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Technologies in Facilitating Professional Growth and Capacity Building

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ABSTRACT

The rapid explosion in technology is unpredictable and very drastic such that it has conquered every aspect and areas of human life. There is such areas where technology has not yet reached. Education being an area that has direct impact on the society is nowhere an exception. Hence, as a teacher or teacher educator one has to update his knowledge and skills in using technology, especially ICT, as the classrooms are being dominated by smart classrooms. They now have to learn how to cope with these technological advancements and innovative approaches in their classrooms Uses of technology in the professional development and capacity building of teachers may be defined in two folds; that is technology for professional development and professional development for efficient use of technology in teaching learning process. When technology develops in a very drastic speed, it is the duty of the teacher to update himself on various areas of ICT that can be used in the classroom transaction. Various online programs and online learning are being introduced that can be used by teachers in the classroom. Hence, the teacher has to update his knowledge and skills through various professional development programmes. The administration of schools has to provide such platform to teachers to undergo such training to cope up with current development and changes in technology. Technology can be used not only as an information management tool, but also as a means of reaching students of diverse backgrounds in a way professionally sound (Torres, 2006). Hence, technology can be seen having implications for classroom learning as well as in reaching students of the disadvantaged group provided the availability of technology in their areas. The use of technology can assess the quality of their papers or articles using technology. It helps to identify aspects such as the

number of times cited, plagiarism etc. These educational software has been introduced in order to maximize quality of all papers being published. In the present paper, we have discussed the linkage of technology with special focus on ICT and Professional development of teachers. Focus of this paper is on and around E- Resources, Integration of Advanced Technology in Teacher Training, citations index, and impact of research publication in the public domain.

Keywords: E-Resources, Innovative approaches, Citations, h-Index, Research Gate, Impact Factor, Professional Development, Capacity Building, Massive Open Online Courses (MOOCs), Scopus, Google Scholar

1. INTRODUCTION

Knowledge transmission across past academic generations has undergone a sea change due to the rapid evolution of communicative technologies. Traditional classrooms have been transformed into boundary-less pedagogical gatherings. Internet-based webinars have become most recent tool for conducting scientific meetings with worldwide connectivity and sharing of knowledge and information. The recent trend has been the use of open courses. These courses are run online wherein the audiences remain far away from their usual course centers by attending the academic sessions online at specific schedules. For instance the “National Institute of Technical Teachers Training and Research” routinely conducts online courses for the development of skills among faculty of technical institutes. The communicative technologies developed for fast duplex information relay have permitted these courses to be interactive. Another trend that has become very paramount component in the knowledge dissemination is the use of websites hosting videos of famous lectures. Such sites have become new centers for information and are visited by large number of academicians. Government of India has identified these approaches thrust areas and has encouraged the Indian Institute of Technology (IIT) and other institutes to digitalize their lectures. These digitalized contents have been hosted on National Programme on Technology Enhanced Learning (NPTEL) site and are available for Indian students. The recorded lectures and videos can be accessed at any place or time whereby the students can save a lot of time in searching for the primary source of data. These recorded lectures can be used in classroom teaching as well as for research purpose. Many new technological devices are added to strengthen the teaching – learning process. Integrating computer technologies into education is a significant investment. Despite best efforts, the use of Information and Communication Technology in Indian education is lagging behind in comparison with their counterparts in developed countries.

Professional development and Capacity building are two major aspects of developing one’s own area of interest as well as in training oneself in the recent advancements in the desired field. It is a collaborative effort whereby the people from different parts of the world come together and share their experiences, research findings, knowledge, skills in order to enhance individual’s ability to do work. This help an individual to become a lifelong learner by improving ones knowledge and skills which are essential for both personal as well as career development. The Professional development and Capacity building programmes are been conducted worldwide through training programmes, conferences, symposium, seminars, community work, coaching, mentoring etc. which ultimately aims at developing the

individual in her/his career. In the modern world, in the development in Information and Communication Technology, the online programmes and courses for professional development of individuals are gaining more and more relevance.

