A Critical Study of the Levels of the Effective Application of ICTs by Teacher Educators

Nithin Jain
Assistant Professor in Education,
Rashtriya Sanskrit Sansthan, Bhopal Campus,
Bhopal, India.
anuttar.edu@gmail.com

Abstract— **In the time of computerization of every aspect of life and education, the educational initiatives are being planned and implemented by government and non-government organizations to promote ICT in India. This study belongs to investigation of the levels of ICT application and comparison of application between modern and traditional mode institution; government and nongovernment institution; gender, age and teaching experience based groups. The data was received from 223 teacher educators working in 9 states of India through self-constructed scaled questionnaire and attitude scale. This study deals with effective application of ICT in teacher education, especially about the application of Microsoft Office application software and resources of e-learning by teacher educators in their educational behavours. In this research, finding deal with three levels of effective application: Awareness Level, Adaptable Level and Integration-Creative Level.**

Keywords- Information and Communication Technology; Teacher Education; Traditional and Modern institutes; Microsoft Office;

I. INTRODUCTION

"*Teacher education institutions may either assume a leadership role in the transformation of education or be left behind in the swirl of rapid technological change" (UNESCO, 2002).*

The advent of ICT has influenced the scenario of Indian education at every level. The demands and concerns of multilayer education reveal the need to planning and implement innovatively, effectively and purposefully. In short, the resources of ICT have revolutionaries to the curriculum, the role of institution, the teacher and the learner, Teaching aid and methods, methods of assessment. Overall, the changes by implements of ICT-based education are very qualitatively and quantitatively.

The frameworks and guidelines for teacher education have been influenced ICT-based education; especially computer based learning systems enriched both –the communication and content. The institutions providing teacher education are directed to planning the programmes to promote the use of ICT. The government and nongovernment organizations are working to develop the basic skills and attitudes in educational personnel and educators at center and state level. These agencies also organize the seminars and conferences to discuss sand share the views on the problems and perspectives to ICT based teaching learning process. Here the roles of NAAC, UGC and NCTE are very crucial to maintain the quality; and generate proper guidelines and supervise the institutions in optimum utilization of ICT. The use of ICT is very important factor to assess and accredit the higher education institutions.

II. BACKGROUND

Research's biggest advance is to present very clear cut views on particular issue, and add scientific facts that may be applicable for better life. Some research works are comprehensively reviewed in the context of ICT based education or teacher education. However, as reported in the literature, change takes time and commitment. Four elements relationships, expectation, incentives and reinforcement-fostered the collaborative professional development framework **(Shelley B. et al, 2007)**. While according to **Taner Altun** (2008) literature suggests that there are four essential factors: ICT infrastructure and physical resources, curriculum and policy development, training lectures and pedagogical training of teachers in ICT.

Ahluwalia and Sharma (2001) have undertaken to examine the role of media on mobilization arid motivational aspects of TLC (Total Literacy Campaign) in Punjab. The researchers investigated that the volunteers were the most valuable resource for providing information and in motivating the learners to join the literacy classes and for sustaining their interest in the classes. **Dey Saxena** and **Gihar (2005)** have worked to investigate the use of ICTs. They suggested that more than 80% teacher educators were found not using educational technologies like magic lantern, epidiascope, video camera, film projector, LCD-projector, radio and DVDs in their leaching. **Joy** and **Manickam (2002)** studied the area of *Computer-Assisted Instruction: Attitudes of Teachers and Correlates.* They have shown that there was no significant difference on the teacher competency in the pre and post scores between the experimental and control group.

Levine Kalia and **Vij (2000)** stated that students with greater confidence in their ability to learn new computer uses reflected more favorable attitudes towards computers. **Meenu (2006)** worked with ETV lessons in mathematics and EVS (SC

and SS) taught to students of both Class III and V significantly improved their learning achievement as compared to their counterparts taught through traditional method. The experiment also showed that.) **Narayanaswami** and **Tangaswami (2001)** observed that nearly 35 per cent of the teachers in DIETs reported that computer had been used in all the six tasks whereas in TTIs it was only 20 per cent. **Beena Agarwal (1994)** focused upon the attitude of secondary school teachers towards computer-assisted instruction and computer education. They have found teachers had great liking as a subject as well as using these computers as a medium/aid for instruction. **AbdulKafi AliBirini (2004)** has studied the new technology initiative in Syrian education, this study explored the attitudes of high school English as foreign language (EFL) teachers in Syria towards ICT. **Taner Altun (2008)** has worked with strategies of preparing pre-service teachers to use new technologies to enhance subject matter training in teacher education (ITE) programmes in various contexts and intends to come out some possible ways of pedagogically appropriate integration of information and communication technologies (ICTs) into Turkish ITE programmes. **Liz M. Y. Chan** and others presented the paper concerned with the use of Information and Communications Technology (ICT) in music classrooms, with the focus on the secondary school music curriculum in the United Kingdom. **T. Unwin (2005)** has presented the paper exploring some of the reasons and outlines a possible framework for the successful implementation of (cachet training programmes that make advantageous use of appropriate ICTs.

