the technology is “the collection of mechanical arts that are available to a culture to make its economy and society function.” In the simplest way, technology can also be described as the projection of human body. What a human body cannot do due to its sheer limitations as ordained by nature can be achieved by the use of technology.

Quite clearly technology, which has contributed significantly in enriching the material culture of the human civilizations, has also moved in tandem with other efforts in achieving educational outcomes of the human beings. Blackboards were perhaps the first instance of the technological use in the classroom. Digital technology is now defining the contours of technological interventions in the field of education. Artificial Intelligence (AI) is on the cusp of revolutions in learning. Given the importance of Information and Communication Technology (ICT) or more broadly Educational Technology (ET) in education and its burgeoning integration in school education and teacher education in recent times, the need for a Journal of Educational Technology has been necessitated which would provide a platform for sharing of ideas on different themes in the area of Educational Technology (ET). This would not only create more avenues for researches in ET but may foster innovations as well in ET. By initiating a journal of educational technology, Central Institute of

Educational technology (CIET), a constituent unit of National Council of Educational Research and Training (NCERT) with a mandate to create and disseminate audio, video and multimedia contents in school and teacher education along with research, training and extension in the area of educational technology, proposes to promote research work and facilitate effective usage of ET in educational systems. This journal is being conceived as online, biannual journal in English providing theoretical perspectives and methodological developments through quality empirical researches that validate the applications of educational technology leading to improvements in the learning at all levels of education from early years to senior secondary level including vocational education and teacher education comprising in-service professional development of teachers.

We are happy to bring out the first issue of Indian Journal of Educational Technology. We did receive ten manuscripts in different categories. Since the journal is a peer reviewed one, out of these, five manuscripts have been selected for publication after three rounds of review i.e. one at the editor's level and two rounds at the reviewer's level. A double-blind methodology was adopted for review of these manuscripts for final selection. After going through review process the five manuscripts selected for publication were: "Documentation of Sign Languages of North East India", "Faculty @ Facebook - Students' Perspective for Educational Scaffold", "Professional Development of Teachers with ICT", "ICT initiatives in School Education of India" and "New Technology and Education: Contemporary Issues in Education Studies". The first two articles are research articles whereas, next two are general articles followed by the last one which is a book review.

We hope to receive an enthusiastic support from the academic fraternity working in the area of educational technology. We express our sincere thanks to the reviewers who took time out from their busy schedule to do the reviewing. We are also thankful to the authors who responded to our call for submitting the articles. Last but not the least, we also thank a very small team of dedicated members of the editorial board for agreeing to be part of this venture.

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Research Article

Documentation of Sign Languages of North East India

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Abstract

Today, technological advancements offer much more solutions in ensuring accessibility for the D/deaf community in school education. Computer tools and programs have made the task of documenting Sign languages easier and more efficient. This paper describes the documentation of sign language varieties in the North East Region (NER) of the Indian Sign Language for wider and web-based dissemination of resources for the teachers and the students in classroom transaction.

The nature of sign languages requires a visual database to be stored systematically and designed in a user-friendly manner for ease of access. Documentation of sign language is a still a major necessity in India and particularly in the NER. This paper is not debating on what Sign language is or how it differs from spoken language; rather, it focuses on how such documentation has resulted in a web-based app known as 'NESL Sign Bank'.

Keywords: Sign Language; Deaf; deaf; Documentation; Sign Bank; North East Region

Introduction

Technology has played a major role in every aspect of our lives and it is now, indispensable in the sphere of human connection and communication. It has proved to be more of a boon for the D/deaf* community who rely on visual media for communication, i.e. sign language (a language based on visual-spatial mode). With emerging technologies in a range of media services such as computer programs and applications, resource materials for education in sign language can be developed and designed with the aim of providing effective classroom transaction between teachers and students in an interesting manner.

Prior to the 1960's, Sign Language did not receive any linguistic attention even though its existence had been documented in various literatures. Sign language has similar grammatical features as any spoken language, the only difference is that, it is produced by the hands and

perceived by the eyes. The emergence of the concept of language in visual modality as propounded by Stokoe (Stokoe, 1960) triggered further linguistic research on the differences between spoken and sign language, and on empowering the linguistic status of sign language. His pioneering work, *Sign language Structure: An outline of the Visual Communication System of the American Deaf* reveals that sign language operates in ways similar to spoken language. In the last 40 years, the field of sign linguistics has shown that sign language is a natural language that fulfils the same functions and has the same standards as any spoken language.

Attempts to study sign language and the deaf community in India started in the 1970's by Vasishtha, Woodward & Wilson (Vasishtha et.al., 1978, 1980, 1985 and 1987). Their findings indicated lexical variations in basic signs and they provided evidences of the existence of similar syntactic patterns of sign structure across India. They concluded that Indian sign varieties in these four major cities (Mumbai, New Delhi, Bangalore and Kolkata) are one language, which is Indian Sign Language (ISL). Their studies have been compiled and outlined in 4 dictionaries in book form. Sociological studies were further carried out by Jepson (1991a, 1991b and 1991c), and Miles (2001). More attempts include the comparative study of ISL with the Pakistani Sign language by Zeshan (2000, 2001, 2002, 2003a, and 2003b) which is known as the Indo-Pakistani Sign language Grammar. Zeshan (2000) suggested that IPSL may be operating all over India and Pakistan with varying degrees of dialectical variation which require more research. Linguistic analysis of ISL has been initiated in India which provides an elaborate description of how the language works (Sinha, 2003 and 2017).

Researches related to the lexicography of Sign Language have been published over the years. The first known dictionary of signs was produced by John Bulwer in 1648. However, sign language lexicography did not actually begin until 1965 when the first sign language dictionary based on linguistic principles was published by Stokoe, Casterline and Croneberg (Stokoe et.al., 1976). It is widely known as the *Dictionary of American Sign Language on Linguistic Principles (DASL)* which set off further development of sign language dictionaries all over the world. Most of these sign language dictionaries developed around this era was in

book form. These dictionaries were developed on the basis of spoken language which was translated into signs for the hearing community. Most sign language dictionaries that have been published in the 1970's and 1980's are uni-directional bilingual dictionaries (Schermer, 2004). The most widely known bilingual dictionaries of sign language in book form are the Gallaudet Dictionary of American Sign Language (Valli, 2006); the Australian Sign language Dictionary (AUSLAN) by Johnston (Johnston, 1989); and the Dictionary of British Sign Language (BSL) by David Brien (Brien, 1992). There are various forms of sign language dictionary; some are developed for a specialized field, for example, Legal terms, Computer terms, Medical, etc. There has also been development of a machine system for translation from speech to sign or vice-versa for example spoken text to sign language.

In India, several attempts have been made to document sign language in book form and many have begun to document ISL for an online course as well as in web and mobile based applications such as the "Talking Hands" (Deaf Enabled Foundation, Bengaluru initiated in 2013). Since 2000, the Ramakrishna Mission in Coimbatore (2001) has also documented sign language according to different semantic categories derived from a project in collaboration with CBM international. Wallang (2007, 2014 and 2015) has also attempted to analyse the situation of deaf education in Shillong and document the language used by the Deaf community in the form of a Multi-media dictionary of Shillong sign language (ShSL). At present, the Indian Sign Language Research Training Centre, (under the Ministry of Social Justice and Empowerment, Govt. of India) has recently launched an ISL dictionary encompassing the varieties of sign languages operating in the country, with an entry of 3000 words. In this context, documentation of the Sign Language varieties in NER can contribute to their endeavor.

At this point of development, a multi-media dictionary is not the main objective of the documentation since it almost feels impossible to produce work of the same level of quality and precision as seen in the sign language dictionary developed for the BSL by Brien (1992). Thus, the term 'Sign Bank' is adopted for this web based documentation to signify a collection of signs (at the lexical level) recorded from the native signers across the NER.

Considering the rich diversity of the region in terms of culture and languages, it is expected that the type of sign languages used in the states will also differ extensively from one state to another. At this point, lexical variants are being considered and incorporated into the Sign Bank. Each sign-meaning collected has simply been translated into English as the majority of the schools use English as the medium of instruction. It does not describe the grammatical properties of each sign. There have been no linguistic studies that take into account the sign languages operating in North Eastern India. The most striking feature of the NER is its linguistic situation where 70% of India's spoken languages are found. As per the Census, 2011 the NER is home to 122 languages, with Arunachal Pradesh having the highest number of 90 languages. Amongst the 122 languages, 4 fall in the category of scheduled languages (GOI, 2010). English is the official language in Nagaland, Mizoram, Meghalaya and Sikkim except in the states of Assam and Tripura. Although all the tribal languages have the same equal status as a language, only 27 tribal languages have found a place in the school curriculum in their respective states. The D/deaf people co-exist with these varied linguistic communities who are themselves struggling to empower their own ISL (collaborating with the National Association of the Deaf) and fighting for linguistic survival in the globalised world.

As compared to the past, with today's social media and instant communication access, the deaf communities existing in each state are more closely linked with each other. The native signers are constantly exposed to other sign language native signers. With the rapid development of ISL, the contact of the deaf communities of the NER and ISL native signers have become more frequent through various platforms such as Deaf conventions, conferences, gatherings, and other interactive activities. Such activities are conducted by NGOs working for the welfare of the disabled. Hence, there is a likelihood of finding cognates of ISL in the sign languages used by the deaf community in this region.

For example, the Regional Deaf Conference organized by the Ferrando Speech Hearing Centre, Shillong (with the National Association of the Deaf in October, 2017) indicates the existence of a larger deaf community and considering the varied numbers of spoken languages and culture found in this region, it is no surprise that different varieties of signs particularly at the lexical level was found, with the exception of Nagaland. In Meghalaya,

British Sign Language (BSL) was initially introduced, and then the American Sign Language (ASL). At present, one school is using the ISL Mumbai variety while in another the sign language developed by the Coimbatore team is being used. The types of fingerspelling used are the double-handed fingerspelling (ISL) and the single-handed ASL fingerspelling (Wallang, 2014). ISL is found in almost all the states in the North East, with the exception of Nagaland where ASL is used. This school (details available in the app) makes use of a different variety of signs and the sign system used in this school resembles the ASL lexical items and as well as the word order. Although, most signs denote the cultural aspects specific to their community in terms of food habits, dress, customs, etc. In Mizoram a dictionary (2004) of Mizo sign language (2004) has been published and it comprises of signs commonly used in the state, with the integration of the ASL varieties.

The term NESL adopted here refers to the collection of sign language varieties commonly used by the deaf community across the NER. NESL: A Sign Bank is a proto-type version consisting of a sign language database which is commonly used in the field of education. Signs included in this Web-App cover several areas which have been classified into different semantic categories i.e. basic words, question words, kinship terms, colour terms, food items, locations, professions, educational terms (of various subject areas), etc. Besides these words, alphabets in English or fingerspellings, both single-handed and double-handed, along with numerals, have also been included. The NESL Sign Bank offers technological resources to teachers for enhancing communication access to the D/deaf children in an inclusive classroom.

Significance of the Documentation

Over the past few decades, the accumulated research findings have brought forth significant breakthroughs that highlight the value sign languages have for D/deaf children in the context of the present education system. In India, however, despite the academic research that has already been initiated, a wide gap still exists between the academicians and school practitioners, and furthermore, the academic contributions are hardly visible in school education. Misconceptions about the language and the Deaf community still abound across

school educational programmes and policies due to the lack of substantial and useful academic resources.

