A FRAMEWORK FOR EVALUATING THE ICT USE IN TEACHER EDUCATION: A CASE STUDY OF THE COLLEGES OF TEACHER EDUCATION IN KARNATAKA

DR. G. R. ANGADI[*]

Abstract:

In this study the use of ICTs Competency Framework for Teachers (ICT-CFT), to identify the strengths and weaknesses of ICT-CFT in evaluating ICT use in Colleges of Education and to improve the ICT-CFT to meet evaluation needs of ICTs in teacher education as it is input for the study. The competency framework for teachers was then used to evaluate Information and Communication Technology (ICT) used in pre-service teacher education that is B.Ed. to enable the investigator to identify its strengths and weaknesses. The framework is then improved towards a new framework that can be effectively used to evaluate information and communication technology use in pre-service teacher education. In this study the independent variables are derived from computer use within the institution, some other extraneous factor may have impact on the results. Those factors may be computer use at home, friends home and cyber or internet centers by the respondents. It is an attempt has been made to hold these extraneous variables, but it is very difficult to determine at what extent which affect the result.

Introduction

The most obvious technique for professional development for teachers is to provide courses in basic ICTs knowledge and skills, delivered by experts in national and regional centres. These types of courses, taught at training centres or universities or colleges of education with a syllabus set by university or national agencies (NCTE/UGC), have been a common practice in India. However, this approach has had limited success without follow-on training and support, as

compared to effective use of ICTs by trained teachers. Similarly, courses for teachers in particular software and hardware applications are difficult to implement in a way that result in use of these applications in classroom instruction or other professional practices without additional support. The development of ICTs does not improve education if the focus is on ICTs. The vision must focus on what ICTs can do to improve education.Over the last decade, many countries especially India that included ICTs in education was slowly to include it in teacher education. Recently national agencies like UGC and NCTE has begun to realize the importance of educating teachers at the beginning of their careers. Younger people are more likely to be familiar with ICTs, to be adaptable, and to not yet have formed habitual modes of instruction that are more difficult to change with more experienced teachers. It is in the pre-service stage that they are most open to learning how to infuse technology into instruction. Based on their long experiences with traditional modes of learning, teacher educators may find it challenging to incorporate ICTs into their own instructional practices. They may also lack experience in developing the complex partnerships between higher education and schools that facilitate technology-rich contexts for training student teachers. To bring this about, it is usually necessary that the faculty be held accountable to standards and that the institution provides both incentives and resources to support technology-rich programmes and initiatives.One approach that encourages collaboration between the teacher education programme and the community is the formation of computer clubs for students interested in computers and education. This approach was used successfully in Russia and works well where computing resources are limited. Care must be taken, however to ensure that the emphasis is on education rather than on games or competitions. Peer tutoring models are very effective in club settings and may develop into reciprocal mentoring with teachers in which the students provide ICT training for peers and teachers and the teachers mentor the tutors' developing skills as teachers. Peer tutoring is a relatively common approach in classrooms of cultures around the world. This approach is effective even when teachers have little ICT skill and knowledge. Community members may also serve as teachers, tutors, and co-learners and the whole community may benefit economically because of an increase in the ICT skills among diverse members of the community. ICTs may also support effective professional development of teachers into how to use ICTs. A limited

* Assistant Professor, BLDEA's JSS College of Education, P. G. Dept. of Studies and Research Centre in Education, Vijayapur,Karnatak, India

initiative to integrate an innovative approach to teaching and learning with one new technology for a large population of teachers can be an important early step for a nationwide strategy.

Significance of the Study

Introducing ICTs in the education sector can be quite costly in terms of up-front costs (for acquiring basic infrastructure) and the recurrent costs (maintenance and human resources training and development). With this rise in implementation and demand comes an increased need to evaluate the effectiveness of technology in teacher education. A proper evaluation of ICT-CFT use in education in general and teacher education in particular will help us to learn from past experiences, improve service delivery, plan and allocate resources, evaluate polices and demonstrate results as part of accountability to key stakeholders. This is important since a bigger chunk of our implementation funds (MHRD NME-ICT) are to be provided for by our development partners (Intel Teach to Teachers, Microsoft IT Academy) and volunteers. The stakeholders will want to know whether the performance indicators are being achieved, hence the study.

