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Impact of ICT Competencies on Teaching Learning among Teacher Educators

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Abstract
Teachers are being seen as the key players in using ICT in their daily classrooms, due to the capability of ICT in providing a dynamic and proactive teaching-learning environment. There is no doubt that the changing technology in this contemporary society is used more and more widely, especially for the purpose of teaching and learning. ICT has become an ideal source for teachers to update their knowledge and support in preparing students for life in the 21st century. This paper would become evidence for making a strategic planning for the policy and decision makers to develop the competency of ICT skills among teacher educators. The present paper illuminates the ICT competencies of teacher educators who frequently use ICT for teaching and learning process. It represents a starting point for looking at solutions and emerging challenges among the faculty members of teacher education institutions. It focuses on the need for continuing training and orienting through seminars, workshop, and orientation programme on ICT. ICT would assure their demands for enhanced teaching learning skills to attain fruitful results.

Keywords: ICT competencies, teacher educators.

Introduction
Information and Communications Technology (ICT) has gone through innovations and transform our society that has totally changed how people think, work and live. As part of this, teacher educators imbibe ICT skills to prepare student trainees to live in "a knowledge society" and need to consider ICT and knowledge of e-resources in conjunction with preparing students for the current digital era. ICT has become an ideal source for teachers to update their knowledge and support in preparing students for life in the 21st century.

The study is restricted to look into the ICT Skills among teacher educators of this university, teachers are the back bone of the nation building so it is essential for the teachers to improve their ICT skills. Therefore, the researcher has made an attempt to know their skills and competencies in relation to the use of e-resources as well.

ICT Meaning and Components of ICT
ICT is an umbrella term that includes all technologies for the manipulation and communication of information. The term "ICT" describes the use of computer-based technology and the Internet to make information and communication services available to a wide range of users. Maximizing ICT potentials will involve quality ICT policy, greater involvement of private and public in the funding of the implementation, and proper implementation and monitoring. ICT is a scientific, technological and engineering discipline and management technique used in handling information, its application and association with social, economic and cultural matters".

ICT in Teaching and Learning
ICTs enable the handling of information and facilitate different forms of communication. The field of education has been affected by the penetrating influence of information and communication technology. Undoubtedly, ICT has impacted on the quality and quantity of teaching, learning, and research in traditional and distance education institutions. In concrete terms, ICT can enhance teaching and learning through its dynamic, interactive, and engaging content; and it can provide real opportunities for individualized instruction. Information

and communication technology has the potential to accelerate, enrich, and deepen skills; motivate and engage students in learning; helps to relate school experiences to work practices; helps to create economic viability for tomorrow's workers; contributes to radical changes in school; strengthens teaching, and provides opportunities for connection between the school and the world.

Types of ICT Tools for Teaching and Learning

ICT tools stand for Information Communication Technology tools. The ICT tools mean to digital infrastructures like computers, laptops, printers, scanners, software programs, data projectors, and interactive teaching box. The ICT devices are the latest tools, concepts and techniques used in student-to-teacher, student-to-student interaction for example:- clicker devices, mobile applications, flipped classroom for information and communication technology.

- **Educational Networking:** Online learning platforms that connect learners using social networking technologies, exhibiting similar functions to sites like Facebook or My Space Examples: Ning, Classroom 2.0, Elgg
- **Web-Based Learning:** A set of online applications or services that expand learners' abilities to interact and collaborate with each other in the process of searching, receiving, organizing, and generating educational content Examples: Wiki, blog, podcasting, social bookmarking, virtual worlds
- **Mobile Learning:** Mobile devices or technologies used for educational purposes that support different aspects of instruction or make new educational activities available Examples: Smartphone, PDA, GPS (for augmented reality games), interactive response pads
- **Classroom Equipment:** Stand-alone devices that are used in traditional classrooms to facilitate the interaction between teachers and students in different class activities Examples: Interactive whiteboard, touchscreen computer, Kiosk

Objectives

1. To explore the ICT competencies possessed by the Teacher Educators of Colleges of Education
2. To identify the level of ICT competencies of male and female Teacher Educators of College of Education.
3. To trace the ICT competencies of below 10 years, 11 to 15 Years and above 15 years teaching experience of Teacher Educators of College of Education.

Research Title

The present research is entitled as: "Impact of ICT Competencies on Teaching Learning among Teacher Educators".

