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## INDEX

Sl.	Title	Page
<b>1</b>	<b>Integration of ICT in Teacher Training Institutions: A Transformation in the Paradigm of Teacher Education</b> Aamir Majeed and Prof. Syedah Fawzia Nadeem	<b>6-15</b>
<b>2</b>	<b>Awareness on Utilization of Community Resources in Teaching Chemistry at Secondary School Level</b> A.Devi and Dr.T.Kanakaraj	<b>16-24</b>
<b>3</b>	<b>Teachers Professional Development and Job Satisfaction</b> Ashish Kumar	<b>25-30</b>
<b>4</b>	<b>Teacher’s Professional Development in Online Social Networking Sites</b> Cathrine Asha S. and Dr. Blessing Mary	<b>31-39</b>
<b>5</b>	<b>Life Style and Attitude towards Sustainable Development Goals among Prospective Teachers at Secondary Level</b> Sreevidya R. and Dr. Mubi K. Mohamed Ali	<b>40-57</b>
<b>6</b>	<b>Socio-emotional Skills among Secondary School Students of Standard Nine in terms of Gender and Demographic Location of Udupi District</b> Rose Kiran Pinto	<b>58-71</b>
<b>7</b>	<b>Blended Learning: A Vision for the Future</b> Dr. Fatma Gausiya	<b>72-87</b>
<b>8</b>	<b>A Study on Perception of Student Teachers on Professional Development</b> Dr. Manju N.D	<b>88-103</b>
<b>9</b>	<b>Emerging Need of Blended Learning</b> Dr. Pratibha Khare	<b>104-115</b>

<b>11</b>	<b>Role of Fourth Industrial Revolution and Education 4.0 on Sustainable Development in Education</b> Dr. Seema Gopinath	<b>116-124</b>
<b>12</b>	<b>Efficacy of Indigenous Rhymes in Developing Student Engagement and Motivation</b> Dr. Prithi Venkatesh, Ms. Sreevidya MS, Ms. Nisha A, Mr .Srinivasa R	<b>125-139</b>
<b>13</b>	<b>Transforming Education: Evaluating The Implementation and Effects of the 2020 Education Policy</b> Dr. Veena Khilnani	<b>140-146</b>
<b>14</b>	<b>Educational Significance of Inclusion in Reducing Juvenile Delinquency-Need for Multi-dimensional Approach</b> Dr.C.B.Vikram	<b>147-165</b>
<b>15</b>	<b>From Exclusion to Excellence: Overcoming Obstacles to Inclusion in Schools</b> Dr. Rajeshwari Garg	<b>166-176</b>
<b>16</b>	<b>Impact of Artificial Intelligence Enabled Technological Pedagogical Implications in Higher Education</b> Dr.S.Ammami, Dr.M.Anita, Ananya	<b>177-186</b>
<b>17</b>	<b>The Effect of Artificial Intelligence on Research Methodology</b> Dr. Taiyaba Nazli	<b>187-194</b>
<b>18</b>	<b>Empowering Educators: Navigating Continuous Professional Development In Alignment With NEP 2020 In India.</b> Jagirdar Lubna Batool and Dr. Syed Azaz Ali	<b>195-206</b>
<b>19</b>	<b>Inevitability of Assessment and Feedback Strategies in the Teaching- Learning Continuum</b> Jasmine. J	<b>207-214</b>
<b>20</b>	<b>Vital Role of Teachers, Parents and Students as a Joint Venture in Inclusive Education</b> Mrs. Jyothi H.D.	<b>215-221</b>

21	<b>Humour as an Effective Teaching Strategy</b> Madan Kumar	222-229
22	<b>Significance of Inclusive Education in Fostering Social Justice in India</b> Mamta and Nivedita	230-243
23	<b>An Investigation of the Gender Disparity in the Teaching Abilities of Trainee Teachers</b> Mrs. Mirza Humaira Batul	244-256
24	<b>Enhancing Learning of Students through Formative Feedback in Higher Education</b> Monal	257-267
25	<b>Exploring the Preparedness for LMS among Teacher Educators and B.Ed. Students in the Current Education Scenario</b> Dr.M.Ponnambaleswari and Aswathy C.K.	268-281
26	<b>The Family Environment Promotes Student Engagement and Motivation</b> N. Revathy and Dr. A. Blessing Mary	282-285
27	<b>Transformative Education Reforms: Catalyzing Social Justice in India</b> Pooja and Nivedita	286-294
28	<b>Exploring Participatory Pedagogy for Cultivating Inclusivity in Classroom</b> Prabhleen Saini	295-307
29	<b>Transforming Education: A Journey Towards Transgender Inclusion</b> Prakasha C.	308-320
30	<b>Impact of Competency Based Education on Learning Outcomes</b> Prashasti Singh and Dr. Kalpana Thakur	321-333

