ICT-Pedagogy Integration at B.Ed. Level : Classroom Practices

Jyotsna A. Amin
Assistant Professor, Department of Education [CASE] Faculty of Education and Psychology, The M. S. University of Baroda, Vadodara: 390 002, Gujarat, India

Abstract

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and modern technologies are demanding teachers to learn how to use these technologies in their teaching. While new technologies increase teachers' training needs, they also offer part of solution. Because of rapid development tin ICT, especially the internet, traditional initial training as well as in-service training institutions are undergoing a rapid change in the structure and content of their training and delivery methods of their courses. However, integrating new technologies with effective pedagogy has become a daunting task for pre-service teacher training. Development of info savvy and techno savvy skills in the prospective teachers is the matter of concern for teacher educators.

Present paper focuses the issues and concerns while integrating technology in enhancing pedagogical understanding in teachers training through various techniques such as formation of online group of student teachers, showing films of related topics, using ICT for feedback purpose. Formation of group included firsthand experience of using emails to create academic networking, online assignment submission, viewing the prerecorded demonstration and discussing for improvement and many other activities have sensitized the student teachers for using ICT in teaching learning process. The effort is to create an academic culture to promote technology enabled learning in the teacher training institution. A real case study is presented and put forth for the discussion in the paper. Student teacher feedback on the same is quite encouraging to sustain this activity and disseminate to the learning community.

KEYWORDS: ICT pedagogy integration, online forums, teacher training

Introduction

The pace of technological revolution and emergence of a knowledge society can change the traditional role of the teacher and the students. Traditionally, the teacher used to be the source of knowledge for the students. There is some cooperation among students to explore new knowledge. In many cases, the teachers do not posses adequate knowledge to supplement the view of the student. And the main source of knowledge remains limited to text book. The development of ICT changes the epic centre of knowledge. At present, in a number of cases the student is more informed than the teacher. Furthermore, there is likely to be confusion in the teachers mind about his/ her new role in relation to the use of these technologies 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 to a different source. In other words, we can say that there is a decentralization of the knowledge source. This has an overall impact on the development of learning abilities among the children. There is a need to facilitate training on ICTs for teacher both at the pre service level and in service level. The acquisition of fundamental ICT skills among teachers and students helps knowledge sharing, thereby multiplying educational opportunities. However, all teachers are not willing to introduce new technologies to themselves first and subsequently to their students. In order to implement ICT-driven education programmes, the teachers must first understand and be comfortable with the technologies. They must be given opportunities for acquisition of a new knowledge.

Present paper focuses the issues and concerns while integrating technology in enhancing pedagogical understanding in teachers training through various techniques such as formation of online group of student teachers, showing films of related topics, using ICT for feedback purpose. Formation of group included first-hand experience of using emails to create academic networking, online assignment submission, viewing the prerecorded demonstration

and discussing for improvement and many other activities have sensitized the student teachers for using ICT in teaching learning process. The effort is to create an academic culture to promote technology enabled learning in the teacher training institution. A real case study is presented and put forth for the discussion in the paper. Student teacher feedback on the same is quite encouraging to sustain this activity and disseminate to the learning community.

ICT Pedagogy Integration

In planning for infusion of ICTs into teacher preparation programmes, the factors important to a programmes success must be considered. A holistic framework proposed by the UNESCO (2002) takes into account the factors, e.g. cultural, educational, technology resources that are important in planning the integration of technology into preservice curriculum. The framework has been designed to assist policy makers, teacher educators, textbook writers, and other professionals who are charged with developing the use of ICTs in teacher education.