Objectives of the Study

i.   To evaluate the overall use of ICTs Using the Information and Communication Technology Competency Framework for Teachers (ICT-CFT),

ii.   To identify the strengths and weaknesses of ICT-CFT in evaluating ICT use in Colleges of Education and

iii.   To improve the ICT-CFT to meet evaluation needs of ICTs in Teacher Education

Variables of the Study

The diagrammatic presentation of the variables involved in the study is given as follows:
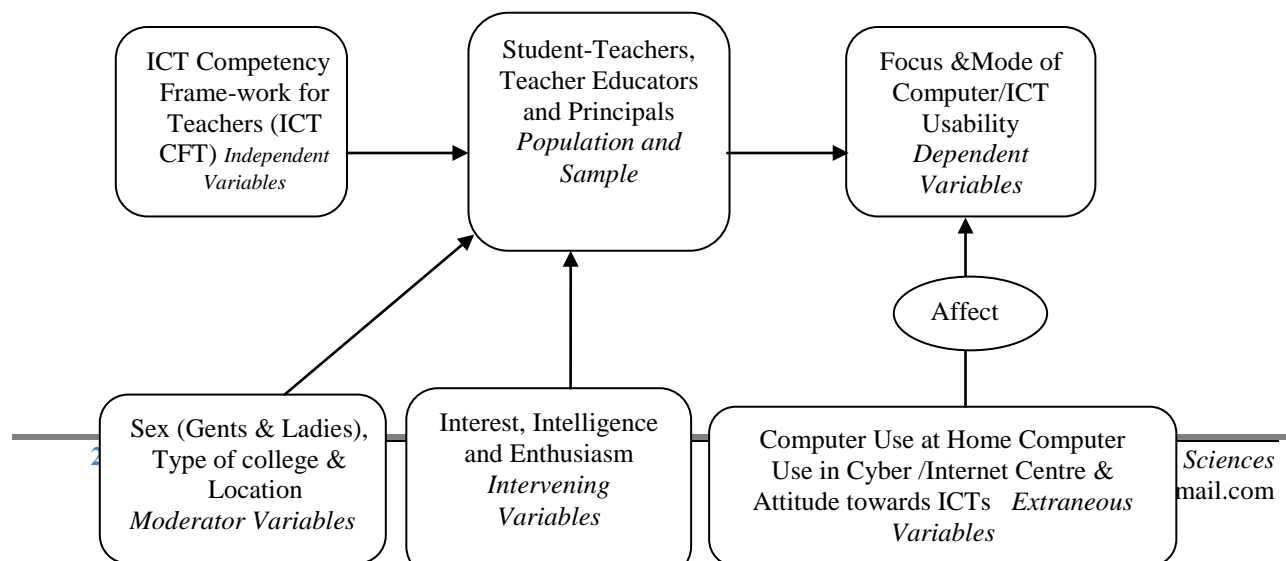
Design of the Study

The purpose of the study was to evaluate the overall use of ICTs Using the Information and Communication Technology Competency Framework for Teachers (ICT-CFT), to identify the strengths and weaknesses of ICT-CFT in evaluating ICT use in Colleges of Education and to improve the I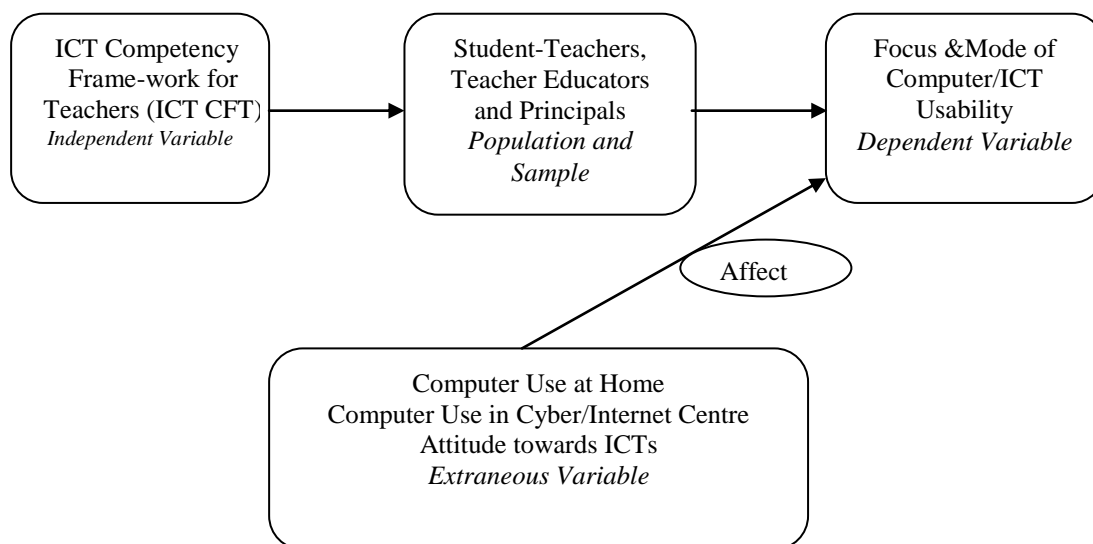CT-CFT to meet evaluation needs of ICTs in Teacher education, hence mixed method research design has been chosen to study it. The method and procedure to achieve the objectives of the study were as depicted in the following conceptual framework as follows:

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┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐
│ ICT Competency  │     │ Student-Teachers,│    │ Focus &Mode of  │
│ Frame-work for  │ ──▶ │ Teacher Educators│──▶ │ Computer/ICT    │
│ Teachers (ICT CFT)│   │ and Principals  │     │ Usability       │
│ Independent Variable│ │ Population and  │     │ Dependent Variable│
└─────────────────┘     │ Sample          │     └─────────────────┘
                        └─────────────────┘           ▲
                                              (Affect) │
                        ┌─────────────────────────────┐
                        │ Computer Use at Home         │
                        │ Computer Use in Cyber/Internet Centre│
                        │ Attitude towards ICTs        │
                        │ Extraneous Variable          │
                        └─────────────────────────────┘
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Population, Sample and Sampling Technique of the Study

The study was conducted in colleges of education in Karnataka, the colleges of education student teachers, teacher educators and principals are the population of the study. Currently there are 345 colleges of education (2015) in Karnataka which are almost all have computer laboratory and are

making efforts to establish and to improve the ICT Resource Centre as per NCTE norms. The enrollment on an average of 34500 students' yearly, for one academic year and two semesters with 2415 teacher educators and 345 principals approximately constitutes the population of the study. The sample of the study were chosen by purposively Rani Channamma University, Belagavi affiliated colleges of education, the total colleges of education in this university are 43 they are distributed in three districts Viz: Belagavi, Vijayapur and Bagalkot., It is further selected the 430 student teachers by cluster sampling technique, 258 teacher educators by simple random sampling and 30 Principals' by snowball sampling from colleges of education affiliated to RCUB.

Instruments Used for Data Collection

Questionnaire

Two different questionnaires were prepared and used for Student teachers (30 items) and Teacher educators (19 items) separately. The questionnaires consisted of both open and closed-ended questions.

Interview

Qualitative method was used in the form of in depth interview were mainly conducted with the Principals of colleges of education, the structured interview schedule have a 20 items.

Data Collection and Analysis

The data were collected respectively from student teachers, teacher educators and principals of colleges of education. General information sheet was given with the each tool for collecting personal information of the respondents. The collected data were analysed by percentage technique and interpreted it.

Major Findings of the Study

1.   Proposed framework for ICT evaluation in teacher education and the terminologies have been used as followings: Comparison of terminologies used in the general framework for monitoring and evaluating ICT in education and the proposed framework for evaluating ICT in teacher education.

General Framework for ICT monitoring & evaluating in education	Proposed framework for ICT evaluation in teacher education.
Equipment operation	ICT Usage Skills
Software use	
Instruction	Content and Pedagogy
Interaction	Collaboration and Networking

The proposed ICT framework incorporates the social and health issues components to take of the increase need for teachers to address the challenges posed by adoption of technology in the society, locally and globally.

