

Ramifications of ICT in Teacher Education: A Study on Behavioural Attitudes of Students

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Received: 16-September-2022

Revised: 22-November-2022

Accepted: 10-December-2022

ABSTRACT

Incorporating information and communication technologies into educational settings is extremely necessary everywhere in the world. The use of technology in teaching could be advantageous. New technology introduced into educational environments has the potential to enhance learning possibilities in terms of both quantity and quality. The use of information and communications technology (ICT) in educational settings is growing in popularity because it improves learning, provides a positive environment, and stimulates the development of critical thinking and self-assurance in students. Effective instruction now faces additional obstacles as a result of ICT integration in education. People's typical daily routines have been disrupted as a result of this. The purpose of this study was to examine the potential effects of using technology in the classroom on the standard of education and student retention while taking into account the participants' behavioural and mental attitudes. This study used a method of research called a systematic literature review. Lessons that are aided by information and communication technologies are typically more successful. The advantages that curriculum technology integration can have are emphasised. The findings of this study indicate that managing change in the teacher education industry requires comprehension, worry, caution, and reflection. Modifications to the way the teacher education programme is run are required for effective school reform.

Key Words: *ICT, impact of ICT, sustainable education, solution and problem, teaching and learning process.*

1. INTRODUCTION

UNESCO's goals for education include expanding the range of subjects and instructional strategies as well as promoting experimentation, innovation, information sharing, and policy debate. Our perspective and way of life have changed as a result of the growth of ICTs. This phenomena updates and improves our way of living for the modern era. ICT is revolutionising global education (Achari, and Agrawal 2021). This revolution needs to be strengthened in order to spread to more people because it isn't very broad. A multidisciplinary and integrated strategy is essential for the long-term growth of the economy and society because there are so many aspects that affect how people utilise and integrate ICTs (Mac-Ikemenjima, 2005).

Today's civilization, especially in industrialised nations, definitely requires the use of ICTs. Communities and cultures have adapted as a result of the information era's onset. The spread of information and communications technology has accelerated the process of social, political, economic, and technological change. The widespread usage of ICT has had an impact on education. ICTs have an effect on all three of the foundational elements of teacher education: teaching, learning, and research. ICT enables student instructors, academics, and non-academic workers to communicate with one another more efficiently during both formal and informal instances of teaching and learning (Yusuf, 2005b, pp. 316-321). All teachers must complete basic computer skills training as well as teaching on how to use different educational apps effectively (Ololube, 2006).

Information and communication technologies must be incorporated into the classroom and other academic pursuits. S. and D. D. Kumar (2021). In almost every nation, the effectiveness of teaching plays a significant role in determining how much students learn. Since they can make it simpler for teachers to receive training and give them the ability to utilise technology to its fullest extent to advance student learning, ICTs must be used to educate teachers. With new opportunities for teaching and learning for both teachers and their students, ICTs have ushered in a new era in traditional teaching methods. Education institutions should use technology because it enables accurate and distinctive representations of instructional materials and because it makes it simpler for students to access knowledge.

2. OBJECTIVES

The key assertions of this paper are accomplished with the following objectives:

- a) To analyse the role of ICT in Teacher Education
- b) To study the establishment of ICT in implementing sustainable education
- c) To identify the limitations of ICT integration in education field.

3. METHODOLOGY:

The method of research that was performed in this investigation was called a Systematic Literature review. A body of literature is compiled, analysed, and evaluated through the use of techniques that have been defined and pre-specified in systematic reviews. To eliminate the possibility of bias, the review's rationale, hypotheses, and methods of data gathering are all predetermined. The purpose of this type of review, much like that of traditional literature reviews, is to locate, analyse, and synthesise knowledge pertinent to a particular subject. SCOPUS, ProQuest, ScienceDirect, SpringerLink, PsycINFO, PubMed, EBSCOhost, SciELO, Google Scholar, and Web of Science were some of the databases that were included in the SLR.

4. RESULTS AND DISCUSSIONS:

In any knowledge economy, education is the main driver of economic and social progress. ICT is used widely. It improves a number of academic areas. ICT has a strong emphasis on network-based control and monitoring, audio-video processing, broadcast media, and telephony. The term was used by Dennis Stevenson in 2000 National Curriculum documents and a 1997 report to the UK Government. ICT refers to a group of tools and technologies that are used to create, manage, transmit, and distribute information. Over the past 20 years, ICT has revolutionised virtually every industry, particularly education (Kumar, 2021). ICT and teacher preparation provide new learning environments (Figure 1).