<b>31</b>	<b>An Introduction of Inclusive Education</b> Rajesh Kumar Pathak	<b>334-343</b>
<b>32</b>	<b>E- learning: Impact on Psychosocial Competence</b> Ms. Rajwinder Kaur and Dr. Gagandeep Kaur	<b>344-353</b>
<b>33</b>	<b>Computer-Based Programmes to Improve Communication with Children with Special Needs: Cerebral Palsy</b> Ramesh	<b>354-363</b>
<b>34</b>	<b>Nurturing Students Engagement: An Educator’s Role in Fostering Autonomy, Competence, and Relatedness in Teaching-Learning Process</b> Saroj Rani	<b>364-388</b>
<b>35</b>	<b>Life Style and Attitude towards Sustainable Development Goals among Prospective Teachers at Secondary Level</b> Sreevidya R. and Dr. Mubi K. Mohamed Ali	<b>389-405</b>
<b>36</b>	<b>Perception of Pre-service Teachers towards Blended Learning in Teaching-learning Process</b> Ghazala Parveen	<b>406-429</b>

## **Integration of ICT in Teacher Training Institutions: A Transformation in the Paradigm of Teacher Education**

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### **Abstract**

In the contemporary world the integration of digital technology laid a great importance on teacher training institutions (TTIs) and its transformative impact on the paradigm of teacher pedagogy of teaching. As the current educational scenario evolves, this study explores how the strategic incorporation of digital technology tools and methodologies within teacher training programs reshapes traditional teaching approaches. The research investigates the efficacy of Information and Communication Technology enhancing pedagogical strategies, developing collaborative learning environments and preparing teacher educators for the demands of the digital era. The current study eventually aims to contribute to the ongoing discourse on modernizing teacher education, emphasizing the key role of technology in shaping a new paradigm that aligns with evolving demands of the learners and society. This study emphasizes to offer a comprehensive analysis of diverse research studies the valuable insights and hold implications for educators, policymakers, curriculum developers and institutions striving to adopt

and innovate in response to the dynamic landscape of teacher training programs in an evolving technological world.

*Keywords:* information and Communication technology (ICT), integration, paradigm, teacher education, transformation

### **Introduction**

ICT is an acronym for "Information and Communication Technology," encompasses technologies facilitating information access through telecommunication. The term Information and Communication Technology is directly related to Information Technology (IT), but ICT mainly laid emphasis on technologies that are communication based. It involves various mediums like the cell phones, internet, wireless networks and other channels of communication. The present system of education offers better possibilities for the teacher training institutions to integrate digital technology into their training programmes, enhancing the quality of education by enabling more effective teaching methodologies (Ratheeswari, 2018). The utilization of Information and Communication Technologies ICT can be understood on the basis of three dimensions: access to ICT equipment (devices), fundamental skills (knowledge of how these tools work), and complex capabilities (advanced digital literacy) (Mendonça et al., 2015). However, proficiency in digital literacy does not imply using ICT tools, it requires specialized training to acquire complex skills and competencies. Consequently it is significant to impart advanced digital skills to students in order to ensure them for their successful integration into the future job market(Akayoglu et al., 2020). In order to attain this goal, it is necessary to support the utilization of Information and Communication technologies (ICTs) among students and incorporate these technological tools within the educational setting (Thieman & Cevallos, 2017).

The inclusion of Information and Communication Technologies (ICTs) in the process of teaching and learning enhances students' academic achievements, leading to more effective teaching and an overall improvement in the quality of education (Hambira et al., 2017). Information and Communication Technologies (ICTs) not only make students tasks easier but also empower them, foster self-reliance, boost motivation, and can be modified to suit each student's proficiency level, irrespective of their challenges (García-Valcárcel-Muñoz-Repiso et al., 2014). New and advancing technologies will continue in shaping our society, with a particularly profound impact expected in the realm of education (R.G. et al., 2017). Despite of the improved accessibility of ICT in education, previous study (Bice & Tang, 2022) suggests that numerous teachers are not using technology in effective ways that fosters meaningful student-centered learning. This commonly asserted statement emphasize the difference between the envisioned use of information technology for facilitating learning and the approach educators actually integrate it into the classroom setting (Ayisi Abedi, 2023).

Therefore, it is imperative for the teacher educators to be skilled in utilizing the technology in real classroom situation in order to improve the digital literacy among the students (García et al., 2021). The intention of the present study is to examine the incorporation of Information and Communication Technology in teacher training institutions and the employment of innovative technology and methodologies for the enhancement of education system. The role of digital technologies in transforming teacher education programs is multifaceted, encompassing different aspects of pedagogy, professional development, and the overall educational experience. Some of the key dimensions that highlight the transformative impact of



Information and Communication Technologies (ICTs) in the paradigm of teacher education are as under.

