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INTEGRATION OF ICT INTO TEACHER EDUCATION : ICT COMPETENCY LEVELS OF TEACHER EDUCATION

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ABSTRACT

The present Era of Teacher Education aims to prepare ICT competent Teachers. Technology integration has become part and parcel of the Education system. This was proved when the deadly pandemic hit the world. Most of the countries suffered in many sectors. One of the most affected areas is the education sector. Except for the highly developed countries, the countries which needs to equipped with Techno competent education system could not combat the situation. This clearly indicates the importance of integration of ICT in Teacher Education. Teachers are the corner stones of the society. They need to be upgraded with the new technologies which makes teaching and learning easy. The world took the place of a Global village and knowledge has become more accessible in nano seconds through the Internet. Online teaching has taken up a pivotal place in disseminating knowledge. Teachers should be in a position to integrate technology into Teaching-learning process. This can be feasible only through upgraded Teacher Education curriculum. Teacher Educators are expected to have required ICT competencies. An empirical Research is made with the title " Integration of ICT into Teacher Education : Competencies of Teacher Educators." The study focuses on levels of ICT Competencies of Teacher Educators of Rayalaseema region, Andhra Pradesh India. The sample consists of 600 teacher Educators. A self-developed tool was administered for the present study. The study indicated that there is no significant difference in the ICT Competencies of Teacher educators of with respect to the Gender (Male/Female), Academic stream (Arts/science) and the locality of the teacher education institutions (Rural/Urban).

Key words: Technology in Education, Teacher Educators, ICT Competencies of Teacher Educators, ICT integrated Teacher Education.

INTRODUCTION

21st century has brought in unprecedented changes in Economy, Polity and Education. It resulted in modernization, the latest developments in science and technology, digital media evolution, globalization of education and the ever expanding contemporary challenges are revolutionizing the education scenario. A paradigm shift has been noticed that National education became Global education, University education became lifelong education and teacher- centric education became learner centric education. These changes make new demands and embark fresh challenges to the established education systems and practices in the country. Many developing countries are Professional development of Education system. India is enormously diversified country. The diversity in the professional educational establishment and to accommodate the diverse needs of the rural populations which is spread out over a large geographical area in about Millions of villages, most of which are very small and remote, India needs to adopt appropriate curricula which is apt for the needs of diversified socio-cultural groups. This can be achieved by the capacity building of Teachers through arranging Seminars, workshops and providing ICT Competence training. ICT enabled education is not only and can be cost effective but also make education effective and efficient with customized learning, and continuous support.



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NEED AND SIGNIFICANCE OF THE STUDY

The Indian scenario of the classroom has changed a lot comparatively in Urban areas. There was a technological space separating the development of the community and instructional activities of the teacher in the classroom. Now a days, primarily due to Pandemic, many of the developing countries including India has realized the importance of ICT enabled education. Previously, Indian society though the technology has revolutionized the teaching - learning activities at school level far away from ICT, classroom the knowledge is imparted by the teacher this kind of teaching is totally a teacher centric in nature. Present 21st Century's education is purely student centric education. A student learn from multi sources and for this reason use of ICT and Multimedia is an essential commodity in educational field and simultaneously teacher's knowledge of ICT and Multimedia also required. So the present investigation has greater importance because this study focuses on ICT competencies of teacher educators.

OBJECTIVE OF THE STUDY

The objective of the present research is to find out the ICT Competency in Teacher Educators in 21st Century's Teacher Education in India.

METHODOLOGY

The present study is based on secondary sources like Educational Articles, Educational Journals, Educational research Thesis, University News feeds, Expert opinion and websites etc., the method used is Descriptive Analytic method.

INTEGRATION OF ICT IN TEACHER EDUCATION CURRICULUM

Use of ICT within Teacher-Training programs around the world is being approached in a number of ways with varying degrees of success. These approaches were subsequently described, refined and merged into four primary approaches.

1. ICT SKILLS DEVELOPMENT APPROACH

Here, importance is given to providing training for ICT competencies in general. Student-teachers are expected to be skilled users of ICT in their day-to-day activities. Knowledge about various features of Software, Hardware and their use in educational process is provided.