Proposed ICT Framework
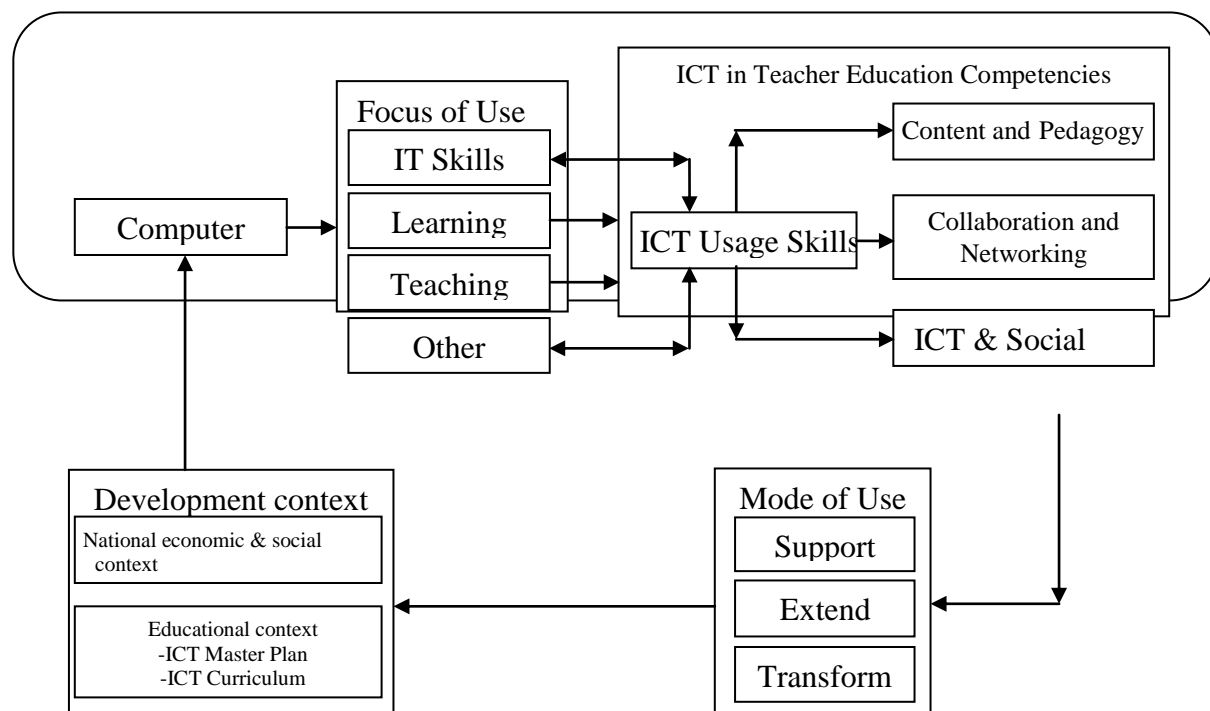
Effectiveness of the competency framework for teachers as well as computer practice framework indicated that it was reliable for measuring quantity of computer use but the focus and mode dimensions were not reliable when applied to secondary descriptions of computer use. Several

respondents commented that the difficulties encountered were due to lack of clear and detailed informative indicators. This lack of clear indicators on which to measure the focus and mode dimensions and made the research to measure those dimensions were indirectly as explained in the earlier chapter four in detail. The new framework proposed some competencies on which indicators could be based.

2.   The teacher educators were asked through the questionnaire to rate them on a three point Likert scale consisting of Very necessary, Necessary, and Not necessary. The following results were got from 258 teacher educators who answered as the (68) 26.36% of the teacher educators considered the competencies and indicators proposed in the new framework were very necessary, (138) 53.49% of the teacher educators as necessary and (52) 20.15% of the teacher educators considered them as not necessary.

3.   **Development Context**

The best practices in the integration of ICT into teacher education points to the guiding principles are proposed and recommended by international bodies. These best practices and guidelines can be adapted to meet the specific needs of every nation. International bodies like UNESCO (2002), InfoDev (2005) and SITE (2002) have recommended some guidelines to be followed when implementing ICT in teacher education. The indicators of good ICT uses in teacher education that are set up at the national level include; The ICT policy through which the government articulates his levels of support and commitment towards ICT implementation at the institutional level, the ICT infrastructure which enables to the internet and The ICT curriculum guide to the application of ICT in teacher education. These are direct and indirect effect on computer use at the institutional level.

4.   **Computer Use**

The quantity of computer use as a proportion of the available time for the learning, the dimension is concerned with the proportion of the college day during which one or more computers are in use by the student teachers or teacher educators, the college day is taken to mean the time when student teachers are in college and includes rest time, the number of student teachers using a computer is relevant or irrelevant and the number of computers in use is relevant

or irrelevant. In this new framework, the learning time includes all the eight hours (as per UGC guideline) student teachers are in college of education, given a strict and tight schedule for lessons in colleges of education, then student teachers make use of computers during the rests.

5.   **Focus of Use**

It explores the purpose of the computers use. The dimension deals with the objectives underlying the computer use. This dimension is subdivided into four parts in the proposed framework; Information Technology Skills: Using computers to help students to acquire computer skills. Learning Tool: Computer supports the learners to any aspect of their learning other than IT. Student teachers applying IT in classroom activities like seminar, assignments and projects etc. Teaching Tool: Focus is on how teacher educators use the computers to create better learning environments. Other: The use of computers for other purposes that except, IT skills, teaching-learning. It includes objectives that do not relate directly to learning and teaching.

6.   **ICTs in Teacher Education Competencies**

These competencies that teacher educators and student teachers should have in order to use ICT effectively, these are in line with the basic principles for development of effective ICT in teacher education, these are as follows; Technology should be infused into the entire teacher education program. Student teachers should learn about and with technology and how to incorporate it into their own teaching. Technology should be introduced in context. Pre-service student teachers should learn many uses of technology because they are integrated into their course study and field experiences. Teacher educators should expose the pre-service student teachers to regular and pervasive modeling of technology and provide opportunities for them to teach with technology. Student teachers should experience innovative technology supported learning environments in their teacher education program.