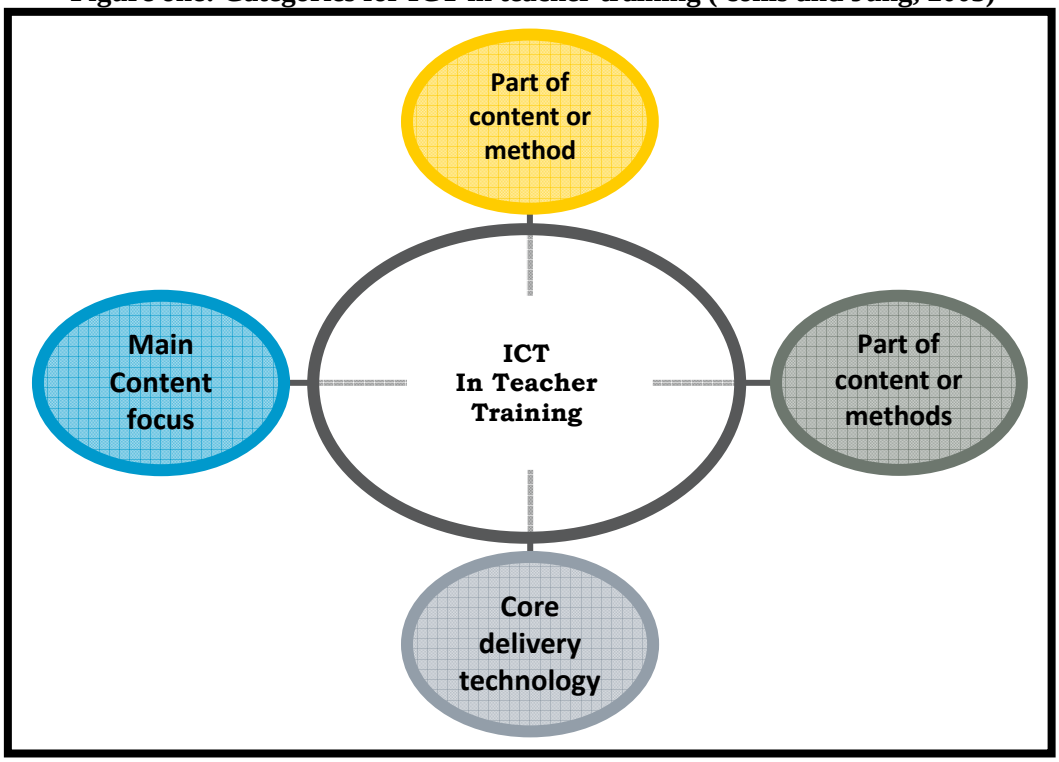
- **Context and Culture** identifies the culture and other contextual factors that must be considered in infusing technology into the teacher education curriculum. It includes the use of technology in culturally appropriate ways and the development of respect for multiple cultures and contexts, which need to be taught and modelled by teachers.
- **Leadership and Vision** are essential for the successful planning and implementation of technology into teacher education and require both leadership and support from the administration of the teacher education institution.
- **Lifelong Learning** acknowledges that learning does not stop after school.
- **Planning and Management of Change** is the final theme, born of today's context and accelerated by technology itself. It signifies the importance of careful planning and effective management of the change process.

These themes may be understood as a strategic combination of approaches that help teacher educators develop the four core competencies. The core competencies may be seen as clusters of objectives that are critical for successful use of ICTs as tools for learning. ICTs can support effective professional development of teachers. Using ICTs as tools for training of teachers is as important as introducing the basics of ICTs to the prospective teachers. As sources of information and expertise, as well as tools for distance communication, ICTs can offer many new possibilities for teacher education. Teachers may through the regular use of these technologies. Use of new media, new rules of communication – even a new language – have to be learned.

ICT Pedagogy Integration in Teacher Education

Use of ICT within teacher training programs around the world is being approached in a number of different ways with varying degrees of success. These approaches were subsequently described, refined and merged into following approaches: ICT skills development approach, ICT pedagogy approach, Subject-specific approach, Practice driven approach. ICT in teacher training can take many forms. Teachers can be trained to learn how to use ICT tools. ICT can be used as a core or a complementary means to the teacher training process (Collis & Jung, 2003). The various ways in which ICT teacher training efforts could be classified into four categories are shown below in figure one.