2. USES OF TECHNOLOGY IN EDUCATION

Technology, especially ICT is being used in various educational institutions starting from Primary classes to higher educational systems. The use of technology can be seen at maximum in open learning, distance learning and online learning. Use of ICT is visible in higher education especially in the form of online courses. Social networking is also an excellent medium for learning and has a broad scope of reaching anyone throughout the globe. The advancements in technology have reduced the dependence of books and has made the availability of information at fingertips within a few seconds of time. Interacting with respective subject experts have become comfortable with the advancement in technology. Hence, the hard work required for searching through books has minimized, and any doubts or queries can be rectified now and then. Writing blogs are an excellent means of sharing ideas and opinions and also for rectifying our doubts and questions.

One has to be very careful regarding the authenticity of any information obtained through the internet. It is here, the role of online journal, different database and citations come into picture. Selecting those articles or publications that are published in reputed journals will be given impact factor, or it will be SCOPUS journal or the most cited journals. Hence, any published journals with such citations are considered as authentic and also can be regarded as genuine work of the authors. Citing such articles is the best way to improve the quality of papers. Use of smart classrooms, blended learning and Massive Open Online Courses (MOOC) are also a significant impact of technology in classrooms. Use of online courses is vast. Any online course has the following features;

Administration: The first page will be the administration page that is the homepage of the programme. The main features of the administration page is that it shows the advertisements of the course, a link for syllabus and discussions, list of email of the members enrolled in their area of expertise, the related links etc. This helps the participant to get an overall view of the course as well as plan on how to proceed with the modules and also providing the community resources for having interaction and to learn collaboratively.

Readings/sources: The Web and CD-ROMs that are uploaded in these sites offer a wider variety of secondary and primary data and sources, both in visual and audio forms. These can be lectures delivered by experts, web materials, data, etc. With proper guidance, the participants can use their reading materials and build up their ideas. Their opinions or arguments or query can be posted in blogs where the experts and the group members can also pass their answers or any further opinion. Hence, this will serve as a platform for sharing of views and ideas.

Papers/presentations: In this platform, the students can do independent exercises by publishing their own works or assignments instead of taking up any written or online exams.

This provides an opportunity for disseminating of ones ideas as well as sharing of the opinion for further learning.

Lectures: There is also provision for viewing recorded lectures which is possible with the usage of particular software. It is also a tool for combining the lecture with outline of the lecture in any audio or visual form. This tool help the audience as they can take printouts of the handouts and can save the lecture for future references.

Discussion: Electronic discussion is a tool which has been used by many online users. Such discussions can be done through online chat, email, answering to questions posed earlier, and conferencing software. It can help in overcoming the limitation of the face- to – face learning as the online platform creates an environment of sharing information and ideas. The range of electronic publishing techniques depends on the technical skills, resources used and creative thinking of the students who have to perform the following;

- **Multimedia in classroom presentations:** A student participating in e- learning can use a multimedia presentation whereby a computer and a projector can be used for projecting one’s presentation. The presentation can also have audio, visual or a combination of audio- visual materials. This multimedia presentation makes classroom lively and saves time and resources.
- **Web teaching units for one’s own class or other classes:** The materials developed by students can be shared on web for use by their own classmates or by other classes. This creates a platform for sharing and analyzing ones research with others of the group.
- **Web exhibits:** Students can also prepare a slide of various related exhibits or materials which can be an added resource to the online learning. This web exhibits gives a simulated environment for the other participants to learn and reflect.
- **Classroom archive/library:** When courses are run in different areas, a huge collection of relevant contents related to the course can be accumulated which lead to the formation of a digital library on specific area of education..

3. E- RESOURCES

Readily available educational e- resources for teachers, students and parents make the process of Teaching and Learning easier and joyful. The internet has a gigantic collection of online resources that can meet the needs of every learner. The main criteria is the ability to look/ search for what one require and to make the best use of compiling various studies.

Types of e-resources

Generally, e-resources in Teacher Education, classified into two major areas as online e-resources and Offline e-resources.

(1) Online e-resources: Online e-resources are of different types such as e-books, e-journals, e-mail, e-library, e-forum, e-learning (lessons / courses), e-shops, e-dictionaries, mobile SMS / MMS, search engines and metasearch engines. This can be available in a three types of

matter as freely available resource contents, licensed resources (databases available by logging using a library card) and onsite resources.