Design of Study

The researcher has adopted a single-group experimental design technique for attaining the objectives and hypotheses. The study aims to understand the ICT competencies of Teacher educators. The study illuminates the ICT competencies and how best teacher educators who frequently use ICT for teaching and learning process.

- **Efficacy:** The word "efficacy" is mostly used in a scientific setting. Asking about the efficacy of an intervention is asking whether it can achieve the desired result, even if that's under very specific and controlled conditions. Efficacy is the ability to create the expected effect[16].
- **ICT Competencies:** are about understanding and applying a range of telecommunications and computers, software, storage, audio-visuals, and other applications.
- **Teacher Educators:** are the person who teaches the skills you need to be a teacher in a school/college. Teacher educators are educational qualified professionals who actively facilitate the formal and informal learning of teachers and student teachers[15].

Hypothesis

1. **Hypothesis-1:** There is no significant difference in pre and post-test scores of ICT competencies of Teacher Educators of the College of Education.
2. **Hypothesis-2:** There is no significant difference between mean scores of ICT competencies of male and female Teacher Educators of College of Education.
3. **Hypothesis-3:** There is no significant difference between mean scores of ICT competencies of below 10 years, 11 to 15 Years and above 15 years teaching experience of Teacher Educators of College of Education.

Population, Sample and Sampling Technique

For the present study, the teacher educators working in teacher education institutions affiliated to Rani Channamma University, Belagavi are considered as population of the study. There are 493 teacher educators working in B.Ed. colleges of Rani Channamma University, Belagavi. The purposive sampling technique was employed in the present study. Teacher Educators working in Teacher Education Institutions were considered as the sample. 30 Male Teacher educators and 30 female teacher educators, were selected constituting a single-group experimental design based on the preliminary information collected.

Tools Employed for Data Collection

The teacher made tool was used for the testing of ICT Skills among Teacher Educators. It has five dimensions covering the components of ICT

Statistical Techniques Used in the Study

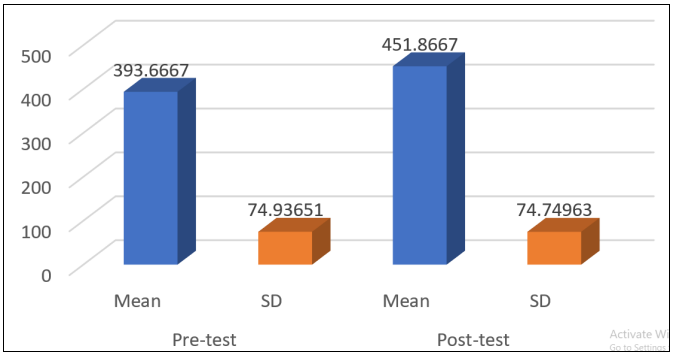
To fulfil the objectives, hypotheses and purposes were tested by using an Independent Sample t-test, ANOVA, AND POSTHOC (Turkey HSD test) test and the results obtained thereby have been interpreted.

Hypothesis-1: There is no significant difference between pre and post test scores of ICT competencies of Teacher Educators of College of Education.

Table 1: Comparison of difference between pre and post test scores of ICT competencies of Teacher Educators of College of Education.

Test	N	Mean	SD	t-Value	p-Value	Sig
Pre-test	60	393.6667	74.93651	74.549	.000	S
Post-test	60	451.8667	74.74963		p < .05	Rejected

From the above table, it is evident that the obtained p-value is .000 and t-value is 74.549. Here, p-value is less than .05 level of significance. Hence, Null Hypothesis is rejected and Research Hypothesis is accepted. It indicates that there is a significant difference between pre and post test scores of ICT competencies of Teacher Educators of Colleges of Education, at 0.05 level of significance, t= 74.549, p <.05. Further, it is observed that the mean score of post-tests is higher than the pre-test. It signifies that, due to the intervention, ICT competencies scores are increased in post-test. The results are also shown in the graph below.



Graph 1: Comparison of difference between pre and post test scores of ICT competencies of Teacher Educators of College of Education.

Graph: Comparison of difference between pre and post test scores of ICT competencies of Teacher Educators of College of Education.