Figure one: Categories for ICT in teacher training (collis and Jung, 2003)



From the above suggested approaches, regarding ICT as a core component at the pre-service level, integration of all approaches would help in developing proper attributes among prospective teachers. There should be joint efforts of educators and prospective teachers in implementing and sharpening ICT skills. Whatever approach is followed in educational institutions to develop knowledge about ICT, it has inherent limitations. Coupled with other reasons, we are not making student teachers fully confident in using ICT in their daily classroom activities. As reported by Larose F. in their study, the level of computer literacy of the teaching staff is satisfactory but there is little transfer of these competencies to teaching practices **(Larose F., et al. 1999).**

ICT integration at Department of Education

Realising the importance of ICT in Education attempt has been made to provide the blended pedagogical inputs at pedagogical course "Teaching of Science". In the Report of National Curriculum Frame work for School Education (2005) the major thrust for pedagogical inputs in the classroom and the demands from the teachers while transecting the curriculum are as follow:

- Connecting knowledge to life outside
- Shifting from rote learning to constructing knowledge
- Providing a wide range experiences for the overall development of a child
- Bringing flexibility in the examinations

An attempt has been made to enhance the ICT skills of students in science teaching by providing various activities to the student teachers of Department of Education (DOE), The Maharaja Sayajirao University (MSU) of Baroda, Vadodara. Student-teachers having science back ground were selected for the same and the activities were integrated with method course as and when possible. Teaching of science is a course offered at DOE, MSU of Baroda having scope of dealing with nature of science, Pedagogical training and ICT Integration dimensions. In this course neither the content of secondary science as one of the subjects is being taught nor are they evaluated on the content of secondary science, only methodology is being taught to them. Average strength of the students opting for the science method is 40 out of 180 students. At the end of every activity their feedback is collected on the same to further modification. This has been executed on the student-teachers every year since academic year

2004-05 and every year modifications have been made as per students need. Table mentioned below provides the details about the activities taken up for the study and specific objectives for each of the activities

Table One : Outline of the ICT- Based Activities at B.Ed. Level

Name of the Activity	Objectives of the activity	Outcome of the activity
Formation of Online group	► To prepare student teachers to create their own email account. ► To prepare them to use the internet service to share information with peer group. ► To enable them to collect the required information from internet to teach science. ► To disseminate the science related information to the group for improvement of teaching. ► To create a network of science teachers to share their expertise and learn from others.	► Increase in their info-savvy and techno-savvy skills. ► Networking of all the student teachers for disseminating the knowledge and promoting science. promoting paper less culture
Awareness, sharing and integrating (wherever possible) technology in teaching of science	► To orient them for various electronic media and print media through which science can be taught ► To discuss about scope of using them in secondary science classes. ► To list out educational journals, websites to teach science at secondary level.	► Increased computer-literacy and using it for information gathering and disseminating ► Online submission of assignment
Viewing pre recorded video of demonstrations of activities / experiments based on concepts from science curriculum	► To provide them exposure for effective demonstration ► To enable them to generate newer ideas for activities in science classes.	► Clarity about their mistakes resulted in better performance in Demonstration performance ► Realisation of use of Technology for the feedback purpose.
Film show on global warming	► To provide them exposure to the issues related to environment ► To make them realize the impact of film as a powerful media to teach science related issues	► Awareness, ensitization about environmental problems and global warming ► Realisation Film as a power full medium of Education
Online sharing	► To enable them for using we technologies in their classroom ► To develop in them the information gathering and sharing skills.	► Creation of an academic network for future deliberation ► Collaborative learning

Implementation of ICT Based Activities at B.Ed. Level

- **Online Forum:** With a view to enhance the skills related to information and technology and provide recent happenings in the area of science and technology, an online forum is created. Every year student-teachers have created their e-mail account and they are

connected with an online group with yahoo group service. A group named science_B. Ed_2005 was created first time and after that every year students have joined the group. This group is still active and student from abroad are also exchanging their views, ideas and innovations in science teaching. This helps them to share the recent happenings and inventions in the area of science and technology. This trend is continued till the current year