7.   **ICT Usage Skills**

In the proposed ICT framework, ICT usage skills support all the areas of technology use in teacher education. This approach is taken because technology should pervade the entire teacher education program (SITE, 2000). Indicators for evaluation in ICT usage skills can be developed around the following two areas; Demonstration of introductory knowledge, skills and

understanding of concepts related to technology and Demonstration of continual growth in technology, knowledge skills to stay abreast of current and emerging technologies.

8.   Content and Pedagogy

Content and pedagogy can further divide into three areas mainly to ease the development of indicators.

a) Planning and Designing Learning Environments

Teachers should be able to plan and design learning platforms that are supported by technology that include; Design appropriate learning opportunities that apply technology to support diverse needs of the learners, Apply current research on teaching and learning with technology when planning learning environments, Identify and locate technology resources and evaluate their potential value in classroom use sustainability, Plan for the management of the technology resources within the context of learning and Plan strategies to mange student learning in technology enhanced context.

b) Teaching, Learning and Curriculum

Indicators in this area can be clustered around the following areas; Use technology to support learner centered strategies that address diverse needs of the student teachers, Apply technology to develop student teachers higher order skills and creativity and Mange student learning activities in a technology enhanced environment.

c) Assessment and Evaluation

It involves evaluating a teacher educator's competence in applying technology to a variety of effective assessment and evaluation; Application of technology in assessing student teachers learning of a subject using a variety of assessment strategies. Using technology resources to collect data, interpret the results, and communicate findings to improve instructional strategies. Determine student teachers appropriate use of technology resources for learning, communication and productivity and evaluate the ways in which use of ICTs changes the nature of teaching and learning.

9.   Collaboration and Networking

Teacher educators use technology to enhance their productivity and professional practice by; Use of technology to engage in on-going professional development and lifelong learning. Using technology to share best practice and reduce bureaucracy and Use technology to collaborate with peer professionals, subject forums and the larger community in order to nurture student learning.

10.   Social and Emerging Issues

Teacher educators should understand the social, ethical, legal and human issues surrounding the use of ICTs in school and colleges and apply that understanding in practice by; Model and teach legal and ethical practice related to technology use. Apply technology resources to enable and empower learners with diverse backgrounds, characteristics and abilities. Promotion of safe and healthy use of technology resources and facilitate equitable access to technology resources for all student teachers and teacher educators.

11.   Mode of Computer Use

The mode of computer use component of the proposed framework is concerned with the impact that computer use has on the curriculum.

Summary and Conclusion

As technological advances continue to evolve and proliferate, teachers, teacher educators and administrators have sought to integrate technological innovations into the classroom. Teacher educators who wish to update and upgrade their teaching and learning designs using new learning technologies have some difficult issues to confront. Whether they are working in colleges, or colleges of education the incorporation of new technologies into their teaching requires them to learn about a very different approach to teaching and learning, and develop new digital materials and online activities ahead of the start of the course. This is complex design and development work that has to be done on top of the delivery of their current teaching. Some institutions recognize this and allow staff significant time to develop their ideas, skills, and designs. Very few allow adequate time. However, the expectations of teaching staff keep expanding: that they should learn to be ahead of their 'digital native' student teachers, should build 21st century skills into the curriculum even though they have not been trained themselves, and should develop wholly new ways of conducting teaching and learning. It is an impossible

task, and it is time we recognize that teacher educators are deserve far more help with the development of digital learning. This study investigated that the quantity of computer and ICT use in teacher education institutions is less and it is mainly focused on the learning of ICT skills which takes optimum time computers are used. The study concludes that the reality rhetoric gap of the impact of ICTs in teacher education institutions be evaluated from periodically to ensure that the quality with program objectives are met. The result shows that there is an urgent need to conduct intensive training to all the teacher educators in the colleges of education. The curriculum developers should develop global content for serving the local needs and make it to available to all the colleges of education online as well as offline content or blended learning modules. Several factors have been cited as responsible for low quantity of computer use in colleges of education. Some of these factors are; attitude towards new technologies, poor management, lack of local content serving local needs, shortage of equipments, lack of quality hardware and software, lack of training, confidence, knowledge, interest, relevancy, technical support, lack of realization of advantages, lack of time, peer support, lack of administration/organization and power failure. teacher educators need to 'learn by doing', become a network, use pedagogical patterns to exchange good ideas, use OER to populate the well-designed pattern and to improve the use of ICT in teaching-learning-evaluation process.

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