(2) Offline e-resources: Offline e-resources are CD ROM based e-resources, offline e-books, offline e-dictionaries, MS Office applications (documents, spreadsheets, power points), Training software, e-prompter; resources from mobile devices and secondary storage devices.

Taxonomy of e-resources

The taxonomy of e-resources is on the basis for numeric, text, image and program, (system & data); which are described as follows;

1) Electronic numeric data:

- a) Electronic census data, b) Electronic survey data

2) Electronic text data:

- a) Electronic bibliographic database, b) Electronic journal, c) Electronic newsletter
- d) Electronic document

3) Electronic image data:

- a) Electronic representational data, b) Electronic maps data, c) Electronic music data,
- d) Electronic sound data, e) Electronic font data

4) Electronic program:

- a) Electronic utility program, b) Electronic application program, c) Electronic CAD program, d) Electronic database program, e) Electronic spreadsheet program, f) Electronic word processor program, g) Electronic desktop publishing program, h) Electronic games.

5) Electronic system program

- a) Electronic operating system program b) Electronic programming language c) Electronic retrieval program

Need for training in ICT skills

Training in ICT helps in developing the following skills

a) Information Skills

The students should be acquainted with the skills necessary to use various data sources as well as trained to retrieve the data. They should be trained to develop the skills for maximizing the use of e- resources. As the technology is advancing day by day, the students should also update their knowledge and skills. Updating this knowledge and expertise on technology is essential for future use.

b) Integration and use of Information and Communication Technologies

The integration of ICT can be utilized for teaching- learning as well as in research. It can be utilized in the accessing the internet, using software and hardware to make presentations, movies, electronic portfolios and slide shows, communicating using fax, email, and phones, gathering information about tape recorders, video and digital cameras

Positive and Negative Outcomes From the use of e-resources

There are many benefits that online resources can bring to teaching and learning, including: access to information from many different sources and experts. There are many resources from credible institutions, public commentators, organizations and news media available online which can be used by any student or researcher. As a teacher, there is no need to reinvent the wheel, or do everything oneself.

One can create an online resource for a certain topic, share it openly with others by making it available online under a Creative Commons license. Students can take an active role in finding and sharing course resources. Integrating tasks into your curriculum where students find and assess online resources on a particular topic can be a good way to engage them in the class content. Resources are easily available as it offers equity and accessibility to information for all students on and off-campus.

Positive outcomes	Negative Outcomes
<ul style="list-style-type: none"> • Greater and quicker access for students to materials to support their learning 	<ul style="list-style-type: none"> • Perception by academics that if you put the materials online the students won't attend the classes
<ul style="list-style-type: none"> • More interaction in face to face and blended teaching 	<ul style="list-style-type: none"> • When the system doesn't work there is no lecture notes and no means to deliver the content
<ul style="list-style-type: none"> • Consistent delivery between different members of the team due to shared e-resources e.g. power points. 	<ul style="list-style-type: none"> • Reduced face to face contact with students
<ul style="list-style-type: none"> • Much more efficient delivery of lectures using online film clips 	<ul style="list-style-type: none"> • Fear of staff regarding new technologies
<ul style="list-style-type: none"> • Satisfaction because it provides equitable access to off-campus work based and off-shore learners 	<ul style="list-style-type: none"> • Network failures can ruin the excitement of using E-resources
<ul style="list-style-type: none"> • Extended access, management data, simplified services 	<ul style="list-style-type: none"> • Teacher time
<ul style="list-style-type: none"> • Enhancing student experience 	<ul style="list-style-type: none"> • Increased workload for part-time tutors

Massive Open Online Courses (MOOCs)

In times of increasing demands in the workplace and a shorter half-life of knowledge there is an urgent need for flexible, easily accessible knowledge acquisition, an extra-occupational further education on demand and just in time. Here, as soon as possible innovative life-long learning strategies are needed to counteract both the consequent shortage of skilled employees as well as overall demographic change.

In the current international trend Massive Open Online Courses (MOOCs) try to establish. "Massive" thus implies the goal of addressing a broad audience with MOOCs. The number of students should be as high as possible.