In the context of education, sign language in India still fails to make its way into the school curriculum and the classrooms that Deaf children attend. As one of the priority areas in promoting inclusive education, the National Curriculum Framework (2005) states that “Children with language-related impairments should be introduced to standard sign languages, which can support their continued growth and development to the fullest. A recognition of the linguistic abilities of learners would encourage them to believe in themselves and their cultural moorings” (NCERT, 2005, p. 36). Johnson et.al., (1989) highlighted the importance of natural sign language right from an early stage which is critical in second language learning development and discussed the incongruities that abounds deaf education around the world. Further, they pointed out that the adoption of total communication method, which is an inclusive approach to deaf education, is actually ‘Crypto-oralism’ where the use of sign language to learn English is simply a process of literal translation of words for signs, rather than using a natural sign language. They also stressed that it is only the d/Deaf children’s natural sign language that is justifiable in being used in the school so as to make the curricular content more linguistically accessible.

It is within such similar notions that the NESL Sign Bank was developed so as to ensure easy accessibility to resources in sign language (derived from the community members) for classroom interaction. At this point, however, the level of documentation has been initiated only at the lexical level, and the task of incorporating such lexical items structurally in a sentence remains a future endeavour.

There is a dearth of sign language materials that can be used as educational reference materials in India, particularly in the context of NER. On this basis, there is a pressing need to document the sign language in the region and produce sign language resources that can support future developments.

Several studies have discussed the challenges faced by deaf communities around the world and they are no different from the deaf communities in the NER. This NESL Sign Bank is only a small step towards eliminating the language barriers in the educational context of

North East India. Thus, in one of the most linguistically diverse regions of India, only a multi-lingual education model which can accommodate sign language as having an equal status with other spoken languages can truly minimize the barriers of education for the Deaf.

Methods of Documentation

The process of documentation begins with the recording of selected data and the methods used are similar to the process of data collection used for linguistic documentation of any spoken language. However, because of the differences in modality in the transmission channel i.e. in the perception and production of sign languages, video recording was employed for the research to capture the accuracy of data. Moreover, sign languages make use of space, movements, handshapes, etc. which significantly and uniquely define the linguistic structural system which only a video recording can capture. Data was collected from native signers (D/deaf who are members of deaf communities in the states and the region) out of a random sampling of population from inclusive schools and special schools (both Private and Government schools) in the NER. Further, Deaf Associations, Deaf clubs and other NGOs were consulted for data collection. Data was collected through a series of video recordings, using a digital video camcorder. Video recordings can capture the accurate descriptions of lexical signs in terms of all its specified features. The lexical items that were collected consist of a word-list and words capturing various semantic, grammatical categories and educational terms comprising of approximately 5000 words.

Compilation of NESL Sign Bank

Online access to sign languages is available around the world and a few exist in India which are mostly dedicated to fulfilling daily communicative needs. This NESL: Sign Bank provides online access to sign languages in the context of school education. It is an online educational resource that contains information regarding the types of sign languages used by the deaf community. This Web App has been developed using free online software programs (open source) which aim at supporting the education of d/Deaf people across the region. The application will be hosted in NERIE-NCERT website to cater to educational institutions in the NER.

The Web App contains information about how a particular English word is used in Sign language. For instance, if a teacher teaching a d/Deaf child in the classroom does not know how to sign the word 'EXPERIMENT', he/she can use the App to access information about how it is signed. Signs have been arranged in alphabetical order so that a user can simply click on the window containing the NESL: Sign Bank and either scroll down to the alphabet 'e' to look for the sign 'Experiment' or simply type the word in the search window which is placed adjacent to the NESL: Sign Bank icon on the main window page. When a user clicks on the selected English word, the corresponding or equivalent sign is automatically displayed in video format. Besides the lexical items, users can also access information about the research background and other materials which relate to how sign language works and functions.

Characteristic Features of NESL Web App

1. Format: Web based Application that can be accessed offline as well as online.

2. Technical information: This Web App has been developed using free online software programs (open source) which aim at supporting the education of d/Deaf people across the region.

- **Software used:** Visual Studio, Xampp server, MySQL, Adobe Premiere Pro (for video editing).
- **Web development** using HTML5, CSS, PHP

a) HTML (Hypertext Markup Language) for designing the Web App.

- **A database** is created using MySQL. (Standard Query Language)

A particular word is linked to the particular video.

The words are stored in alphabetical order in the database.

Each word is linked to a particular video by storing the path location of the video (for that particular word).

3. Layout: NESL Sign Bank consists of five navigation tabs/windows in the vertical menu bar. The main sections of the app are presented in this section as follows:

(I) Homepage: The homepage of “NESL Sign Bank” contains the background of the Web-App. It gives an introduction to the Web App stating that it is a collection of signs that have been collected from different parts of the NER in order to facilitate teachers to use sign language for the benefit of the Deaf children studying in the different states of the region. Teachers in different government schools and NGO’s have expressed their difficulty in finding resources to help them communicate with the Deaf students in their classrooms and thus, NERIE-NCERT has taken upon itself the task of providing context-based vocabulary specifically tailored for the academic needs of their classrooms. Teachers can now simply, log on to the internet, type the word that they are looking for and a video of the sign will be displayed. This app not only provides the word list and signs, but also the grammar of the sign language along with background knowledge of the Deaf community of the NER. The process of developing this Sign Bank is a continuous process that is regularly being improved upon by the developers through more research and the feedback given by the users.

(II) NESL Sign Bank: This tab contains the explanation of the question, “What is NESL?” It has a “dictionary” having words listed in alphabetical order which the user can access easily with a click of a button. Examples of two variants of a single sign meaning have been found in two states. If a sign is found to be commonly used across the region, only one sign video citation is used. Besides the dictionary, it also has a “Fingerspellings” tab which consists of both the single-handed and double-handed alphabets in English. The single-handed finger spellings are based on the American Sign Language which is adapted within the Indian deaf community. A tab representing the “Numerals” in sign language is also available.

(III) Educational Resources: Most often teachers teaching D/deaf children are unaware of how sign language works and how in the absence of sound, a language can be used in similar ways like any other language. Therefore, the window/tab on ‘Educational Resources’ provides a glimpse into the nature of sign language and provides basic insights that will equip teachers with the grammatical properties of the language. The tab ‘**Contact us**’ provides users a chance to send their comments and feedback and to contact the developers

for any further information that they may require for classroom transaction The tab/window 'The Team' consists of information about the team members responsible for the documentation and compilation of the database for NESL Sign Bank.

Instructions for Installation

(I) Software Requirements: Web browser, MySQL and Xampp or Wampp (provided in pendrive)

(II) Instructions for Installation:

Step 1: Installation of MySQL

1. Install MySQL (either 32 bit for 64 bit depending on the computer configuration).
2. Open the folder named "Software", click on either "mysql-5.7.19-win32" or "mysql-5.7.19-winx64".
3. After clicking on it, a window will pop out; click on "Next".
4. Click on a checkbox "I accept the terms in the license Agreement"
5. Then click on "Next"
6. Click on "Typical"
7. Click on "Install"
8. Click on "Yes", and then click on "Finish".

Step 2: Install Xampp

1. Click on "xampp-portable-win32-5.6.31-0-VC11-installer"
2. A window will pop up, click on "Yes"
3. Click on "Next", go "Next"
4. Click on "Next", again "Next"

5. Click on “Next”
6. Wait as it will take some time
7. When it is done, click on “Finish”
8. Choose the Language, then click on “Save”.
9. A window will pop up, go to step 3.

Step 3: Go to Xampp Control Panel

1. Go to Start Menu, Type Xampp Control Panel
2. When the Panel is open, click on Start button near what it is written “apache” and also Click on the start button near what it is written “MySQL”.
3. Now, Click on Admin which is on same row with MySQL.
4. A screen will be displayed, do not close it, go to step 4 for importing database.

Step 4: Importing Database

1. Click on “New” which is on the left hand side of the screen.
2. You will see “Create Database”, so create the database with the name “signbank”
(Note: all the letters of the word “signbank” are in small letters).
3. Click on “Create”.
4. Click on “Import”
5. Click on Browse; go to the location where the sql file is. (if it is in the pendrive, go to the pendrive and select the folder named “Database” , click on “signbank”.
6. Click on “Go” which is below.

Step 5: The Web App

1. Go to the folder named “NESL”
2. Copy the folder “NESL”
3. Go to C drive, open “xampp” folder, go to “htdocs”, paste it here.
4. Now, open your browse example, Google Chrome or Microsoft Edge or any browser.
5. Type “localhost/NESL/index.html”
6. Now the “NESL” Web App is ready.

Future Projections and Conclusion

At present this study has managed to incorporate data at the lexical level only. Due to time constraints, most varieties could not be covered. Therefore, there is a need to document more linguistic aspects of the sign languages in NER. The outcome of this research, as mentioned earlier, has been compiled in a web-based application and hence, the NESL SignBank is proposed to be hosted in the official website of North East Regional Institute of Education. At present, the application has been sent to the National Informatics Centre, Meghalaya State Centre, for auditing and hopes that it will find a place in the official website of the institute.

***Acknowledgement:** The development of this database would not have been possible without the support of the deaf community in the region and particularly the schools and institutions working for deaf education. With the support of NCERT (PAC), this NESL Sign Bank will surely further the cause of promoting inclusive schools in the country and empower the Deaf community here in the NER.*

References

B. J. (1648). *Chirologia; or, The natural language of the hand. Composed of the speaking motions, and discoursing gestures thereof. Whereunto is added Chironomia; or, The art of manuell rhetoricke. Consisting of the naturall expressions, digested by art in the hand, as the chiefest instrument of eloquence: By historicall manifestos, exemplied out of the authentique registers of common life and civill conversation.* London: Printed by T.H. and are to be sold by Fran. Tyton.

Brien, D. (1992). *Dictionary of British sign language / English.* London: Faber and Faber.

Indian Sign Language Dictionary. (2000). Ramakrishna Mission Vidhalaya. International Human Resource Development Centre, for the Disabled, Coimbatore. India.

GoI, 48th Report on Linguistic Minorities (2010). The 50th Report does not make any general observations and recommendations. Report accessed online on February 3, 2017 from www.delhi.gov.in. p. 211, paragraph 38.10. (n.d.).

Indian Sign Language Dictionary. (2000). Ramakrishna Mission Vidhalaya, International Human Resource Development Center, for the Disabled, Coimbatore, India.

Johnson, R. E. and Erting, C. J. (1989). *Unlocking the Curriculum: Principles for Achieving Access in Deaf Education.* Working Paper 89-3. (n.d.). Retrieved from <https://files.eric.ed.gov/fulltext/ED316978.pdf>.

Jepson, Jill. (1991a). Two sign languages in a single village in India. *Sign Language Studies* 20.70: 47-59.

Jepson, Jill. (1991b). Urban and rural sign language in India. *Language in Society* 20: 37-57.

Jepson, Jill. (1991c). Some aspects of deaf experience in India. *Sign Language Studies* 20.73:453-459

Johnston, Trevor. (1989). *AUSLAN: The Sign Language of the Australian Deaf Community.* University of Sydney.