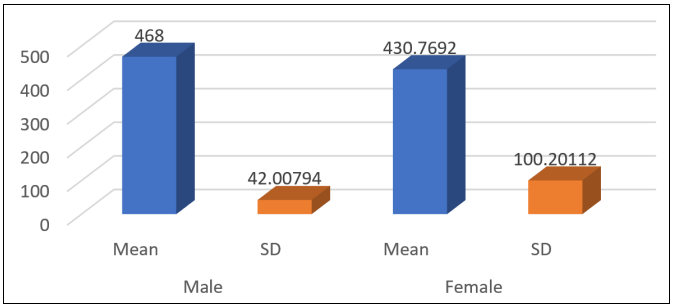
Analysis and interpretation of data, which includes the paired 't-test and independent 't-test, ANOVA and Turkey's Post hoc tests are applied are given in the chapter to follow.

Hypothesis-2: There is no significant difference between mean scores of ICT competencies of male and female Teacher Educators of College of Education.

Table 2: Comparison of difference between mean scores of ICT competencies of male and female Teacher Educators of College of Education

Gender	N	Mean	SD	t-Value	p-Value	Sig
Male	34	468.0000	42.00794	1.779	.085 p > .05	NS Accepted
Female	26	430.7692	100.20112			

From the above table it is evident that, the obtained p-value is .085 and t-value is 1.779. Here, p-value is higher than .05 level of significance. Hence, Null Hypothesis is accepted and Research Hypothesis is rejected. It indicates that, there is a significant difference between mean scores of ICT competencies of male and female Teacher Educators of College of Education at .05 level of significance, t= 1.779, p >.05. Thus, it is observed that there is no significant influence of gender on ICT competencies of Teacher Educators of College of Education. The results are also shown in the graph below.



Graph 2: Comparison of difference between mean scores of ICT competencies of male and female Teacher Educators of College of Education

Gender: Comparison of difference between mean scores of ICT competencies of male and female Teacher Educators of College of Education

Hypothesis-3: There is no significant difference between mean scores of ICT competencies of below 10 years, 11 to 15 Years and above 15 years of teaching experience Teacher Educators of College of Education.

Table 3: Table: The ANOVA Test results of comparison mean scores of ICT competencies of below 10 years, 11 to 15 Years and above 15 years of teaching experience Teacher Educators of College of Education.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	52455.268	2	26227.634	5.393	.007
Within Groups	277207.665	57	4863.292		
Total	329662.933	59			

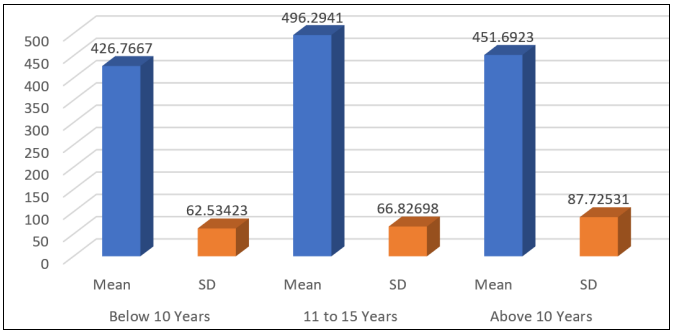
From the above table, it is evident that the obtained p-value is .007 and F-value is 5.393 with 2 and 57 degrees of freedom. Here, p-value is less than .05 level of significance. Hence, Null Hypothesis is rejected and Research Hypothesis is accepted. It indicates that, there is a significant difference between mean scores of ICT competencies of below 10 years, 11 to 15 Years and above 15 years teaching experience Teacher Educators of College of Education at .05 level of significance, F= 5.393, p <.05. Further, multiple comparison performed using Tukey Post-Hoc test procedure and reported in following table.

Table 4: Post hoc test for difference between mean scores of ICT competencies of below 10 years, 11 to 15 Years and above 15 years of teaching experience Teacher Educators of College of Education.

Teaching Experience	N	Mean	SD	Experience	
				11 to 15 Years	above 15 years
below 10 years	30	426.7667	62.53423	.005 (*p*<.05)	.532 (*p*>.05)
11 to 15 Years	17	496.2941	66.82698		.201 (*p*>.05)
above 15 years	13	451.6923	87.72531		

From the above table, it is evident that the obtained p-value is less than .05 for the difference between the mean scores of below 10 years and 11 to 15 Years teaching experience teacher educators [p = .005]and whereas the obtained p-value is higher than .05 for the difference between the mean scores of below 10 years and above 15 Years teaching experience [p = .532] and 11 to 15 Years and above 15 Years teaching experience [p = .201] teacher educators with respect to ICT competencies. It means,

- The 11 to 15 years teaching experience teacher educators were found to be higher ICT competencies than the below 10 years teaching experience teacher educators in college of education.
- The below 10 years and above 15 years of teaching experience teacher educators of college of education showed same ICT competencies.
- The 11 to 15 years and above 15 years of teaching experience teacher educators of college of education showed the same ICT competencies.