2. ICT PEDAGOGY APPROACH

This approach emphasizes on integrating ICT skills in respective subjects, drawing on the principle of constructivism, preservice teachers design lessons and activities that centre on the use of ICT tools that will foster the attainment of learning outcomes. This approach is useful to the extent that the skills enhance ICT literacy skills, and the pedagogy allows students to further develop and maintain these skills in the context of designing classroom-based resources. Students who have undergone this type of training have reported significant changes in their understandings associated with effective implementation strategies, as well as their self-efficacy as to their ICT competencies.

3. SUBJECT- SPECIFIED APPROACH

Here ICT is embedded into one's own subject area. By this method teachers not only expose students to new and innovative ways of learning, but also provide them with a practical understanding of what learning and teaching with ICT looks and feels like. In this way, ICT is not an 'add on', but an integral tool that is accessed by teachers and students across a wide range of the curricula.



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4. PRACTICE-DRIVEN APPROACH

Here the emphasis is on providing exposure to use of ICT in practical aspects of Teacher Training also. Emphasizing on developing lessons, assignments etc., using ICT and implementing these in their practical work experience at various levels, the students are provided with an opportunity to assess the facilities available at workplace and effectively use their own skills to manipulate these facilities. Based on the concept that the pre-service teacher is a learner, manager, designer and researcher and expected to research their practicum school's ICT facilities, design ICT activities with their tutor-teacher, manage those activities in the classroom, and evaluate their effectiveness in terms of student learning. Ideally, an integrated approach is to be followed for developing ICT skills in teaching. Whatever may be the approach followed in the institutions to develop knowledge about ICT, it has its own limitations and coupled with other reasons, they are not making student-teachers fully confident of using ICT in their day-to-day classrooms and other situations. In the general opinion, all the four approaches are required to develop awareness of expert level skills in Student Teachers.

RECENT TRENDS IN TEACHER EDUCATION

Based on the various changing needs of the community, emphasis was given to the various educational theories and practices as well. According to these theories and practices, changes undergone in teacher education as well. It is inevitable that teacher education must integrate ICT in the Teacher education Curriculum. Teachers should be proficient in ICT skills and master in Techno- Pedagogy. Nowadays, some of the new progression in teacher education are Inter-disciplinary Approach, Correspondence courses, orientation courses, Simulated Teaching, Micro Teaching, Programmed Instruction and Team Teaching are also used in teacher education. Now-a-days Action Research also implemented in Teacher Education. ICT acts as a Portal to the window of knowledge and information and keeps teachers updated with new technologies which are useful in Teaching - Learning Process.

DIFFERENT STRATEGIES FOR APPLYING ICT IN TEACHER EDUCATION

Providing adequate infrastructure and technical support. Applying ICT in all subjects. Applying new Pre-service teacher Education curriculum. By using application software, using multimedia, Internet email, communities, understanding system software.

CREATING A LEARNING ENVIRONMENT FOR THE 21st CENTURY

We can create a learning environment by integrating constructivist theory and information and communication technologies into our educational institutions. This will be made possible by developing greater motivation among the teachers.

- ❖ Making workforce more flexible and creative.
- ❖ Reducing isolation among teachers.
- ❖ Making teacher a facilitator of knowledge construction
- ❖ Improving social interaction among the students
- ❖ Sharing knowledge between the students and teacher and among the students.
- ❖ Sharing the duty for the total development of students and collective duty for students success.



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- ❖ Developing interdependency and interdisciplinary approach.
- ❖ Changing the role of the student, teacher and community
- ❖ Implementing the framework of content, pedagogy and technology integration in the classroom
- ❖ Providing access to the information resources and focusing on learning with technology and
- ❖ Encouraging innovation and creativity in the classroom.