"Open" points out the free access of the course, which is met by a user-friendly and informal access to the system without particular conditions. The interested person registers with his e-mail address, a user name and password and immediately gets access to the courses. However, this simplicity of registration generates the problem of lack of authentication. That's why a possible certification of learning outcomes is difficult from the Outset. "Online" refers to the use of the Internet to allow the extremely high number of participants. All MOOC portals try to hold low the technical requirements on client-side. Often videos are used, which are mostly hosted on the platform YouTube and are just embedded into the course. On the one hand, this reduces the server administration costs and on the other hand it increases the reliability on different client systems. Furthermore, mobile devices are supported by adapting the user interface, to ensure ubiquitous learning. "Course" indicates that the content is mostly available in a curriculum. Usually, they are based on the lecture notes of the corresponding universities, which are often adapted for e-learning. Following are the major benefits of MOOCs

1. Appropriate for any Internet connectivity
2. Available easily in multiple languages
3. Escape time zones and physical boundaries
4. Development and delivery in short timeframe
5. Referential content can be shared by all
6. Informal setting
7. Peer-to-peer contact can trigger serendipitous learning
8. No or we can say lower barriers to student entry
9. Enhance personal learning environment and/or network by participating
10. Improvement in lifelong learning skills

Citations

Citation is an easy means to help the readers, students and researchers to find out that some of the content in that paper or article has been taken from some other sources. It is very helpful for the researchers as it helps them in tracing out the original source of information or data. This information include the name of the author, title of the paper, date of publication, publisher etc. which are relevant for publication.

Scopus

Scopus is the largest database which contains abstracts and citations of peer reviewed articles or research papers. It is a tool for tracking, analyzing and visualizing various researches. It is a very huge and comprehensive overview of researches that can be viewed worldwide in various fields of Science, technology, Medicine, Social Sciences, Arts, Humanities etc. Scopus allow tracking citations over time for a set of authors or documents, with Citation Overview/Tracker and setting citation alerts, Assess trends in search results with Analyze Results, View h-index for specific authors; Analyze an author's publishing output with Author Evaluator, Gain insight into journal performance with Journal Analyzer and alternative journal metrics. Search in Scopus can be done using document, author or affiliation, advanced search, refine search, year, language wise etc.

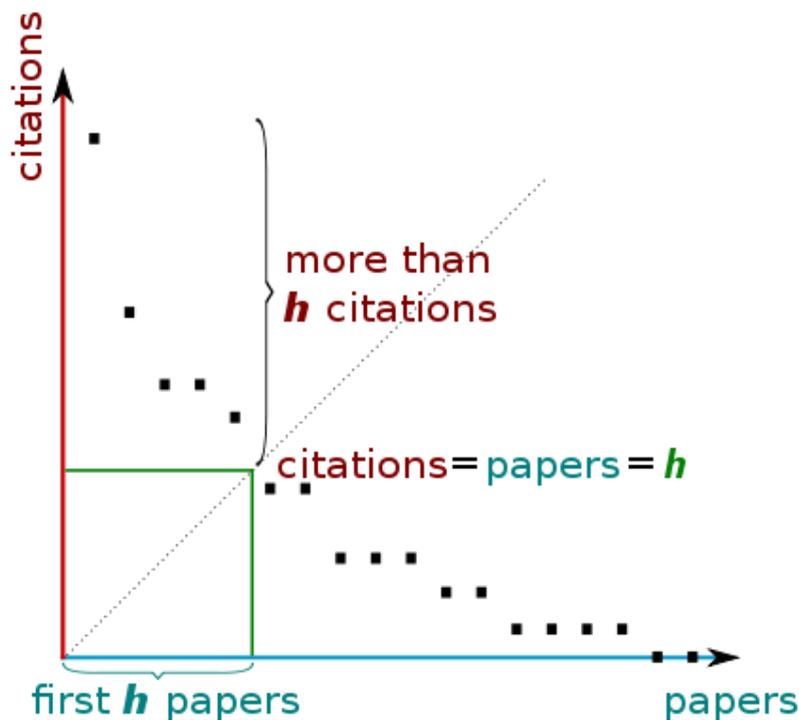
Indian Citation Index (ICI):