III. Rationale of Study

The various programmes of teacher education i.e. B. Ed., M.Ed., D.Ed. etc. are considered modal and very useful programmes for trained teachers at primary and secondary level of school education. The application of ICT is regarded very important to make more effective the teacher education programmes due to rapid development in technologies and acceptance of these technologies by educators. The futuristic educational programme will be based on ICT based. The appropriate knowledge and application of ICT resources by teachers and teacher educators will be considered very important to develop confidence, commitment and competency. In this context, the recommendation of committees and commissions very clearly reveals that urgent use of ICT, and India Vision 2020 highly advocate that all institutions even at primary or secondary level should be enabled with ICT infrastructure especially the teacher education institutions will have to well equipped and ICT based curriculum, teaching methods, assessment methods etc. should be adopted in regular process by these institution. **National Knowledge Commission** Report (2007) clearly reveals that is urgent need of Nation Mission for Education through ICT at university and higher institutions. That will clearly because associated with teaching process. **MHRD** is planning one million teacher make ICT-friendly. The gap between technical and teaching and technical training is very clear to the degree of ICT. After planning and implementation the programmes, there should be clear cut assessment for all learning situations. The broaden purpose of this study is to recognize the level of application of innovative ICT-based strategies by teacher educators in Indian institutions.

This study investigated the following **two objectives**:

• To find out the status of the effective application of ICT by teacher educators at three levels i.e. Awareness Level, Adaptation Level and Integrated- Creative Level.

• To find out the status of attitudes of teacher educators towards effective application of ICT.

The study evaluated empirically the effective application of ICT at teacher education as higher level of education. Teacher education is fundamentally considered as most responsible for every level of education. This is why some special agencies are established to make guidelines for quality education. In short the purpose of this study is very relevant and functional.

IV. Methodology

In nature this is survey-based study which deals with *what is current situation* or *status*. The survey research is one kind of non-experimental researches. Non- experimental research is systematic empirical inquiry on which scientist does not have direct control of independent variables because their manipulations have already occurred or because they are inherently not manipulated (**Kerlinger:** 1986, p.348). The effective application of ICT by teacher educators is investigated. The data was collected through Scaled Questionnaire and Linkert Attitude Scale. In general terms, the word Questionnaire refers to a device securing answers to questions by using a form which the respondent fills in himself (**Goode and Hatt**: 1981, p.133). The process to make standardization of Questionnaire was well studied with various references.

The Questionnaire used in this research has four parts and in last three parts there are respectively 30, 22 and 20 questions; and in Linkert Attitude Scale there are 30 questions. The total number of questions is 102 questions. The Questionnaire and Linkert Attitude Scale were prepared in Hindi and English, both languages. The research tools were presented a penal of experts for content and face validity. The penal included educational technology experts, bilingual experts and research methodology experts. As possible and suitable, each recommendation was considered to assess appropriately. The finalized Questionnaire and Linkert Attitude Scale were distributed to collect data from a small sample to check the reliability. The collected data was analyzed with split-half Reliability Method and Spearman-Brown Prophecy Formula for internal consistency reliability. The reliability was found: ICT Application Questionnaire- 0.79 and Linkert Attitude Scale- 0.76.

The standardized tools were distributed via mail, email as well as face-to-face to 430 teacher educators. The Questionnaire and Attitude Scale were received from total number of 235 teacher educators. The response rate was 54.65%. Twelve out of 235 were not usable for further analysis due to incompletion. Only 223 Questionnaires and

Attitude Scales were analyzed manually. The Mean, t-test and f-test were used for further analysis and hypothesis testing.