CONTRIBUTION OF ICT IN 21st CENTURY'S TEACHER EDUCATION IN INDIA

1. ICT helps teachers in both pre-service and in-service teachers training.
2. ICT helps teachers to interact with students.
3. It helps teachers in preparation their teaching and to provide feedback.
4. ICT enables teachers providing access with different educational institutions and Universities, NCERT, NAAC NCTE and UGC etc.
5. It helps in improving Techno Pedagogical skills improves innovative Teaching.
6. It also improves the Professional Development and Educational management of the teachers.
7. It enhances Active Learning of teacher Trainees.
8. It helps in Assessments and instant feed backs.
9. It is used as an "assisting tool" while making assignments, communicating students and Parents, collection of data and documentation of lesson plans and students' progress.
10. ICT as a popular tool for organization and management in Institutions.

Objectives Of The Study:

1. To study the ICT Competencies of Teacher Educators in respect to the gender background of Teacher Educators.
2. To study the ICT Competencies of Teacher Educators in respect to the Academic Stream (Art/Science) of the teacher educator.
3. To study the ICT Competencies of Teacher Educators in respect to the locality (Rural/Urban) of the Teacher Education Institution.



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Hypothesis:

- ❖ There is no significant difference in the ICT Competencies of the Teacher Educators in respect to their Gender background.
- ❖ There is no significant difference ICT Competencies in respect to the Academic streams (Arts/Science) of the teacher educator.
- ❖ There is no significant difference in ICT Competencies in respect to the locality (Rural/Urban) of the teacher education institution.

Variables:

Dependent Variable: The ICT Competencies of the teacher educators.

Independent Variables:

1. Gender back ground of the teacher educators.
2. Academic Stream of the teacher educator and
3. The locality (Rural/Urban) of the teacher education institution.

Sample: Simple random sampling technique was used to select a sample of 196 teacher educators from the population i.e., Teacher education of colleges of Rayalaseema Region of Andhra Pradesh. Out of 196 teacher educators, 131 were made teacher educators and the remaining 65 were female teacher educators.

Research Tool: Preliminarily, the researcher has prepared a questionnaire with 70 items to study the ICT Competencies of teacher educators and conducted a pilot study on 82 sample. The collected data was computed. The items which are significant at 0.05 level were retained and the items which are not significant at 0.05 level are deleted. Among 70 items 63 questions were retained and 7 items were deleted. After finalizing the tool the researcher has conducted the final study on a sample of 80 teacher educators. The collected data was computed and analysed. And the following are the results.

Research Design: Survey method was found to be more suitable hence, used in this study. The researcher adopted the statistical techniques of arithmetic Mean, Standard Deviation and the ‘t’ test were calculated. The data coded and prepared for analysis using the statistical package for social sciences (SPSS).

Data Analysis: There is significant difference in the ICT Competencies of teacher educators in respect with Gender, Academic Stream and the locality (Rural/Urban) of the teacher education institution.

Table-1: Frequency Distribution

Levels of Competencies	Frequency	Percentage
Low	196	32.7
Moderate	222	37.0
High	182	30.3
Total	600	100.0



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Table-2: Gender*Levels Of Competencies

Gender		Levels of Competencies			Total	Chi-Square
		Low	Moderate	High		
Male	N	131	161	118	410	3.033@ Df: 2 <i>p-value:</i> 0.220
	%	32.0	39.3	28.8	100	
Female	N	65	61	64	190	
	%	34.2	32.1	33.7	100	
Total	N	196	222	182	600	
	%	32.7	37.0	30.3	100	

In the table - 2, the values of the male and female teacher educators are distributed and the Chi-square values were calculated. The obtained Chi-square value 3.033 which is less than the table value of 3.841 and not significant at 0.05 level. Therefore it is confirmed that the Gender of the Teacher Educators does not have any significant difference in ICT competency levels. So, the formulated hypothesis is accepted.

As per the values of table – 2, it is clear that both male and female teacher educators almost have the same levels of ICT Competencies. This may be due enormous usage of Smart gadgets, online teaching tools, compulsory online teachings and trainings during the Pandemic and lock down situations. This result is not in conformity with the research done by Venumadhav & Prof.Mahender Reddy Sarsani (2022) on “Teacher Educators’ ICT Competencies in relation to their background variables.”