- Miles, M. (2001). Signs of Development in Deaf South & South-West Asia: histories, cultural identities, resistance to cultural imperialism. Independent Living Institute.
- Mizo Sign Language. (2004). Society for Rehabilitation Spastic Children, Mizoram and Gilzom Offset. Aizawl.
- NCERT. (2005). National Curriculum Framework. NCERT, New Delhi.
- Schermer, Trude. (2004). Sign Language Lexicography. Dutch Sign Centre. http://www.gebarententrum.nl/publicaties/upload/89_file1.pdf, Accessed September 8. 2009. (n.d.).
- Sinha, S. (2003). A Skeletal Grammar of Indian Sign Language. Unpublished M.Phil. Dissertation, Jawaharlal Nehru University, New Delhi.
- Sinha, S. (2017). Indian Sign Language: An Analysis of Its Grammar. Gallaudet University Press.
- Stokoe, William C. (1960). Sign Language Structure: An outline of the visual communication system of the American deaf. Studies in Linguistics, Occasional Papers 8. New York: University of Buffalo.
- Stokoe, W. C., Casterline, D. C., & Croneberg, C. G. (1976). A dictionary of American Sign Language on linguistic principles. Linstok Press.
- Valli, C. (Ed.). (2006). The Gallaudet Dictionary of American Sign Language. Gallaudet University Press.
- Vasishta, M., Woodward, J., & Wilson, K. (1978). Sign language in India: regional variation within the deaf population. Indian Journal of Applied Linguistics, 4(2), 66-74.
- Vasishta, M., Woodward, J., & De Santis, S. (1980). An Introduction to Indian Sign Language:(Focus on Delhi). All India Federation of the Deaf.
- Vasishta, M. M., Woodward, J., De Santis, S., & Sharma, V. (1985). An introduction to the Bangalore variety of Indian Sign Language. Gallaudet Research Institute.

Vasishta, M. M., Woodward, J., De Santis, S., & Sharma, V. (1987). An introduction to the Calcutta variety of Indian Sign Language. Gallaudet Research Institute.

Wallang, M. G. (2007). Sign Linguistics and language education of the Deaf: A study of Residential and Day Schools for the Deaf in Shillong.

Wallang M. G. (2014). Introduction to Sign Language. A Visual Dictionary. Lakshi Publication. New Delhi.

Wallang, M. G. (2015). The Making of the Shillong Sign Language Multimedia Lexicon (ShSL MML). *Sign Language Studies*, 15(3), 296-321.

Zeshan, U. (2000). Sign language in Indo-Pakistan: A description of a signed language. John Benjamins Publishing.

Zeshan, U. (2001). Mounting in Indopakistani Sign Language (IPSL): Regularities and variation.. In P. Boyes-Braem & R. Sutton-Spence (eds.), *The Hand is the Mouth: The Mouth as Articulator in Sign Language*. Hamburg: Signum

Zeshan, U. (2002). Towards a notion of 'word' in sign languages(pp. 153-179). Cambridge: Cambridge University Press.

Zeshan, U. (2003a). Indo-Pakistani Sign Language grammar: a typological outline. *Sign Language Studies*, 157-212.

Zeshan, U. (2003b). Classificatory' constructions in Indo-Pakistani sign language: Grammaticalization and lexicalization processes. *Perspectives on classifier constructions in sign languages*, 41-113.

*(Note: The term 'Deaf' is used with a capital 'D' referring to a group of deaf people whose first language is sign language having their own specific and unique culture and a community of their own, which is the contemporary trend in linguistic research. In this paper, the same convention is also followed.)

Research Article

Faculty @ Facebook - Students' Perspective for Educational Scaffold

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Abstract

Social media is an integral part of the lives of students. In spite of its popularity amongst the student community, not many studies have been conducted to investigate its use as an educational scaffold. This sequential explanatory mixed method research, which is a part of a larger study, explores students' perceptions of the usability of Facebook group as a scaffold to face-to-face Chemistry education. The data of the study was collected from 75 students who were a part of specific Facebook group. These students were appearing for higher secondary (HSC-Maharashtra State Board) and competitive exams at National level. The study communicates students' perceptions of how the interactions on the Facebook group enhance their learning of subject Chemistry. Regular educational posts, including videos, quizzes, discussion scaffolding to the classroom teaching of Chemistry and the interactions in the group were a regular feature of the group for 6 months. An online survey of the members of the Facebook group using Google forms was conducted to examine the student perceptions about the usefulness of such a group. The results indicate positive student reactions for such a scaffold and points out the need for better utilisation of Facebook in learning situations.

Keywords: Social media, Educational Scaffold, Connected Learning, Facebook

Introduction

Today's students have grown up in a technology-saturated environment. They have never known the world without personal computers, mobile phones, internet, videos on demand and now, the Web 2.0 tools. Prensky (2001b, pp.1-3) introduced two terms "Digital Natives" and "Digital Immigrants". He expounds that these people, are 'native speakers' of the language of the internet and the digital world. It is only natural for them to utilize it to solve

their immediate problems. These range from exchange of interesting information, notes, exam schedules, important notifications to seeking doubt-solving for an assignment.

As educators, it is necessary to recognize that digital natives do not necessarily learn in a linear manner but by processing random, hyperlinked resources available. It is also prudent to remind ourselves that their learning is neither confined to classroom nor to textbooks. The participatory media often known as Web 2.0 tools is a prime source of communication for constructing knowledge for digital natives. The theory of Connectivism (Siemens & Downes, 2008) elucidates the human and non-human components which could be 'system', 'field', 'nodes' in learning in a digital era and marks the connections between them as a vital link for learning. Siemens underlines the ever changing landscape of knowledge and thus recognizes the skill of decision making itself as a step of learning.

The Web 2.0 tools have promoted a culture of social learning. The social media seems to provide a platform for increasing collaboration, initiating interaction and enabling resource sharing and critical thinking. As noted by Maloney (2007), interactions of students on social media lead to building relationships around shared interests and building knowledge communities. Bugeja (2006) suggests that this informal channel of communication offers the opportunity to re-engage learners actively and promote critical thinking, a goal of education. Social media has become an embedded aspect in a student's life to a great extent. Studies (Selwyn, 2009) on Facebook have shown that it helped students settle in University life and be socially accepted thus also impacting their academic performance. At the same time, studies also point out that despite the popularity of Facebook amongst students, there has been not enough thought out effort by the stakeholders to harness the characteristics of social media platform into teaching learning process, thus may be losing out on a cost effective, learning platform.

Though there are many social media platforms, Facebook and lately Whatsapp in particular has been found to be the most used social media by the students. This study tries to investigate the perception of students of social media in general and Facebook in particular as a supplementary tool for communication and a scaffold for enhancing collaborative learning.

Theoretical framework

The digital and social tools incorporated in the learning process provide opportunities to view the social learning with a lens of Connectivism. The Social Constructivism Theory put forth by Lev Vygotsky, a Russian developmental psychologist underlines that the cognitive processes often occur on the social level before they are internalized and transformed at individual level. Thus, learning is embedded in social interaction with parents, teachers, peers and anybody else who has more knowledge than the learner- the more knowledgeable other(MKO). Vygotsky emphatically states that actual learning takes place in this interaction whereby the learner traverses the spectrum from inability to achieve the task to achieving the task independently with timely help from MKO. This mid area of the learning spectrum was named as Zone of Proximal development (ZPD).

In today's era, with the boundaries of real and virtual world being, the physical proximity of belonging to the same educational institute can no longer define the ZPD. In fact, the social media can be leveraged to expand this ZPD to create more avenues of collaboration for effective learning and creation of knowledge in a global context, a need of knowledge based society.

The popularity of Facebook as a social media can be adjudged from the number of users which seem to be constantly rising. The students as well as teachers are adept to using this social media platform with more and more educational institutes having Facebook pages in a bid to reach out to the students and teachers and stay connected and pass information. Though research studies have been conducted in the West about the use of social media tools in education- both as a part of classroom activities or for out of the class activity, it seems that this potential of social media has largely remained unexplored in India. This study aims at exploring this very potential of Facebook being an informal, collaborative, cost-effective platform for learning and tries to investigate students' perception to use social media, particularly Facebook as a pedagogical scaffold.

Review of literature

The evolution of ICT is taking place at an unprecedented pace and educators are trying very earnestly to incorporate them. There is some evidence that internet and social media applications play an important role in education (Guzmán-Simón, García-Jiménez, & López-Cobo, 2017). The emergence of social media and the way people connect and interact on social media have provided an avenue to educators to figure out and utilize the interaction towards fostering collaboration and contribution in learning. (Gunwardena, et. al., 2009). Students communicate in their Facebook teaching groups not only about social events, but also about courses and experiences. Facebook as a means of social communication can affect the motivation of students. The otherwise shy students could often be seen part in 'heated discussions and arguments' which they would avoid in a face to face interaction. This meant that social media could be more inclusive in nature-- open and democratic making it more participatory across a wider spectrum. (Stacey & Gerbie, 2007). The motivation of students to use Facebook for purposes other than just social networking, directing towards formal learning, is reported to have increased (Aydin, 2014; Erdem&Kibar, 2014).

An investigative study on the use of social media by learners reported the need of support and pedagogical interventions for optimal use of social media as a learning tool. (Cigognini, Pettenati and Edirisingha, 2011). Literature suggests that the use of Facebook extends from the realm of social communication into work. About half of the students in that study indicated that they use Facebook for formal learning purposes like assignments and exams (Towner& Muñoz, 2011). Similar findings were reported for high school students in the USA (Mao, 2014). A few examples of the beneficial attributes of Facebook groups as a formal learning tool can be derived from recent studies. Yunus and Salehi (2012) deduced that university students perceived Facebook groups to be helpful in promoting their writing skills. Similar research findings of social media has been successfully utilised for professional collaboration have been reported (Lampe, et. al., 2012).

Social media can successfully used to extend the period of learning other than the classroom or face-face to interaction and provide a platform for self paced learning. Greenhow (2011) summarized that the use of social media for learning promotes a more student centered approach to learning. Overall, research suggests that social media is used increasingly as a

tool for developing formal and informal learning. Social media platforms evolve into socially mediated knowledge systems that empower learners with a sense of constructive ownership of knowledge in the learning process. (Dabbagh & Reo, 2011a;).

Hamid, Waycott, Kurnia, and Chang (2015) surmised that students perceived the use of online social networks as beneficiary to engagement, improvement of skills and mastery of course content, enriching knowledge development of critical thinking and analytical skills, among others. Similar findings for Serbian, Egyptian and American students, respectively are reported (Milošević, Živković, Arsić, and Manasijević (2015), Sobaih, Moustafa, Ghandforoush, and Khan (2016) and Gikas and Grant (2013)).

The flexibility and the reach of social media is of great value that educators can make the most use of. The ubiquitous nature and informational function has led to acceptance of social media in educational settings. (Barnes & Jacobsen, 2012). Social media show the attributes of being convergent needed for collaboration and hence can be used effectively in educational settings. (Freidman & Freidman, 2013). Such interactive scaffold enables egalitarian and participatory practices that set the basis of self motivated learning opportunities. (Selwyn, 2011). Flexibility, convenience and accessibility are the positives of using social media in education. (Zaidieh, 2012). One of the crucial aspects, which makes Facebook an appealing tool for students, is the immediate feedback, instant communication, and interaction that it provides (Erdem & Kibar, 2014).