Graph 3: Comparison of mean scores of ICT competencies of below 10 years, 11 to 15 Years and above 15 years of teaching experience Teacher Educators of College of Education.

Graph: Comparison of mean scores of ICT competencies of below 10 years, 11 to 15 Years and above 15 years of teaching experience Teacher Educators of College of Education.

Findings

1. There is a significant difference in pre and post test scores of ICT competencies of Teacher Educators of Colleges of Education, at .05 level of significance, t= 74.549, p <.05.
2. There is no significant difference between mean scores of Computer Operation Basic Skills of male and female Teacher Educators of College of Education at .05 level of significance, t= 2.149, p < .05.
3. There is significant difference between mean scores of ICT competencies of below 10 years, 11 to 15 Years and above 15 years teaching experience Teacher Educators of College of Education at .05 level of significance, F= 5.393, p <.05.
4. It is evident that, the obtained p-value is less than .05 for the difference in the mean scores of below 10 years and 11 to 15 Years teaching experience teacher educators [p = .005]and whereas the obtained p-value is higher than .05 for the difference in the mean scores of below 10 years and above 15 Years teaching experience [p = .532] and 11 to 15 Years and above 15 Years teaching experience [p = .201] teacher educators with respect to ICT competencies.

5.15 Educational Implications of the Study

i) **Level of Support:** there is need of proper orientation for teacher educators to update their knowledge according to the neds of 21st century learners. The educational institutions should provide an opportunity to such interested teacher educators to take part in seminars conferences and workshops. Virtually all teacher education institutions should offer some support.

ii) **Finances:** most of the teacher education institutions are having lack of financial support for enhancing infrastructure and e resources in the institutions. Institutions may provide certain amount of funding to raise ICT resources which are essential for teaching learning process.

iii) **Extra Training:** teacher education institutions should provide extra training for teachers who needs to enhance their ICT skills.

iv) **Teachers Attitude:** faculty members of the teacher education institutions also should accept their difficulties in learning ICT skills. The teachers' willingness to acquire ICT skills also helps in building good academic environment.

v) **Faculty Support:** Some teacher educators are good in handling ICT and competent in using e resources such teacher educators should support their colleagues in enhancing their knowledge on e-content.

vi) **Use of ICT:** Use of ICT will support the teaching learning process in a better way and make the future generation learning happy and healthy.

5.16 Recommendations

- Help teacher educators to understand the importance of ICT skills and e resources in the 21st century.
- Reinforce the forms and functions of print, media, e-resources and other ICT oriented pedagogical skills found useful in classroom.
- Teach and reinforce various e resources and ICT skills.
- Promote ICT awareness by helping teacher educators to identify ICT skills and e resources.
- Allow teacher educators to make use of ICT resources available in their institutions.
- Provide many opportunities for teacher educators to take part in various academic activities like seminars, conferences, workshops on ICT skills and e- resources.
- Use as much as possible the ICT peripherals in the classrooms.
- Provide activities to student teacher that allow them to make use of e resources and ICT skills.
- Identify the content which can be taught through ICT skills.
- Use auditory and visual aids to help children understand how to identify, segment, and blend the resources in their learning.
- Give children a variety of opportunities to ICT skills.
- Introduce new or difficult ICT skills in the classroom and provide an opportunity to practice them on their own.
- Build ICT skills and e resource connections that encourage student teachers to become involved actively in their teaching learning process.

Conclusion

The study is mainly concentrating on the ICT competencies and their use of e- resources by the teacher educators working in Affiliated B.Ed. Colleges of Teacher Education. It is essential to update their knowledge in this digital era as per requirement of the latest trends and approaches in teaching learning process. Therefore, the researcher has made an attempt to know their strengths and weaknesses in ICT and its impact on use of e-Resources for their academic enhancement and better dissemination of knowledge in teaching.

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