Table – 3: Academic Stream * Levels Of Competencies

Academic Stream		Levels of Competencies			Total	Chi - Square
		Low	Moderate	High		
Pedagogies	N	54	69	56	179	6.395@ Df: 4 <i>p-value:</i> 0.172
	%	30.2	38.5	31.3	100	
Perspectives	N	65	58	46	163	
	%	39.9	35.6	24.5	100	
Pedagogies & Perspectives	N	77	95	86	258	
	%	29.8	36.8	33.3	100	
Total	N	196	222	182	600	
	%	32.7	37.0	30.3	100	

In the table -3, the values of the teacher educators’ Academic Streams are distributed and the Chi-square values were calculated. The obtained Chi-square value 6.395 which is less than the table value of 7.815 and not significant at 0.05 level. Therefore it is confirmed that the Academic streams of the Teacher Educators does not have any significant difference in ICT competency levels. So, the formulated hypothesis is accepted.



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As per the table – 3 values, the Academic stream of teacher educators does not have the significant impact on their levels of ICT Competencies. This may be due enormous usage of Smart gadgets, online teaching tools, compulsory online teaching and trainings during the Pandemic and lock down situations. These findings are in conformity with the study conducted by Debdas Mandal (2021) conducted “Teacher Educators Teaching Competency of West Bengal towards ICT.”

Table – 4: Age* Levels of Competencies

Age		Low	Moderate	High	Total	Chi - Square 2.964@ Df: 6 <i>p-value: 0.813</i>
Up to 30 yrs	N	67	69	57	193	
	%	34.7	35.8	29.5	100	
31 – 40 yrs	N	59	62	55	176	
	%	27.4	40.4	32.2	100	
41 – 50 yrs	N	40	59	47	146	
	%	33.5	35.2	31.2	100	
51 yrs and above	N	30	32	23	85	
	%	35.3	37.6	27.6	100	
Total	N	196	222	182	600	
	%	30.7	37.0	30.3	100	

In the table – 4, the values of the teacher educators’ ages are distributed and the Chi- square values were calculated. The obtained Chi-square value 2.964 which is less than the table value of 3.841 and not significant at 0.05 level. Therefore it is confirmed that the Age of the Teacher Educators does not have any significant difference in ICT competency levels. So, the formulated hypothesis is accepted.

As per the table - 4, the age factor of teacher educators does not have significant impact on the levels of ICT Competencies. This may be due enormous usage of Smart gadgets, online teaching tools, compulsory online teaching and trainings during the Pandemic and lock down situations. These findings are not in conformity with the study conducted by Subhaveera Pandiyan A & R. Nanda Kumar on “ A study of Teacher Educators ‘ Skill and ICT integration in Online Teaching during the Pandemic Situation in India.”

Educational Implications:

The implications of the present study revealed that there is no significant difference between the levels of ICT Competencies of Teacher Educators working in different Teacher Education Institutions at Rayalaseema region of Andhra Pradesh in respect to their Gender (female/male), Academic streams (Pedagogies/Perspectives/Pedagogies and Perspectives) and the Age (up to 30 yrs./31 -40 yrs./ 41 – 50yrs/ 51 yrs. and above). Male and female teacher educators, Teacher educators with different Academic Streams and of different Age groups are showing almost the same levels of ICT Competencies. This might be because of the fact that these days usage of smart gadgets has



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become a mere need. Especially, during the Pandemic Situations the Teachers and Academicians faced a challenge of getting acquainted with new technologies, Online teaching software workshops and Training sessions from experts and also from YouTube recourses. This shows that there is an immense need to integrate ICT into Teacher education. Teacher Educators are very much ready for the new curriculum and new challenges. This can improve the ICT competency levels of Pre-service and In-service Teachers as well.

Recommendations:

The following suggestions can be considered for the further study / research.

1. This Investigation was limited to D.Ed, B.ED and M.Ed levels of Teacher education Institutions. B.Ed. (Special Education), B.Ed (Physical Education) can be considered for further research.
2. This Investigation can be considered on vast variables such as Teaching aspects, Learning aspects as well as Evaluation aspects.
3. Similar research can be carried out in other districts as well as other states.
4. An investigation can be done on a large sample belonging to different states so that the results can be generalized in our country.
5. The same investigation can be considered on academic standards of the teacher education institution.

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