Objectives of the study

The major objectives of this study were:

- 1) To explore the utilization of Facebook Group for academic interactions with peers
- 2) To explore the utilization of Facebook Group for academic interactions with mentors
- 3) To examine the extent of use of Facebook Group for assignments and other related activities.
- 4) To investigate the perception of students towards the use of Facebook as a scaffold to face-to-face Chemistry education.

Research methodology

This sequential explanatory mixed method study uses a survey for quantitative data collection followed by individual unstructured interview with few student members of the sample for qualitative data and analysis. This method is chosen because the responses obtained by the survey mandate digging deeper in a bid to explain the perceptions. The interview was conducted of male and female students chosen according to activity range of least active (lurkers) to the most active in the Facebook Group.

Sample

A purposive sampling was carried out. The sample comprised of 75 students appearing for class XII Science from Mumbai who were a part of a specifically created Facebook group. These students were a part of a larger classroom environment and hence the Facebook group was the scaffold of the face-to-face or classroom teaching-learning for these students. The membership to the group was voluntary and the members were oriented regarding the duration and purpose of the group. No attempt was made to make ‘friends’ with the members though a few students were already ‘friends’ of the researcher.

Data collection

A questionnaire of 23 items was constructed as a tool to collect the responses using Google Forms. The questionnaire was adapted from the online tools like NSSE and Blended Learning Toolkit was validated by three experts of education. The tool was reviewed by the feedback obtained from the pre-survey of 10 selected students. The questionnaire broadly deals with major aspects: a) personal information with their social media behaviour and prior academic achievements b) Use of Facebook Group for academic interaction with peers and mentors c) Use of Facebook Group for collaborative academic work like assignments d) perception regarding Facebook group as a scaffold to classroom teaching. The survey was followed by individual unstructured interview with members of the group. The participants were suitably coded to ensure confidentiality.

Findings and discussions

Use of Facebook:

The survey indicated most participants were members of 1-3 social media networks and 18.5% having more than 5 social media networks. The survey revealed multiple access on daily basis (Figure 1). The responses indicate that WhatsApp is the most popular followed by Facebook, Instagram and then Twitter. Almost all the students have reported to access social media through their mobile phones giving us an insight that this hand held device holds a huge potential for anytime access to learning, acting on the parameters of cost-effectiveness and ease of use.

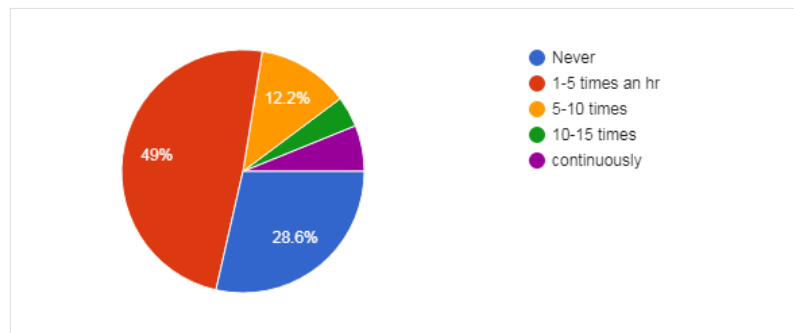


Figure 1: Access of social media while doing homework or studying

The fact that almost 50% of students acknowledged that they accessed social media at least once every hour while doing their homework substantiates the embedded position of social media in their lives. Nevertheless, 42.3% students attested having never accessed social media in the classroom while around 38.8% admitted accessing social media occasionally (1 to 3 times) during the class. This could be attributed to various factors that could be another research area and definitely out of the scope of this paper.

Qualitative data:

“I login to Facebook on my Mobile phone. Multiple times also.”(M1)

This generation of digital natives seem to have considerable netiquettes as suggested by the responses where 46.9 % of students responding that they would never ping their mentors on social media after 10 pm. This refutes the apprehension – ‘unnecessary disturbance’ that mentors have while sharing the social media platform. The responses also show that students

do feel that the teacher is more approachable when he/she is on social media with 43% very strongly agreeing with this and the same percentage of students very strongly agreeing that they would prefer using social media to communicate and resolve their doubt with their mentor. This suggests that the shy or introvert students who might not be vocal in the class can be more communicative using social media, thus enhancing their learning. It could be posited that social media is a very effective communicative tool for educational purposes.

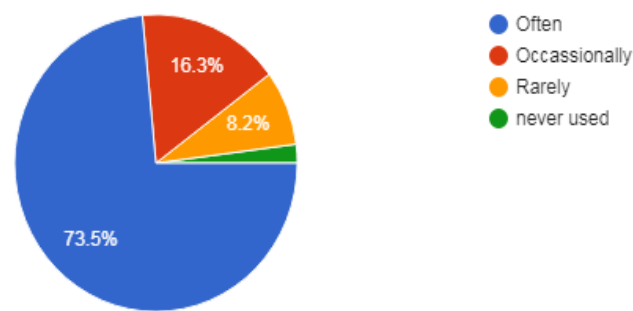


Figure 2: Use of social media to share notes and other academic work

Facebook as a scaffolding tool

Almost all students, good 73.9 % affirm using social media frequently to share notes and have discussions with peers on academic matters – clarifying, solving some doubt, being the major ones (Figure 2). All the members agreed that videos, quizzes and other resources shared on the Facebook group helped them clarify concepts, revise their learning and also generated discussion and deliberations. The group was their emergency solution provider for a wide range from sharing some notification to knowing a reference material and directed their learning. This is in agreement with the earlier research of ‘ability to plug in resources when needed’(Siemens, 2005). The responses indicated that only 14.3% feel that sharing of such notes and discussion on social media defies attending class. This signals that the teachers need not feel insecure about being replaced or becoming redundant.

Though maximum of students affirm use of social media for notes-sharing, doubt solving and 62% agree that social media can be a good educational tool, around 53% expressed that use

of social media during work negatively affects the quality of work. This is somewhat in agreement with the findings that indicate negative impact on academic achievement (Junco, 2012)

Qualitative data:

- *'The videos uploaded help in clarifying the concepts' (M4, F3)*
- *'The videos help in reinforcing what I have learnt. I usually do it while travelling making better use of my time'(F5,44)*
- *'I could ask the doubts related to a topic. I could also ask some clarification. The mentor or sometimes the peers would answer. The mentor is also available on chat.'*(F4,M3)
- *'Sometimes, the post leads to discussion and these diverse discussions are then extended in our classroom. We then discuss it with our teachers and there is in depth discussion related to the topic.'*(F5,M6,M5)
- *'I was earlier very excited with the quizzes and tests. They were not particularly stressful. But I'd rather not use Facebook to take a test. That is not what I log in for.'*(M18, 21, 45, F34,52,58)
- *'The quizzes were good. I wanted my name to feature there in the comment section as the top scorer.'*(M25,64, F44, 47)

Facebook for educational communication

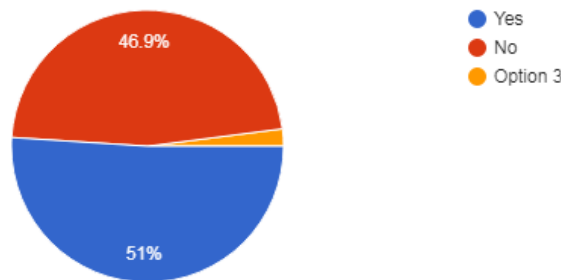


Figure 3: Participation in social media groups made by mentors

Communication- asynchronous and synchronous enabled easy collaboration and gave them the needed control to design and develop their own pace. It is interesting to note that communication with mentors is more preferred on Whatsapp rather than Facebook chat (Figure 3).

It is heartening to see that more than 50% of the students were a part of social media groups formed exclusively for educational purposes by their teachers/professors/mentors. This surely can be seen as a signal of the change; the adaptation and integration of social media by educators is slowly taking place in teaching-learning process.

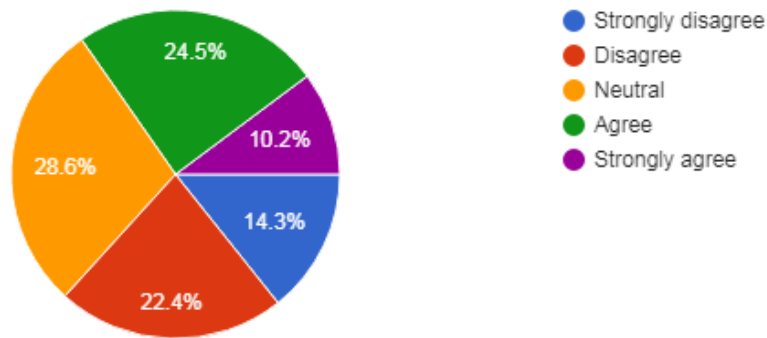


Figure 4: Students' opinion on use of social media by educators in classroom to increase student engagement

The responses (Figure 4) reveal that only 14.3% of the students strongly disagree on using Facebook to increase student engagement. Only 37.6% of the students indicate that teachers and mentors should not use social media in classroom giving us a sneak peek into what the current generation wants with respect to the delivery of instruction and thus provide us an insight to adapt our instruction and pedagogy.

Social media as an educational scaffold possesses the most important characteristic of being collaborative. Hence seeing some of the members remaining purposely non-responsive is contradictory in nature. Another contradiction springs up when the members have responded '*no interaction with peers from other schools*', while in fact they have had discussions in the comment section. This is in agreement that these are 'weak ties' explained in Connectivism.

This study reveals that students perceive social media as a scaffold to learning experiences, especially more as one out-of-class learning resource.

Implications /recommendations

Given the ease of use of social media and its entrenchment in daily life, stakeholders of education should take advantage to enhance learning experience and critically practice the same. The shared videos, podcasts, blogs etc, on Facebook and other social media suggest an enriched scaffold for learning.

The onus lies on the educators to design effective strategies to integrate social media as a scaffold while developing teaching-learning situations. The findings may be a useful insight to the educators on directing the interactions towards collaborative learning. The responsibility of curating content on social media increases manifold and would need requisite skills. The educator has to ensure proper content analysis of the varied resources to be shared and devise a proper schedule of scaffold. It should be ensured not to make it another online testing platform. The educator has to deftly arrange the resources in view of the students' responses so as to enable learning. The educator has to remember to maintain the fine balance of restricting the discussions and keeping the platform democratic and open for the students to voice their concerns. It should be recognized that educators might need training in this aspect to make effective case of social media scaffold in education. The social media scaffold can effectively expand the learning beyond the classrooms.

Additionally, like all social media, Facebook group is characterized by 'information overload'. Accessing older posts though, using the modified search option and use of strings in Facebook makes it easier compared to other social media.

Educators should acknowledge the fact that teachers and students still do not consider 'friend'ing each other, trying to keep their personal virtual lives private. Thus, assurance of non-invasion in their respective private lives is mandatory and clarity of 'privacy' can avoid discomfort to both.