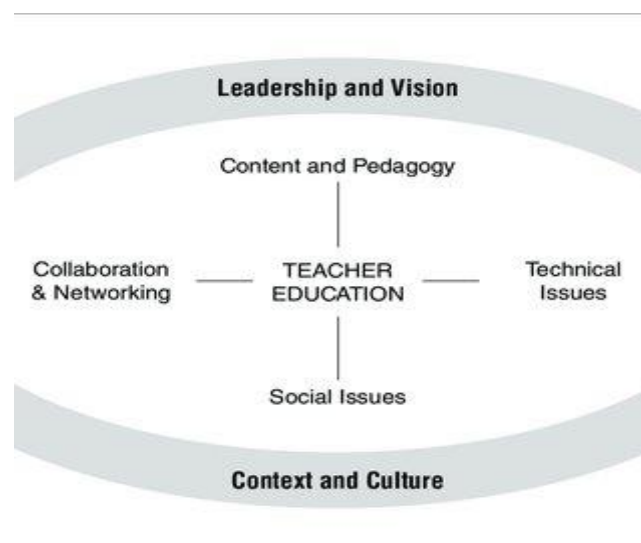


Figure 1: ICT and Teacher Education to build new learning environment.

4.1 ICT: A STIMULANT AND DEPRESSANT OF TEACHER EDUCATION

Tech utilisation by teachers is challenging. Teachers' failure may be explained by a lack of ICT training. (2006) used the Networked Preparedness Index to assess the ICT readiness of 115 economies (NRI). British, Canadian, Danish, Icelandic, Finnish, Canadian, Swedish, and Swiss people won.

Program efficacy is hampered by inefficient use of audiovisual resources and apparatus, including films, slides, transparencies, projectors, globes, charts, and bulletin boards. The advantages of educational technology must be emphasised by administrators and instructors.

Since educational institutions throughout the world are under pressure to teach students information and skills utilising modern ICTs, ICT integration in university teaching, especially teacher training programmes, is a hot topic (Larose et al., 1999). New instructors must be trained in using educational technologies by teacher education programmes (UNESCO, 2002).

ICT has impacted teacher preparation (ICT). ICT has improved research and education on a global scale. Education can use dynamic, interactive content thanks to ICT literacy (Newhouse, 2002a). ICT has the potential to improve instruction, link institutions, promote and involve students in learning, link school and work, and accelerate, develop, and deepen skills. ICT can improve educational production and efficiency, assisting instructors in their work (Yusuf, 2005b). Newhouse asserts that technology increases productivity and solves difficulties (2002b). The same objectives should steer educational technology. Technology has an impact on costs and outcomes. Educational technology enhances students' performance and learning (Larose et al., 1999). According to Creemers (1994), teachers who advance their careers benefit kids. Study on staff education and training emphasises the need for educators to learn and enhance their jobs and effectiveness (Javis, 1983; Keen, 1991; Kautto-Koivula, 1996). To create ICT-based projects and activities that support student learning and achievement, teachers require techniques, resources, and guidance (Aduwa-Ogiegbaen&Iyamu, 2005). Without qualified teachers, ICT in secondary schools is unproductive. Trainers must guide learners in using ICT (Ololube, 2006). Regardless of the standard of ICT equipment in schools or the quantity of college courses instructors have taken, Larose et al. (1999) claim that the transfer of learned competencies and learning to practise are inadequate. ICT usage are depicted in Figure 2.

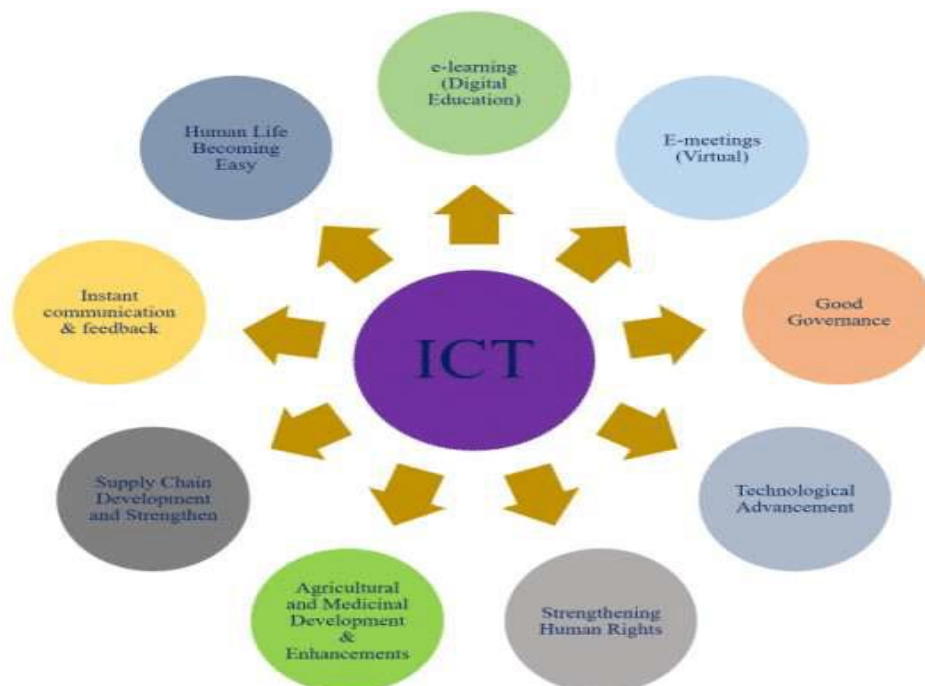


Figure 2: Functions of ICT (Kumar, 2021)

4.2 ICT: A TOOL FOR SUSTAINABLE EDUCATION

India promotes ICT in teacher education. Sakshat Portal, NPTEL, and MERLOT provide high-quality digital information for many uses. (2014). et al. ICT in education: o Develop educational services and media.