In this research, two types of institutions were dealt with: *Traditional and modern institutes*. Traditional institutes include *Rashtriya Sanskrit Sansthan'* eight campus, and other Sanskrit universities and institutes established in Tirupati, New Delhi, Nagpur, Varanasi, Haridwar and Jaipur mostly. Modern institutes include BHU, Varanasi; JMI, New Delhi, and other institutes of major Indian cities. State wise sample analysis reveals five states for modern and eleven states for traditional institutes were included. The total number of sample is 223 teacher educators including 155 Teacher Educators of modern and 70 Teacher Educators of traditional institution.

V. FINDINGS

Awareness Level related Generalisation General knowledge of all teacher educators about ICT is mostly found very sufficient. General knowledge of all teacher educators about MS word is mostly found very sufficient. General knowledge of all teacher educators about MS Excel, MS PowerPoint and methods of all presentation is mostly found very sufficient.

Adaptation Level related Generalisation

The application of ICT by all teacher educators is found applying mostly at occasional situations. The application of MS word, MS PowerPoint, MS Excel, email & internet and methods of the presentation through ICT by all teacher educators is found applying mostly at occasional situations, but lowest at regular situation.

Integration-Creative Level related Generalisation

All teacher educators are found

Applying ICT mostly in sporadic situations. The application of methods of the presentation through ICT by teacher educators is found applying mostly at rare situations, but lowest at the usual situations. The application of email & internet by all teacher educators is found applying mostly at intermittent situations, but they were found equally at all situations.

VI. THE EDUCATIONAL IMPLICATION

This study was executed for investigation of the levels of the application of ICTs by teacher educators and attitudes of the teacher educators towards the ICTs. Actually this study deals with two types of the research i.e. study of the levels of the application and study of the attitudes. The research as the following educational implications:

- The ICT oriented programmes should be planned and implemented to introduce the utility of Microsoft office applications in educational perspectives.
- The programmes related to the MS Excel and MS Word should be implemented at the awareness level. Especially this is very important to continuous assessment of the learners as an innovative technique.
- The programmes should be designed and implemented in the context of adaptation and integration-creative level and in this way the teacher educators should be motivated to use the ICTs in their academic environment.
- Generally the teacher educators are aware about the concepts and resources of the ICTs. In this situation the teacher education institutions should organize the training programmes, refresher courses, orientation programmes at local regions, through which the teacher educators may be more techno-friendly.
- Most the teacher educators are generally aware to the application of ICTs, but they don't use at adaptation level. They should be encouraged and empowered by the head of the institutions.
- The modern and traditional teacher educators have positive attitude, but they don't have a motivational environment for innovative technologies.
- The government and non-government teacher educators have sufficient information and aware also to the ICTs, but they are not inspired at their work place.
- The large amount of the teacher educators is full of attitudes and has sufficient knowledge, but they have no functional skills and determination to apply in the academic activities.
- Both the male and female teacher educators have the general skills, but they face the lack of such programmes, activities and environment to utilize these skills and techniques.
- Over the all teacher education institutions should be understand the responsibility to make such an environment through which the new innovative technology may be a surreal to their academic functions.
- MHRD, NCERT, SCERTs, DIETs, government and non-government institutions should generate a creative opportunities instead of heavy and ambitious guidelines and frameworks, and the supervisory committees should do their job regularly and fairly with a special attention of the implementation of the ICTs.

This is the fact that the institutions have sufficient ICT infrastructure like OHP, Computer, TV, Radio, CDs related to the learning material etc. by which they get proper report cards during the inspection of the NCTE and UGC, but the institutions don't allow to the teacher educators get and use in their academic. To accept ICTs as effective tool to communicate with learners, the teacher educators should be motivated and supported to integrate by colleagues, head of the department, principal and lab technicians etc.

VII. CONCLUSION

The application of the ICTs in teacher education institutions definitely affects the common school system. These are revolutionary changes in teacher education and education. Electronic communicational devises can provide maximum learning output and opportunities within minimum time and efforts. This is fact that ICTs (mainly the internet based technology) is unique technology to achieve the educational goals. ICTs are becoming more adaptable in teaching and education day by day. The world wide educational patterns are changing more qualitatively and effectively. One quality is more important that ICTs are supporting the learner-centered pedagogy.

The effective application of ICTs by teacher educators is very essential for overall education. Furthermore the findings of empirical observation revealed that there are some problems regarding to institutional planning and support, motivation and peer sharing of technological skills and resources. A lack of understanding to create a link between content and techno-presentation was also found. Here some programmes based practical approaches and continuing skill development is more relevant rather than any training initiative.

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