Limitations

The most important limitation of this study is that it is restricted to students of Mumbai and its suburbs. It would be worthwhile to investigate students' perception of social media as an educational scaffold in different geographical areas and academic years.

Though the group consisted of more than 75 members, responses could be elicited from 50 members in the time period of 1 month. Thus the response rate is approximately 66.67%. This could be due to being 'off' social media due to approaching exams. It could also be attributed to the tendency of 'lurking' or remaining passive, a major drawback of social media communication.

To summarize, it can be concluded that social media, especially Facebook has the potential to promote collaborative learning. Appropriate use of the social media tools with a in-depth understanding of its social dimension can make them a 21st century educational scaffold to support educational goals and outcomes.

References

- Aydin, S. (2014). Foreign language learners' interactions with their teachers on Facebook, *System*, 42, 155e163.
- Barnes, N.G., & Jacobsen, S.L. (2012). The missing link in social media use among top MBA programs: Tracking prospects. Retrieved from: <http://www.umassd.edu/cmrr/socialmediaresearch/missinglinkinsocialmediause/>
- Bugeja, M. (2006). Facing the Facebook. *Chronicle of Higher Education*, 52 (21), C1.
- Cigognini, M. E., Pettenati, M. C., & Edirisingha, P. (2011)., Personal knowledge management skills in Web 2.0-based learning. In M. J. W. Lee, & C. McLoughlin (Eds.), *Web 2.0-based e-learning: Applying social informatics for tertiary teaching*. pp. 109–127, Hershey, PA: IGI Global.
- Dabbagh, N., & Reo, R. (2011b). Impact of Web 2.0 on higher education. In D. W. Surry, T. Stefurak, & R. Gray (Eds.), *Technology integration in higher education: Social and organizational aspects*. pp. 174–187. Hershey, PA: IGI Global.

- Downes, S. (2005) An Introduction to Connective Knowledge. <http://www.downes.ca/cgi-bin/page.cgi?post=33034>
- Erdem, M., & Kibar, P. N. (2014). Students' opinions on facebook supported blended learning environment. *The Turkish Online Journal of Educational Technology*, 13(1), 199e206.
- Friedman LW, Friedman HH 2013. Using social media technologies to enhance online learning. *Journal of Educators Online*, 10(1): 1-22.
- Greenhow, C. (2011). Youth, learning, and social media. *Journal of Educational Computing Research*, 45(2), 139.
- Gunawardena, C.N., Hermansa, M.B., Sancheza, D., Richmonda, C., Bohlea, M & Tuttlea ,R. (2009). A theoretical framework for building online communities of practice with social networking tools. *Educational Media International*, VOL. 46, NO.1, pp 3-16.
- Guzmán-Simón, F., García-Jiménez, E., & López-Cobo, I. (2017). Undergraduate students' perspectives on digital competence and academic literacy in a Spanish University. *Computers in Human Behavior*, 74, 196e204. <http://dx.doi.org/10.1016/j.chb.2017.04.040>.
- Hamid, S., Waycott, J., Kurnia, S., & Chang, S. (2015). Understanding students' perceptions of the benefits of online social networking use for teaching and learning. *The Internet and Higher Education*, 26, 1e9.
- Junco R (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Computers and Education* , 58(1): 162-171
- Learning Toolkit, B. (2011). Blended course student survey. Retrieved April 03, 2016, from <http://blended.online.ucf.edu/evaluation-resources/survey-instruments/>
- Maloney, E. J., (2007). What Web 2.0 can teach us about learning. *Chronicles of Higher Learning* , 53 (18), 26.
- Mao, J. (2014). Social media for learning: A mixed methods study on high school students' technology affordances and perspectives. *Computers in Human Behavior*, 33, 213e223.
- Mazman, S. G. & Usluel, Y. K. (2010). Modeling educational usage of Facebook. *Computers & Education*, 55(2), 444-453. <http://dx.doi.org/10.1016/j.compedu.2010.02.008>

Prescott, J., Wilson, S., & Becket, G. (2013). Facebook use in the learning environment: Do students want this? *Learning, Media and Technology*, 38(3), 345-350. <http://dx.doi.org/10.1080/17439884.2013.788027>.

Selwyn, N. (2007) Web 2.0 applications as alternative environments for informal learning - a critical review. s.l., OECD-KERIS Expert Meeting. [Online] Available at: <http://www.oecd.org/edu/ceri/39458556.pdf>

Selwyn, N. (2009). Faceworking: exploring students' education related use of Facebook. *Learning, Media and Technology*, 34(2), 157-174.

Siemens, G. (2004) *Connectivism: A Learning Theory for the Digital Age*. <http://www.elearnspace.org/Articles/connectivism.htm>

Stacey, E. & Gerbie, P. (2007). Teaching for blended learning: Research perspectives from on-campus and distance students. *Education Information Technology*, 12(1), 165–174.

Towner, T., & Muñoz, C. (2011). Facebook and education: A classroom connection. In *Educating educators with social media: Cutting edge technologies in higher education* (Vol. 1, pp. 33e57). Bingley, U. K.: Emerald.

Yunus, M. M., & Salehi, H. (2012). The effectiveness of Facebook groups on teaching and improving writing: Students' perceptions. *Journal of Education and Information Technologies*, 1(6), 87e96.

Zaidieh, A. J. Y. (2012). The Use of Social Networking in Education: Challenges and Opportunities. *World of Computer Science and Information Technology Journal*, VOL.2,NO. 1, pp. 18-21.

General Article

Professional Development of Teachers with ICT

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Abstract

The increasing availability of Information and Communication Technologies (ICT) presents teachers with exciting opportunities to transform pedagogical practices. The demand on teachers to integrate ICT into their teaching and learning programs is high and places additional pressures on teachers in an already challenging profession. The pervasive nature of ICT in daily life has made society reliant on systems and tools that provide challenges for the way people think and work. Students entering the workforce need not only to be equipped with the skills to use those new technologies, but also to be flexible, adaptable, and multi-skilled. They need to operate in an information age that requires them to be: information literate, inventive thinkers, and skilled communicators. This has placed great pressure on educators to provide students with opportunities to develop the skills required to engage effectively in a progressive society and become life-long learners. First and foremost, teachers have to enhance their own ICT competencies and then have to bring changes in their classroom with the utilization of ICTs. The professional development of Teachers can be made possible through various online ICT and subject specific courses which are available on SWAYAM, ITPD and ICT curriculum portals.

Key Words: MOOCs, SWAYAM, ITPD, TPD, ICT, Professional Development, Professional Development of Teacher

Introduction

The well being of a nation is dependent upon the quality of its citizens and the quality of citizens is significantly determined by the kind of education they receive. The quality of their education depends on their teachers. The quality of the teachers mostly depends upon the environment, training and their education. It is acknowledged that what teachers know, do,

expect and value has a significant influence on the nature, extent and rate of students learning. The National Knowledge Commission of India (NKC, 2007) also observed that the teacher is the single most important element of the education system. Continuous professional development of teachers is the need of the hour to develop, implement, and share best practices, knowledge, and values that address the needs of all learners. OECD (2009) highlighted the importance of professional development of teachers by stating “No matter how good pre-service training for teachers is, it cannot be expected to prepare teachers for all the challenges they will face throughout their careers. Education systems therefore seek to provide teachers with opportunities for in-service professional development in order to maintain a high standard of teaching and to retain a high-quality teacher workforce” (p. 49)

The pace of technological revolution and emergence of a knowledge society are changing the traditional role of teachers and students. Traditionally, a teacher used to be the source of knowledge for the students. The development of ICT changes the epicentre of knowledge, i.e. teachers find themselves in a situation where they are no longer the principle source for delivery of information. In the new phase of the knowledge revolution, the source of knowledge has shifted from a one source (i.e. teacher) to different sources (i.e. teachers, printed materials and technology based materials etc.). In other words, we can say that there is a decentralization of the knowledge source.

With information having increasingly short shelf life, education must empower learners to learn for themselves, and to continue to do so incessantly. It is important to understand the key learning skills of the future -interpersonal skills, information skills, technology skills, basic skills, thinking skills and learnability. The pervasive nature of ICT in daily life has made society reliant on systems and tools that provide challenges for the way people think and work. Students entering the workforce need not only to be equipped with the skills to use those new technologies, but also to be flexible, adaptable, and multi-skilled. They need to operate in an information age that requires them to be: information literate, inventive thinkers, and skilled communicators (CEO Forum, 2001). This has placed great pressure on

educators to provide students with opportunities to develop the skills required to engage effectively in a progressive society and become life-long learners (Hancock, 1993).

Need of ICTs for Professional Development of Teachers

NCF 2005 states: “Integration of Information and Communication Technologies (ICT) into schooling needs serious consideration. Teachers, educators, curriculum developers, evaluators and others will have to redefine their roles to tackle ICT rich environment and harness its full potential for the benefit of learners”. National Curriculum framework for Teacher Education 2009 stated that it needs to also equip teachers with competence to use ICT for their own professional development. The demand on teachers to integrate ICT into their pedagogy is high and places additional pressures on teachers in an already challenging profession. Initially, teachers have to increase their own ICT skills and then they have to change elements of their practice to utilise ICT with their students. There is a premise that ICT competent teachers will produce ICT competent students.

Information and communication technology has woven an indefinite network in the current era with revolutionary changes taking place in education system. ICTs are widely believed to be important potential levers to introduce and sustain education reform efforts towards making a world class citizen. Teacher education institutions are faced with the challenges of preparing new generation of teachers to effectively use the new learning tool in their teaching practices. Preparing teachers for the challenges of a changing world means equipping them with subject-specific expertise, effective and innovative teaching practices, an understanding of technology etc. Further ICTs can be utilised for sustainable teacher training and ongoing teacher professional development to meet the challenges.

Teaching as a Profession

Teaching is a profession and teacher education is a process of professional preparation of teachers. Preparing one for a profession is an arduous task and it involves action from multiple fronts and perspectives. A profession is characterized by a sufficiently long period of academic training, an organized body of knowledge on which the undertaking is based, an

appropriate duration of formal and rigorous professional training in tandem with practical experience in the field and a code of professional ethics that binds its members into a fraternity. (National Curriculum Framework for Teacher Education, 2009).

Use of ICTs in Professional Development of Teachers

Introducing ICTs expands the needs for on-going professional development of teachers. ICTs can be important tools to help meet such increased needs, by helping to provide access to more and better educational content, facilitate routine administrative tasks, provide models and simulations of effective teaching practices, and enable learner support networks, both in face to face and distance learning environments, and in real time or asynchronously. A person having internet facility can register himself/herself and can have access to online courses offered by the universities across the world. The esteemed universities/institutions in the world like Stanford, Harvard, Duke, Caltech, Princeton, Massachusetts Institute of Technology (MIT) etc. have developed online courses and tied up with major MOOC providers like Coursera, Udacity and Edx etc. to provide these online courses to interested participants from world over, free of cost. The details of some of the major MOOCs provider are as below:

Coursera: Coursera was founded in 2012 by two Stanford Computer Science professors. Coursera is a platform (<https://www.coursera.org/>) where anyone, anywhere can learn and earn credentials from the world's top universities and education providers. It made the courses available online and free. Courses include recorded video lectures, auto-graded and peer-reviewed assignments, and community discussion forums.