ICI is an Indian based database for abstracts and citations which is multidisciplinary in nature and has articles, research papers and contents from about 1000 top Indian scholarly journals. It provides powerful search engine basically to perform search and evaluation for researchers, policy makers, decision makers etc. ICI database is a powerful tool that let you search, track, measure and collaborate in the sciences, social sciences, arts, and humanities to turns raw data/information into the powerful knowledge you need. Indian Citation Index database is an abstracts and citation database intended to measure and perform two basic functions, general literature search and evaluation using citations similar to international databases

Google Scholar

This is a freely accessible data search engine of most of the online peer reviewed journals, book and other documents, which allow users to search copies of articles, books and reports. Through a very upgraded feature 'cited by' it provide access of abstracts of papers that have cited the research being viewed and through its feature of related articles Google Scholar present a list of all the articles which are closely related to the searched article. Google scholar is a much easy way for researchers and authors to keep a track of citations to their articles. It helps in tracing who is citing our research findings, articles, graphs over time and help in computing several citation metrics. It can also help in making ones profile public, so that the name will appear in 'Google scholar results' when people search our name.

h-Index



h- Index was first published by Hirsch in 2005 which is a measure of academic impact. It is based on a list of publications ranked in descending order by the times cited. The value of h is indicated by a horizontal line. The number of items above this line, which is 'h' has at least 'h' citations. For eg. A h- index of 15 means there are 15 items that have 15 citations or more (ISI web of Science).

The h- index is defined as "A scientist has index h, if h of his/ her N_p papers have at least h citations each, and the other (N_p-h) papers have no more than h citations each" The advantage of the h- index is that it can combine an assessment of both quantity ie. number of papers and quality ie. Which stands for impact, or citations (Glanzel, 2006). For better explanation following diagram may be useful.

Research Gate

Research Gate was founded in 2008 by two Physicians Dr. Ijad Madisch and Dr. Sören Hofmayer, and a Computer Scientist Horst Fickenscher. It is a leading social network for scientists as it offers tools and applications for researchers to connect, collaborate and share results. Research Gate today has more than 5 million members. It strive to help them make progress happen faster. Mission is to connect researchers and make it easy for them to share and access scientific output, knowledge, and expertise. On Research Gate they find what they need to advance their research.

Impact Factor

The impact Factor (IF), is a measure reflecting the average number of citations to articles published in journals, books, patent documents, thesis, project reports, newspapers, conference or seminar proceedings, document published, monographs, in internet, notes and other approved documents. It measures the relative importance of a journal within its field with journals of higher journal impact factors deemed to be more important than those with lower ones. Journal Impact Factors are calculated in yearly/ half yearly/ quarterly/ Monthly for those journals that are indexed in Journal Reference Reports (JRR).

For example, the impact factor 2014 for a journal would be calculated as follows: A = the number of times articles published in 2012-2013 were cited in indexed journals during 2014 B = the number of articles, reviews, proceedings or notes published in 2012-2013 impact factor 2014 = A/B (note that the impact factor 2013 will be actually published in 2014, because it could not be calculated until all of the 2013 publications had been received. Impact factor 2014 will be published in 2015).

Capacity Building and Professional development

Teachers have to provide effective instruction and create a conducive classroom, for students to achieve at high levels, provided they have a relevant curriculum. An excellent knowledge and skills of effective instructional practices is necessary for improving instruction. Teachers are made through the educational preparation they undergo during their pre-service or in-service training programme. When teachers are in service, they need professional development or capacity building to get abreast with new developments in their area and teaching technologies. The significant changes required to reform schools cannot be accomplished without professional development nor can it be achieved with outdated models of professional development

4. CONCLUSION

The various technologies that are in use for facilitating the professional growth of researchers and teachers are gaining priority in the present world. The researches having citations and indexes help them in professional development as it counts for one's excellence in the particular area. The number of papers published or the number of seminars attended is not the measurement of quality. It is to measure the quality of writing that the citations, Google scholar, h-index, Research gate are of great importance. Technology helps in deciding the quality of a paper to a great extent that it also helps in identifying plagiarism and encourages the novel thought of teachers and researchers.

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