- o Promote education and knowledge for everyone.
- o Collect and distribute educational data.
- o To increase technical literacy and remote learning.
- o Encourage knowledge-sharing.
- o Improves classroom education and teaching creativity.
- o Teaching and learning tool.

ICT helps teachers motivate and inspire students to study.

- o ICT can save all educational data securely.

The Indian government's other main efforts are:

UGC-INFONET was founded in 2004. The UGC administers funds to universities. UGCINFONET provides academic papers and information online. The Director, Information and Library Network (INFLIBNET) Centre, Ahmedabad, oversaw the effort.

It's an e-learning platform. IIT Kanpur made it open source freeware. Faculty may upload handouts, lecture notes, and study materials online.

ISRO and the Ministry of Human Resource Development launched EDUSAT (MHRD). This initiative intends to improve distance education by multicasting interactive multimedia.

iv) e-SHIKSHA: India's Ministry of Communications and Information Technology has launched the e-SIKSHAK e-learning framework. This website offers free Telugu lessons.

v) e-YANTRA: Part of the National Mission on Education through ICT, e-Yantra is led by IIT Bombay and funded by HRD. It aims to foster a realistic approach in the next generation of embedded systems engineers.

vi) FOSSEE is part of the MHRD's National Mission on Education through ICT (ICT). The initiative promotes free and open-source software in India to improve education.

A VLE offers undergraduate and graduate e-resources. Institute of Life-Long Learning at Delhi University was founded in 2012. Kumar and Lau and Sim (2008) Modern curricula favour competence and performance over content (Stephenson, 2001). ICTs promote student learning. ICT helps students shift to competency-based curriculum and student-centered delivery (Yusuf et al. 2013). It boosts teaching and teamwork. ICT gives students timely feedback (Becta, 2003; Newhouse, 2002).

4.3 IMPORTANCE AND LIMITATIONS OF ICT IN TEACHER EDUCATION:

The importance and limitations of ICT in teacher education can be elaborated using the following Table 1:

IMPORTANCE OF ICT IN TEACHER EDUCATION	LIMITATIONS
1. It excites student teachers' eyes, ears, and heads. 2. ICT provides student teachers with high-quality, interesting things and packages. 3. It helps redefine literacy, learning, and knowledge to incorporate multimedia digitised literacy.	1. Educators in training are instructed in the fundamentals of information and communications technology with an emphasis on technical issues, but pedagogical concerns receive very little attention. 2. The teaching methodology utilised in educational

<p>4. Multimedia allows student teachers to customise their learning environment and learn from their mistakes.</p> <p>5. ICT helps student teachers regulate lesson, pace, sequencing, topic, and feedback, which improves learning.</p> <p>6. Unlike books, it's interactive and motivates and interests student teachers, serving individual needs effectively and efficiently.</p>	<p>technology classes is outdated, and new technologies are not utilised to supplement or enhance instructional innovations.</p> <p>3. The student instructors currently being trained in schools are not familiar with how to use the latest technology.</p> <p>4. There is a lack of technology input in the classes, particularly the method classes. These are problems caused by the incorporation of technology.</p>
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Table 1: Importance and Limitations of ICT in Teacher Education

Table 2 shows the types of ICT Tools used in Teacher Education.

Type of ICT tools	Definition	Examples
Educational Networking	Online learning platforms that connect learners using social networking technologies, exhibiting similar functions to sites like Facebook or MySpace.	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	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.	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.	Interactive whiteboard, touch-screen computer, Kiosk

Table 2: Types of ICT tools used in Teacher Education (Kumar, 2021)

5. CONCLUSION

ICT is incorporated into pre-service education to create techno-pedagogues. Teachers should include technology and "webogy" into their lessons (i.e. to make use of Internet technology, exploring it, accessing information from it to use in teaching learning etc.). Create goals for skill and application instead of just knowledge and comprehension. It is crucial to give teacher development top priority. Education and teacher preparation curricula must be aligned. Otherwise, teachers are unable to create assignments, projects, and teaching/learning procedures in an effective manner. In addition to ICT as a distinct discipline, methodology must be utilised to evaluate integrated techniques. This supports the development of "techno pedagogy" by student teachers. Successful change management in teacher education requires comprehension, concern, consideration, and discussion. Planners and managers of teacher education produce teachers who are competent of administering the educational system at the pre-primary, primary, elementary, secondary, and upper secondary levels. For effective school change, the management of the teacher education programme must change.

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