EdX: It is an online learning platform and MOOC provider and founded by Harvard University and MIT in 2012. edX is offering high-quality courses from the world's best universities and institutions to learners everywhere. edX differs from other MOOC providers, such as Coursera in that it is a nonprofit organization and runs on open source software. Following link would take you to edX home site. <https://www.edx.org/>

Other popular MOOC platforms are:

- a) Open learning - <https://www.openlearning.com>
- b) NPTEL - Managed by IITs and IISc - <https://onlinecourses.nptel.ac.in/explorer>
- c) Future Learn - <https://www.futurelearn.com/>
- d) Stanford Online - <http://online.stanford.edu/>
- e) European School Net - <http://www.europeanschoolnetacademy.eu/>
- f) NovoEd - <https://novoed.com/>
- g) MOOC-Ed - <https://place.fi.ncsu.edu/>

Similarly, several ICT initiatives have been taken up in India to facilitate the process of professional development of the teachers. Some of the major initiatives are as follows:

ICT in Education Curriculum and Courses

NCERT has developed a model curriculum on ICT in Education which broadly attempts to equip teachers with ICT competencies to strengthen their own professional capacities and to effectively use ICTs in their teaching- learning. The curriculum revolves around the six strands i.e. Connecting with World, Connecting with each other, Creating with ICT, Interacting with ICT, Reaching out the unreached and Possibilities in education and ensuring together the basic, intermediate and advanced levels of competence in the field of ICT. The curriculum is rolled out as a series of short term courses which includes three induction and twenty refresher courses for teachers including subject specific optional courses. These courses are being offered online on the web portal (ictcurriculum.gov.in) as in Figure 1. Any teacher completing all three induction and twenty refresher courses becomes eligible to take an examination leading to Diploma in ICT in Education which would be awarded by NCERT.

Each session of the induction and refresher courses involves an instructor led demonstration followed by hands on session, during which teachers undertake a number of activities. Each activity has an associated deliverable to be recorded in a portfolio (an e-portfolio). Teachers also have to submit various assignments as part of the courses. The cumulative record in the portfolio, representing their achievements during the courses serves to provide a comprehensive and continuous assessment. Provision for improving one's performance is also built in.

Online In-service Teacher Professional Development NCERT has developed another web portal to run online courses related to In-service Professional Development of Teachers. Several courses for in-service teachers are being offered through the same course portal. (<http://itpd.ncert.gov.in/>).

The portal is offering subject specific pedagogy courses like teaching of science at secondary stage and courses on generic issues as well as skill based courses like action research, diploma in guidance and counselling etc. The portal will host more courses for teachers teaching different subjects at all stages of school education in future.

MOOCs on SWAYAM

MHRD, GoI has launched a Massive Open Online Courses (MOOCs) platform popularly known as SWAYAM (Study Webs of Active learning for Young Aspiring Minds) on 9th July, 2017. SWAYAM is a programme aimed to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy.

The SWAYAM portal (<https://swayam.gov.in/>) is offering online courses for students, teachers and teacher educator from school education and higher education to promote quality education and lifelong learning. These courses adopted four quadrant approach as below:

- Quadrant1:e-Tutorial (Video) with transcription of the video content

- Quadrant 2: e-Content (PDF, Text, e-Books, Illustrations, documents etc.) including web resources (related links, Wikipedia, open content etc.). *Figure 3:*
- Quadrant 3: Assessment (Problem solutions, MCQs, Short answers etc.).
- Quadrant 4: Discussion Forum

The eTutorial quadrant is similar to a classroom lecture delivered in the face to face mode teaching-learning process in the school/institution. Similarly, the second quadrant i.e. e-Content is for providing text materials along with the references to the learners for better understanding of the content and assessment quadrant is taking care of the assessment activities/ items for assessing the learner's progress online. The last quadrant is supporting the online teaching-learning process by providing the services to communicate with the teachers or among the learners to share the ideas, clarify the doubts, asking questions etc.

CIET-NCERT has developed course materials (e-content, e-tutorial and assignment) for Master of Education (M.Ed.) course jointly with Allahabad University. A course on Educational Administration, Management and Leadership in School Education is launched on the SWAYAM portal. This course has completed its first cycle and is relaunched from 2nd July, 2018 and 734 learners are enrolled in the course as on 5th September, 2018. NCERT is also running twenty courses on various school subjects at senior secondary school level and 22,000 approx. learners enrolled in these twenty one (21) courses (<https://swayam.gov.in/courses/public?keyword=ncert%202018>).

Conclusion

The advocacy to use ICTs for professional development of teachers is based on many promises. ICT provides various opportunities for a teacher for professional development. ICT like MOOCs offer a powerful platform for education and development with almost no cost and greater efficiency. ICTs promise to support teacher professional development by providing accessible, flexible and short term online courses. ICT can promote international collaboration and networking in education and professional development. There is a range of ICT options- from videoconferencing through multimedia delivery to web sites-which can be used to meet the challenges teachers face today. In fact, there has been increasing evidence

that ICT may be able to provide more flexible and effective ways for lifelong professional development for today's teachers. Recognizing the need and importance of ICT in teaching and learning, a majority of the countries in the world have provided ICT teacher training in variety of forms and degrees. Teachers can be trained to learn how to use ICT as well as teachers can be trained via ICT.

References

- 5) CEO Forum. (2001). Key building blocks for student achievement in the 21st Century. *The CEO Forum School Technology and Readiness Report*. Retrieved April 29, 2004, from <http://www.ceoforum.org/reports.html>
- 6) Hancock, V.E. (1993). *Information Literacy for Lifelong Learning* (Report No. EDOIR-93-1). Syracuse, N.Y: ERIC Clearinghouse on Information Resources. (ERIC Document Reproduction Service No. ED358870).
- 7) National Council of Educational Research and Training. (2005). *National Curriculum Framework, 2005*. New Delhi: NCERT.
- 8) National Council for Teacher Education. (2010). *National Curriculum Framework for Teacher Education*. New Delhi: NCTE.
- 9) NKC (2007). *National Knowledge Commission - report to the nation 2006*. New Delhi: Government of India. Retrieved from <http://www.knowledgecommission.gov.in>
- 10) OECD (2009). *Creating effective teaching and learning environments first results from TALIS*. OECD Publishing. Retrieved from www.oecd.org/edu/school/43023606.pdf

General Article

ICT initiatives in School Education of India

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Abstract

The 21st Century is known for creating and building knowledge wherein the Information and Communication Technology (ICT) plays the key role. In recent years, ICTs have been evolved as an outcome of globalisation and technological changes at national and international stage. The digital technologies satiate to transform and empower the society through implementing it in different areas. For the purpose, ‘Digital India’ flagship programme of Government of India was launched in 2015 with the motto of “Power to Empower”. The programme aims to transform the country into digitally empowered society & knowledge economy. In addition, the fast pace of ICT development paved the way to utilise these technologies in all fields of education. The vision and pillars of Digital India program enable the ICT initiatives in School education of India. It includes creation, process, storage, display, transmission, exchange, monitoring as well as evaluation of information with the use of technology. It aimed to form a better school education system with access, equity and quality. Thus, the present paper discusses the ICT initiatives for School education in India within the framework of policy perspectives. It also explores the challenges of implementing these initiatives at ground level.

Key Words: ICT, School Education, Digital India, Challenges

Introduction

Innovations in ICT have transformed the way of working of educational institutions. ICT has diverse utilities in education and as such it cannot be limited to ‘the transmission of a prescribed set of information from teacher to student over a fixed period of time’ (Tinio, 2003). UNESCO (2006) recommends ICTs and their role in contributing to universal access, equity and quality in education. It further emphasized on teachers’ professional development, education management, governance and administration. These can be implemented through appropriate blending of policies, technologies and capacities in place. Similarly, the Incheon Declaration (2017) on education accentuates that ICTs need to be harnessed to strengthen

education systems, disseminate & transmit knowledge, access the information, and provide effective and quality teaching & learning.

In addition, ICT use in education is considered as a two-way interaction rather than one-way reception that would make the technology more educational. Also, the National Curriculum Framework (2005) expresses that teachers and students must be treated not merely as consumers of technology but also as active producers.

The ICT innovations and its comprehensive development need to be used in Education. For the purpose, the policies and initiatives with better implementation are required. Since independence, different educational policies have recommended the importance and use of ICT in education. In 1986, the National Policy on Education (NPE) promoted the use of computers in schools. As a result, computer was introduced in Indian schools in 1986. The NPE states that professional education is to be imparted through exposure to computers, training and computer literacy. Hence, the computer literacy studies in schools (CLASS) project was launched in 1984-85 to support computer literacy in schools at that time. However, the NPE (1986), as modified in 1992, stressed the need to employ educational technology to improve the quality of education.

Till the end of 20th century, the ICT component was integrated with the major policies and initiatives. Later, the specific policies and initiatives on ICT in education were launched in 21st century. In 2004, two major centrally sponsored schemes, namely, Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS) were merged for a more comprehensive centrally sponsored scheme – ICT @ Schools. The ICT @ school scheme has been subsumed with Rashtriya Madhyamik Shiksha Abhiyan (RMSA). Recently, the Govt. of India has launched an integrated scheme for pre-nursery to Class 12 i.e. Samagra Shiksha under the Union Budget of 2018-19. It is to be noted that Samagra Shiksha subsumes the three flagship schemes of Sarva Shiksha Abhiyan (SSA), RMSA and Teacher Education (TE). Consequently, the above-mentioned ICT @ school scheme is covered under new Samagra Shiksha for improving school effectiveness in terms of equal opportunities for schooling and equitable learning outcomes. ICT @ school scheme aims to provide opportunities to students of secondary schools for capacity building in ICT skills and learn

through computer aided learning process. The Scheme is to bridge the digital divide and socio economic and geographical barriers. It provides support to States/UTs to establish sustainable computer labs in schools. At the same time, Universal Secondary Education report (2005) by the Central Advisory Board of Education (CABE) has figured ICT as an important norm of schooling.

Additionally, the National Policy on ICT (2012) was framed specifically for school education. MHRD has already presented different drafts of this policy, one in 2009, and the revised draft dated 24 Feb. 2011 and the final revised one in 2012. This policy initiative focuses on ICT use in School Education to devise, catalyze, support and sustain ICT. It promotes the ICT enabled activities and processes in order to improve access, quality, and efficiency in the school system. It emphasized that the educational resources need to be prepared in various media forms for widespread availability and extensive use. Thus, the policy promotes digitization of educational resources. ICT can support teachers' capacity building as well as the school system. The implementation of this policy includes the School Management Information Systems (School MIS); digital repositories of tools, content and resources; professional development and continuing education platforms; and guidance, counselling and other student support services.

Moreover, the Curricula for ICT in Education emphasised on the core educational purposes with broad exposure to technologies aimed at enhancing creativity and imagination of the learners. The e-content developed under ICT curriculum should be available in various regional languages because it is the best way of understanding and articulation. Hence, NMEICT (2012) recommended that the e-content being developed for learners from pre-primary to Class 12 would also need to be made available in various regional languages.