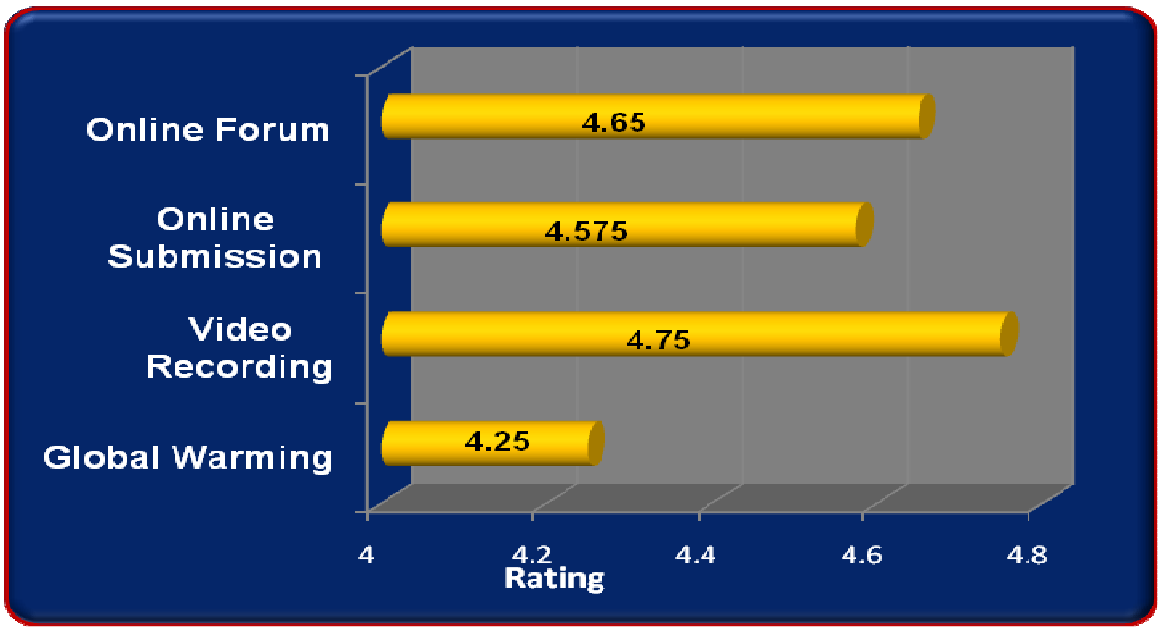
- **Video Recording and its discussions:** In order to develop the science experimental skills they were given the activity to be performed in front of the group. When they are performing it was recorded and shown to them. And a discussion session is carried out to make them realize the mistakes done by them and self evaluation of their performance. This would facilitate the enhancement in the next performance.
- **Film shows on Science related topic:** Student teachers were shown the movies related to science and environmental issues particularly and then their reaction were studied
- **Online Submission of assignments:** They are made capable of sharing the experiments online with the peer group so as to share and exchange the ideas with the peers. In doing so they are learning the technology and using emails, web blogs and many other information gathering techniques
- **Using World Wide Web to enhance disciplinary knowledge:** Each Student teachers are asked to gather the information about websites for secondary teachers with science knowledge and recent updates in the science. They have collected it and shared the links which helped them in practice teaching to save their time and use of techno pedagogic skills was enhanced.

All the above-mentioned activities created a technology enabled culture and training them for Using ICT for Academic Networking nad knowledge sharing.

Analysis of the student teachers' responses:

Student-teachers have rated the activities on five--point rating scale through a Programme Evaluation Sheet prepared by the researcher to study their opinion and suggestions for the implementation and modification. After each of the activity group discussion was also conducted to collect the qualitative responses of the students about the fruitfulness of the activities and feed-back for further improvement was also collected. Following Graph no. one is depicting the picture and rating provided by forty student teachers of science method.

Graph : One : comparative analysis of the ICT Based Activities



The above rating is one aspect of its effectiveness. Analysis of the qualitative responses of the student teachers for each of the activity is presented in the proceeding paragraphs activity wise.