In 2015, The Ministry of Electronics & Information Technology, Government of India, initiated the 'Digital India' program 'with a vision to transform India into a digitally empowered society and knowledge economy.' This flagship program covers many initiatives related to infrastructure, Governance & services and empowerment. It envisages to prepare future India through Indian Talent and Information Technology. It makes technology central, enabling change through this umbrella mission covering various departments, schemes and

ideas with efforts of synchronized implementation. Digital India program is focused on nine pillars of broadband highways, universal access to phones, public internet access programme, e-Governance, and e-Kranti. It promotes electronic delivery of services, information for all, electronics manufacturing, IT for Jobs, and early harvest programmes. The ICT initiatives in school education are linked with these pillars. It supports for better implementation of these initiatives. Similarly, use of ICT for access and quality improvement has also been emphasised in Government of India's latest flagship programme on education 'Samagra Shiksha Abhiyan' (2018) with the moto of "Sabko Shiksha Achhi Shiksha". Under this, various digital initiatives have been submerged which are presented further.

ICT initiatives in School Education

ICT includes technologies of transmission such as radio and television, modern communication and networking tools like cellular phones, computer and network, hardware and software, satellite systems and so on. It covers various services and applications associated with the tools, such as videoconferencing, social networking, collaboration etc. Thus, ICT is encompassed with knowledge, comprehension and application part of education. Further, it can also be classified in terms of various technologies as part of creation, processing, storage, display, transmission, exchange, and assessment as well as evaluation of information.

Under ICT initiatives for School Education, various ICT tools and technologies are being implemented for delivering the best practices in schools of India. These initiatives can be classified in accordance with its objective/s such as improve access & services, data management, dissemination of resources, enhance quality of teaching & learning, and monitoring and evaluation. Overall, the ICT initiatives in school education is proposed for improving access, equity and quality of education. The initiatives under the discussed sub-headings are presented below:

1. Improve access and services

Geographic Information System (GIS) Mapping of Schools: For ensuring universal access within a reasonable distance of any habitation and without any discrimination,

the GIS web enabled platform was developed. It is proposed for seamless visualization of school locations across the country (Spatial and Non-Spatial). It has added value to the quality of planning and better utilization of resources available under different schemes.

2. Data Management

Shala Darpan: This School Automation Application is a single Integrated platform to provide School Management Systems' services to Students, Parents and Communities including school profile management, report cards, curriculum tracking system, SMS alerts for parents / administrators on students and teacher attendance, employee information, student attendance and, leave management.

Shaala Kosh: It is a repository of data related to schools which aims to integrate different databases existing at central or state levels to cater to data requirements of all stakeholders in the education ecosystem. It has enabled data consolidation, analysis and usage thereby capturing entire data value chain to empower teachers, headmasters, and administrators at block, district, state and central level for undertaking data decision making.

Student Data Management & Information System: Aadhaar based Direct Benefit Transfer (DBT) is a major governance reform initiative of the Government to ensure targeted delivery of benefits and services to the students. It enhanced the transparency and accountability with the services provided to the students.

Aadhar Database of Teachers and Students: Under UDISE, National Institute of Educational Planning & Administration (NIEPA) is capturing the data of teachers and students including their Aadhar etc. Aadhar enrolment of school going children in the age group of 5 to 18 years in the country would help in tracking of children so that they do not drop-out from school and also for monitoring their academic progress and for ensuring benefits to be disbursed to them in cash or kind under various schemes.

3. Dissemination of resources

E-pathshala: Central Institute of Educational Technology (CIET), National Council of Educational Research and Training (NCERT) has designed and developed 'E-Pathshala' to showcase and disseminate 'all educational e-resources including textbooks, audio, video, periodicals and a variety of other print and non-print materials through web portal and mobile app'. It is an effort to solve the challenges of digital divide and improve accessibility by offering quality content anytime anywhere.

National Repository of Open Educational Resources (NROER): CIET, NCERT is organising and monitoring the NROER. It is an initiative of MHRD which is a collaborative effort to develop a repository of multimedia resources for teaching and learning purposes. Both online and offline platforms have been designed. Different formats of Resources such as Audio, Video, Image, Document, Interactive, Books including flip books, and multimedia are available on NROER platform.

SWAYAM Platform: MHRD, Govt. of India has launched a Massive Open Online Courses (MOOCs) platform popularly known as SWAYAM (Study Webs of Active learning for Young Aspiring Minds). The portal is offering various online courses through educational institutes for school education and higher education. CIET has also launched courses related to school education.

SWAYAM Prabha DTH-TV Channels: MHRD, Govt of India has developed a learning plan for utilization of satellite communication technologies for transmission of educational e-contents through 32 National Channels i.e. SWAYAM Prabha DTH-TV Channels. These DTH Channels covers the curriculum-based course content of higher education. In addition, the programmes related to secondary and senior secondary school students and teachers are also included in the channels. Besides, life-long learning and preparation for professional courses with competitive exams are also disseminated through these 32 SWAYAM Prabha Channels. SWAYAM Prabha Channel # 31 i.e. Kishore Manch is coordinated by CIET, NCERT which proposed to disseminate content for secondary and senior secondary students as well as teachers.

ShaGun portal – A web portal called ShaGun comprising ‘Shaala and Gunvatta’. It is a repository of good practices, photographs, videos, studies, newspaper articles etc on elementary education. These resources are developed by various states and UTs. Its purpose is to showcase success stories and also to provide a platform for all stakeholders to learn from each other.

I-share for India: This initiative was announced in 2015 for developing educational resources for schools and teacher education. Under the initiative, MHRD has invited the educational stakeholders to contribute digital enabled resources for school education and teacher education. It can be contributed in the form of mobile app or web-based ICT platforms.

4. Enhance quality of teaching & learning

ICT in Education Curriculum for School System: ICT curriculum for teachers and students has been developed. NCERT has launched a revised Information and Communication Technology (ICT) curriculum for schools across India which focuses on integrating ICT tools as part of pedagogy instead of teaching computer as a separate subject. Zia (2017) reported that the syllabus is revised on the basis of recommendations of National Curriculum Framework (2005) and the Digital India campaign. Students’ curriculum was piloted in 588 Navodaya Vidyalayas for one year. Different states have initiated the efforts to develop draft curriculum and to implement it in their respective states with the help of NCERT’s content. A course portal on MOODLE platform has been created for the country as well.

Diksha Portal: MHRD launched Diksha Portal for providing digital platform to teachers, making them more digital. It will serve as National Digital Infrastructure for Teachers enabling to equip them with advanced digital technology. Also, it will enable, accelerate and amplify solutions in the realm of teacher education by providing a platform to learn and train themselves. The portal envisages to help teachers boost their teaching skills and create their own separate profile with their skills and knowledge. Overall, it would help in improving quality of education with use of latest technologies in education.

Project e-Prajna, e-Classrooms, and Digital Language Lab for Kendriya Vidyalayas:

Under these schemes, Students of Kendriya Vidyalayas (KVs) have been given Touch Tablets, pre-loaded with e-Contents of Mathematics and Science Subjects to use it for classroom transaction. It proposed to promote flip-learning, reduce school bag burden, learning at own pace and effective assessment. In addition, 9711 e-Classrooms have been established and 2300 e-Classrooms are being delivered to promote blended learning, accelerated learning & better understanding of concepts and effective assessment. Moreover, teachers have been trained for capacity building.

Digital Language Labs have been established in KVs across the Country to improve spoken skills of students in English Language with having 30 user capacity in each lab. These Labs are equipped with Desktop Computers, Language Lab Software, Modular Work Stations and Arm Chairs.

Shaala Sarathi: Shaala Sarathi is a portal to facilitate and link Corporate Social Responsibilities (CSRs), States, UTs and Non-Governmental Organisations (NGOs). It enabled the partners for identifying and scaling innovative programmes under education reform initiatives. It endeavours to streamline engagement and create transparency around external stakeholders wanting to partner with states for improving quality of school education.

5. Monitoring and Evaluation

Saransh: In 2015, the Central Board of Secondary Education (CBSE) have launched a decision support system i.e. 'Saransh' with a vision to "Improve children's education by enhancing interaction between schools as well as parents and providing data driven decision support system to assist them in taking best decisions for their children's future". It is also available in the form of mobile application for easy access. The app is focused on to review the results at school, state and national level by students as well as parents. This initiative was awarded as 'Best Government Initiative in Education' at e-India 2015 (MHRD, 2016).

Shaala Sidhhi: 'Shala Sidhhi' is developed by National University of Educational Planning and Administration (NUEPA) which is also known as 'National Programme on School

Standards and Evaluation (NPSSE)'. It is a platform for school evaluation aiming to 'enable schools to evaluate their performance in a more focused and strategic manner and facilitate them to make professional judgments for improvement' (MHRD, 2016).

ShaGun Portal: Apart from repository, ShaGun is an online monitoring portal of the elementary education implemented by States and UTs. The data is accessed by Government Officers at all levels using their specific passwords. These Reports, along with the success stories in the Repository, create an online platform which can be viewed by officers in the Department, PMO and Niti Aayog etc., to see the status of implementation of elementary education in all States and UTs.

Challenges of implementing ICT initiatives in School Education

India has potential of affordability towards ICT as a tool for education, but there are other challenges which hinder the implementation of above discussed ICT initiatives in School Education. Globally, the information overload is an important challenge in front of teachers. They lack the skills to filter out the relevant information and organise these resources in terms of access, process and using the information (Salehi and Salehi, 2012). Further, Singh (2018) counted the challenges of digital education in a developing society such as, infrastructural hindrances, cultural issue i.e. language and attitude, lack of trained teachers, and technologically challenged parents. However, UNESCO (2017) reported limited access to computers with insufficient ratio of number of computers per student. There are advances of technological innovations, but 'utilizing such advances of digital innovations for emerging markets in under-resourced areas remains a challenging issue' (UNESCO, 2017). Students from rural locations or impoverished communities do not have even basic access to ICT. There are schools which do not even have appropriate classrooms, quality teachers, computers, telecommunication facilities and Internet services. For them, ICT continues to be a distant dream (ICT in School Education Report, 2010).

Apart from above, several other challenges also hinder the proper implementation of ICT initiatives in school education. Inappropriate penetration of ICT into the mainstream, lack of available technologies and its usability hinder the implementation process. Similarly, negative attitude towards ICT as alternative to face-to-face education is also an important

challenge to tackle. Besides, the insufficient time for teachers to get trained with the latest available Technological innovations and their best practices to integrate it in teaching and learning activities are notably the concerns with regard to teachers (Oradini & Saunders, 2008; Goswami, 2014). Additionally, for utilising ICT and making it integral to teaching and learning, time commitment is a crucial part, which is overlooked by the teachers and policy makers. Thus, a lot of time must be put into creating networks, sharing information and finding other people to communicate with.

Conclusion

In terms of policy perspective, the ICT initiatives are relevant and appropriate. Here, it is to be noted that technology under ICT initiatives are not so important, but the important thing is how we use it! The time has come that ICT in education is something which is more than its relevance. It is a necessity of today's education system. It is clearly about methodology not just tools, and it needs to be not about products, it needs to be more about practices. However, the role of teacher is nowhere going to diminish rather, it is going to be supported with digitalized backup. To bridge the access gap, new models of content creation, content delivery, learning management and planning need to be developed and promoted. The monitoring and evaluation system for creating cooperative, life-long and self-learning environment have to be developed. The e-content needs to be developed and translated in regional languages to improve grasp and enhance learning in all spheres of education in the country. Today, the classroom is an interactive world where, the teacher as well as the student are engaged with technology. Because today's young generation is hooked up and plugged, whether it is with text messaging, social networking, video calling or more. It is important that teachers and stakeholders find a way to engage them with the appropriate technology. Technology in the classroom should keep the students stimulated by using the latest and greatest inventions in computers and digital media. With ICT initiatives, India can improve access, process and output of our school education system through following strategic framework implementation with bottom-up approach. Overall, ICT has really improved the educational system across the globe and more has to be explored.

References

CABE (2005), Universalisation of Secondary Education, New Delhi.

Goswami, C. (2014). "Role of Technology in Indian Education.". In International Proceedings of Economics Development and Research. Retrieved from <http://www.ipedr.com/vol79/002-IC4E2014-1-003.pdf>

ICT in School Education Report (2010). Information and Communication Technology for Education in India and South Asia. Retrieved from: http://www.infodev.org/infodev-files/resource/InfodevDocuments_1016.pdf

MHRD (2016). Major ICT initiatives in School Education. Government of India.

MHRD (2012). National Policy on ICT in School Education. Government of India.

MHRD (2012). National Mission on Education through ICT. Government of India, New Delhi. Retrieved from: http://mhrd.gov.in/sites/upload_files/mhrd/files/MissionDocument.pdf

NCERT (2005). National Curriculum Framework, New Delhi.

Oradini, F. & Saunders, G (2008). The use of social networking by students and staff in higher education. Retrieved from: http://www.eife-l.org/publications/proceedings/ilf08/contributions/improving-quality-of-learning-with-technologies/Oradini_Saunders.pdf

Salehi, H., & Salehi, Z. (2012). Challenges for using ICT in education: teachers' insights, International Journal of e-Education, e-Business, e-Management and e-Learning, 2(1), 40.

Singh, I. (2018). Digital Education: Scope and Challenges of a Developing Society. Paripex-Indian Journal of Research 7.5.

Tinio, V. (2003), ICT in Education, United Nations Development Programme. Retrieved February, 12, 2013.

UNESCO (2017), Education 2030: Incheon Declaration: Towards Inclusive and Equitable Quality Education and Lifelong Learning for All. UNESCO Institute for Long-life Learning,

UNESCO (2006), Using ICT to Develop Literacy, UNESCO ICT in Education Programme, Bangkok. Retrieved from:

http://www2.unescobkk.org/elib/publications/088/Using_ICT_to_Develop_Literacy.pdf

Zia, S. (Sep. 23, 2017). NCERT launches revised student-teacher ICT curricula. Live Mint.

Book Review

New Technology and Education: Contemporary Issues in Education Studies

By - Anthony Edwards, Year of Publication of the book- 2012,
Newgen Imaging Systems Ltd., Chennai, India

(Review by- Jagjit Kaur, Ph.D Scholar, Zakir Husain Centre for Educational Studies, Jawaharlal
Nehru University, New Delhi, Email:)

As can be seen, digital devices are increasingly encapsulating every domain of our lives. If one looks at the institutions such as schools, hospitals etc, the role of technology has increased over the years. In the context of educational institutions, especially schools, the usage of modern digital devices such as smart boards, digital computers and so on are being increasingly installed for administrative as well as academic purposes in the schools. There is plenty of research that emphasizes upon facilitating the innovation and quality of education through the means of digital technologies. In fact, technology is posed as the new solution for upcoming issues in the domain of education. In this context, it is important to ask some pertinent questions such as- What is the meaning of technology? What is the role of technology in education? How has technology evolved in the realm of education? Why are modern technologies like computers more important in education? What are the future predictions for the role of technology in education? The book- “New Technology and Education” by Anthony Edwards elaborates upon these questions through discussions and examples. The further sections would discuss these questions by providing a summary of the chapters along with debates on these questions by various thinkers.

What is technology and its role in the education system? The initial parts of the book discusses about the definition of technology and its meaning. The author traces the etymology of the word ‘technology’ to a greek word *technologia*. If the word is broken down into parts, the first part *techno* “relates to the arts” and the second part *logia* means the “writings on accumulated knowledge of the arts.” (Edwards 2012: 3) This definition persisted from 17th to 19th century when the meaning of the word arts changed to incorporate

“growing application of science to manufacturing” from only referring to “painting or sculpture” earlier. (Edwards 2012: 4) The debate on the meaning and purpose of technology has existed till date by not only different disciplinary traditions but also different institutions, organizations and thinkers belonging to different realms of the society. The United Nations Education, Social and Cultural Organization (UNESCO) defines technology as “the knowledge and skills and creative processes that may assist people to utilize tools, resources and systems to solve problems and to enhance control over the natural and made environment in an endeavor to improve the human condition.” (Edwards 2012: 5) Finn (Finn 1960 quoted in Edwards 2012) refers to technology as “a particular way of thinking about a problem through which a broad range of issues, including economic values, should be taken into consideration.” (Edwards 2012: 5) This means that technology should include “all human and non-human processes, systems, management and control mechanisms.” (Edwards 2012: 5) Mullis (Mullis 2009 quoted in Edwards 2012) describes technology as the “sort of science based devices that began to emerge in the nineteenth century.” (Edwards 2012: 5) Though there can be numerous definitions of the technology, one can simply state that technologies are the machines developed to aid humans by easing the work. Also, it can’t be denied that the new economies are moving forward towards technological advancements in all spheres of life from industrial usage to markets to institutions among others. The education can’t remain devoid of these technologies and so, the ushering of new era of technology in education has taken place. These technologies need to be seen in “an intellectual and social context” as the processes involved in pushing these technologies in education are not neutral phenomena’s but, linked to the “cultural and environmental influences”. (Luppacini 2005 quoted in Edwards 2012: 6). The author further elaborates upon the **aspects of the technology** as not “tangible products” but “a series of interconnected activities” that are involved in the making of the technological product. So, it is not the just the hardware, but software, the content of the device and the agencies involved in making and usage of the device that form important parts of the technology and its system. The author skillfully traces the evolution of these devices from machines which required human intervention such as mining machines to machines with a brain such as robots and other devices being developed in the present context. These technologies aid the imparting of education in various ways such as “enabling access to the learning material”, catering to a

“range of individual habits”, innovation in the pedagogy, easy assessment procedures among many other benefits. (Edwards 2012: 6) The **theoretical context** in which these technologies emerge too is important besides the socio-economic-political context in which these technologies emerge. On one side, there are thinkers who believe that technology is a “self regulating phenomenon shaping the future” and it is technology which drives social processes and happenings. There are thinkers like Marx who can be placed towards this end as he “conceived social processes in technological terms.” (Edwards 2012: 8) As the agency of humans can’t be discarded, this standpoint was critiqued and so, the soft version of technological determinism emerged. This version stated that technology has a vital role in social change but it is not the only agency for the change. This too has been critiqued as if there is no one definition of technology, how can one viewpoint be the leading ideology in understanding the relationship between the technology and the society. Then, there are those thinkers who believe that it is the society which drives the changes in technology. This is also referred to as the ‘constructivist view of technology’ and has various sub-branches to it.

How have technologies evolved in the realm of education and the importance of modern technologies like computers in the present context? The first three chapters of the book trace the evolution of technologies in education from language to books to pencils to the automation of education. Edwards (2012: 23) argues that the first major technologies used by humans was language as it helped in performing the day to day tasks such as “exchange and test knowledge”, “facilitates the transmission of culture” and other interests of education. As the economies evolved from ‘simple artefacts’ to the complex artefacts, the language too became more extended and that’s how the language of diplomacy evolved. Then, in order to give ‘permanency’ and ‘transferability’, books were required to be produced in mass numbers. This was further enabled by ‘mechanized printing’ and this led to further spread of education among the masses. With the invention of new technologies, the variety of material which was printed for educational purposes and distributed too changed. All kinds of books were published such as drawing books, dictionaries etc to stimulate all the senses of the readers besides the written word. The evolution of these technologies also led to changes in the surrounding environment-be it social, cultural or political. McLuhan (McLuhan 1962 quoted in Edwards 2012) refers to printing as the evolution of “technology of individualism”

as reading can now be done in solitary places and this redefines the relationship between the teachers and the students. This importance of printed word over the spoken word also lead to various other socio cultural changes as elaborated by various scholars such as the separation between adulthood and childhood-of acquiring literacy. (Postman 1986 quoted in Edwards 2012) The author has situated technological evolution in the social context and thereby, established the linkages between the technological and social changes. So, the argument by various scholars that technology is a neutral entity has been challenged through such an analysis of looking at the evolution of the technology. Also, the interplay between the self, society and the technology has been placed aptly. For instance, Edwards highlights that the evolution of printing as a technology made knowledge “less vulnerable to the frailties of human memory” and ‘commodification’ of knowledge took place. In the late 19th century, there were more machines being invented by thinkers like Thorndike, Skinner and so on to overcome the challenges posed by printing such as Thorndike invented a device to manage ‘personal instruction’ by print. This era also defined the usage of radio and television in the arena of education to make learning more interesting and engaging for the learners. Edwards highlights that the notion of “open Universities” became possible due to the advancement of these technologies in the arena of education. These technologies also made education more accessible for the deprived sections of the society. After that, in 1950’s, the programmed learning movement, the use of computers in education in late 1960’s further evolved the usage of technology in education. The use of computers in education was triggered by the challenges being faced by the devices earlier used such as ‘distancing of teachers from the pupils’, ‘inefficacy’ among many others. They were perceived to deliver many benefits such as “individualized instruction”, “easy recording”, easy use of “simulation and modeling” and so on. The computers brought in the information revolution and changed the manner in which information and knowledge could be accessed and used. This further changed the notions involving the capacities to interpret and understand complex systems. The challenges such as the role of teachers in the education system, the questions regarding the efficacy of knowledge systems emerged as the usage of computers in education increased.

What are the future predictions for the role of technology in education? Edwards highlights that it is important to locate and think about the future role of technology in

education to be able to analyze the direction in which we are going considering the present usage of the technology. The book, throughout the themes, has located technology along with the socio-economic-political factors. So, the author looks at the global trends of economic growth, working patterns, migration in the future to locate the place of technology in education in future. As the total fertility rate in the OECD countries has already decreased, this has repercussions for the education system as fewer children would mean less schools and less choice. Also, the future trends needs to take into account the increasing globalization which would require newer skills to be imparted through the school system. With such many more socio-economic changes, the role of technology in the lives of the people would also increase. The era of artificial intelligence would arrive with the 'invisible networks' located in our clothes and skins as well. In the domain of education, this proliferation of technology would mean the increase in range of educational courses, "well equipped centers for vocational and educational training", "invasive and non invasive interfaces between the brain and the machines" and thereby, the change from networked to ubiquitous computing. This would weaken the boundaries between the aspects of contemporary living and the definitions of work, leisure, employment and education would change considerably. Though different theorists predict these changes with variations, the role of technology would invariably increase in accepted through the disciplines as technology would become "smaller, cheaper and faster." The author engages with questions whether technological future is inevitable or desirable and then, pinpoints the importance of values underpinning the society which will decide the role technology would play in the society and the education system.

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