Responses of student teachers for Formational of Online group:
This was a technology based activity which was initiated in the initial of the year and continued till end of the year and envisaged to be continued for ever. This was one of the most liked activities of ABSTP as per student teachers responses. Student teacher for the first time knew about the possibility of using online groups for academic purpose and how to use it. Few of the student teachers were not having their E-mail addresses when joined the course. Eight of them felt very happy to report that due to this they were made to create and actually using it actively for knowledge sharing. Online sharing was the new concept for the group; eighteen of them reported that they actually practiced it due to this activity. Six of them responded that they were using internet for information gathering earlier and this activity made them to share the gain information to others which was very beneficial to them during their teaching phase. Eight of them learnt to prepare documents and submit it online. Thirty of them felt that their info savvy and techno savvy skills were enhanced. Nineteen of them felt that it was an initiation towards the paperless society by making them submit the assignments online. They could realize that it was an attempt for academic networking forever. Researcher could see that though it was liked by many student teachers however participation of every student teachers could not be ensured every time.

Responses of student teachers "Viewing video recording of the science demonstration"
This activity was based on the Video recordings of student-teachers' performance during demonstration I and some sample demonstration of better performances of previous years. Student teachers enjoyed viewing themselves on large screen and could realize their mistakes otherwise might not have accepted if told by someone else. Nineteen of them reported that it was a short of self-assessment of science process skills executed by them. Five of them knew about many common mistakes and ten of them felt that it created awareness regarding the proper way of performing the demonstration. Twelve of them could realize and rectified their own mistakes in the later session. Four of them felt that this was a nice attempt which developed ability to perform better demonstrations in practice teaching and in the subsequent demonstration. One student reported that it was a good idea to record the performance and self-evaluation.

Responses of student teachers on Screening of the film "Inconvenient truth" This was a film show on the movie 'the inconvenient truth' on global warming. Student teachers found it very effective and many of them responded that it could sensitize them. Eight of them responded that they knew many concepts related to global warming. In seventeen of them the activity could create awareness and seven of them realized about the challenges of global warming and promised to work on it. Eighteen of them felt that it sensitized us, it made their minds think for the preventing the planet earth from global warming. Five of them reported that they found change in their behavior after watching the movie especially, about the use of plastic bags was minimized by them. Six of them reported that they have shown the movie to their secondary students during their practice teaching phase and promised to continue the same for future. Fifteen student teachers reported that it was very heart touching and gave long lasting effect on student teachers.
These activities are implemented in the Bachelors of education Programme at Department of Education. Every year through constant feedback they are improved and implemented. The team of science teachers could succeed in maintaining these activities for the paper less academia, environmentally sustainable society & environmentally sensitive teachers of science. These activities are possible in real classrooms of India if teacher-educator wants to replicate them they can experiment it and get the expected outcome mentioned above.

Conclusion:

This ICT Pedagogy integration is successful in Department of Education, with some problems but is very encouraging to those who want to work in this direction. Creating e-culture is the shared responsibilities of teacher educators and student teachers along with the policy makers. As we are moving towards ICT mediated world and 5G technology such experiments help the teaching fraternity to move ahead. With the advanced technology, continuous modification and further experimentation is also possible. But commitment and research can help in enhancing the same.

References :

http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=EJ844718&ERICExtSearch_SearchType_0=no&accno=EJ844718

Khirwadkar, A. (2010). **Integration of ICT in Education: Pedagogical Issues.** from https://pdfs.semanticscholar.org/4291/edd57bfaf9de1fc90df31abc0804554e03d8.pdf, retrieved on 04. 12. 2016

Larose F., David R.,Dirand J ,. Karsenti T,T Grenon V.,. Lafrance S & Cantin J. (1999) Information and Communication Technologies in University Teaching and in Teacher Education:Journey in a Major Québec University's Reality, Electronic Journal of Sociology ISSN: 1198 3655

Mangala S. (2001). “Teacher education: trends and strategies”, Radha publication: New Delhi.

Sharma R A. (1999) “Teacher education”, international publishing house :Meerut

Umashree P.S. (1999). “Science curriculum and its transaction: An exploratory study in secondary schools of Vadodara, Gujarat.”

Vaidya, N. (1971). “The impact science teaching”: Oxford and IBH publication: New Delhi

Vaidya, N. (2003). “Science teaching for the 21st century”, Deep and Deep Publications ltd: New Delhi.