### **Transformation in Pedagogy of Teaching and Learning**

**a. Student-Centered Learning:** ICT facilitates a paradigm shift from traditional, teacher-centered instruction to student-centered and interactive learning experiences. Teachers can employ multimedia resources, online simulations, and educational software to engage learners actively in the learning process.

**b. Personalized Learning:** Technology enables adaptive learning platforms and educational apps that cater to individual student needs. Teacher training institutions can use these tools to prepare future educators in the skill of tailoring instruction to diverse learning styles and abilities.

**c. Collaborative Learning Environments:** Online platforms, video conferencing, and collaborative tools enable teacher trainees to engage in virtual discussions, group projects, and collaborative lesson planning. This fosters teamwork and communication skills, essential for effective teaching in contemporary classrooms.

#### **1. Professional development:**

**a. Continuous Learning Opportunities:** ICT offers teacher trainees the ability to engage in ongoing professional development. Online courses, webinars, and virtual conferences provide

convenient and accessible avenues for educators to enhance their knowledge and skills throughout their careers.

**b. Global Networking and Collaboration:** Social media, online forums, and professional networks enable teacher trainees to connect with educators globally. This facilitates the exchange of ideas, best practices, and collaborative research, enriching the professional development experience.

**c. Digital Portfolio Development:** Teacher training programmes can leverage ICT to guide trainees in creating digital portfolios that showcase their achievements, lesson plans, and reflective practices. This aids in the validation of professional growth and facilitates career advancement.

## **2. Curriculum integration:**

**a. Incorporating Technology into Pedagogy:** Teacher education programme can integrate courses that explicitly teach how to incorporate technology seamlessly into teaching methods. This includes strategies for using educational software, online resources, and digital tools to enhance the learning experience.

**b. Digital Literacy and Ethics:** ICT in teacher education should concentrate on digital literacy skills, as well as critical thinking, information literacy, and responsible use of technology. Future educators need to realize the ethical considerations related to technology use in the classroom.

**c. Real-world Application:** Teacher trainees should have opportunities to apply their knowledge in practical settings. This can involve creating and implementing technology-infused lesson plans, utilizing learning management systems, and adapting to the evolving educational technology landscape.

### **3. Assessment and feedback:**

**a. Technology-Enabled Assessment:** ICT provides tools for creating innovative and interactive assessment methods. Teacher education programs can explore the implementation of online quizzes, simulations, and digital portfolios for more authentic and comprehensive evaluation of trainee's skills.

**b. Feedback and Reflection:** Technology supports ongoing feedback and reflection processes. Trainees can receive timely feedback on their teaching practices through video analysis, online discussions, and collaborative platforms, fostering continuous improvement.

## **Issues and Challenges**

ICT plays a key role in evolving our education system. Though ICT helps us in improving our current educational landscape, but we face a number of hurdles in implementing ICT in the practice of teaching and learning. Some of the challenges are as under:

### **1. Inadequate ICT infrastructure**

Lack of technologically sound infrastructure is a major challenge faced in implementing ICT in teacher training institutions which includes hardware, software and all other equipment which are necessary for the integration of ICT in teacher education.

### **2. Dearth of technologically trained teachers**

For the integration of ICT in our teacher training institutions we must have digitally literate and skilled teachers so that they have the capability to overcome the challenges faced in a modern ICT based classroom.

### **3. Slow internet connectivity**

For the integration of ICT in teacher training institutions we not only require infrastructure and ICT skilled teachers but also the fast internet connectivity to ensure the smooth functioning and implantation of ICT in these teacher training institutions.

### **4. Poor electricity supply**

Poor supply of electricity is one among the many challenges faced in integrating ICT in teacher education. The frequent power cuts restrict the operation of the tools of ICT which are essential for integrating technology into education.

## **5. Expensive ICT tools**

The high cost of ICT tools hinders us to implement ICT in our teaching learning process. It is impossible to purchase these expensive tools thus make the integration and execution of ICT unsuccessful.

## **6. Resistance to change**

A major obstacle among teachers is to resist change. Several teachers hesitate to make use of new methods and technology thus hinders the implementation of ICT in teaching learning process.

## **7. Insufficient curriculum**

Teachers in the present age of technology must be technically sound. The weight age given to the ICT contents in curriculum is not to desired level. Adequate importance should be assigned to ICT based curriculum in our teacher training institutions so that it can make our future teachers skilled and help us in implementation of ICT in the process teaching learning.

## **Conclusion**

The integration of ICT in teacher training institutions has improved the quality of teacher education. Instead of the challenges ICT plays an essential role in improving the teaching learning process. The integration of ICT in teacher education programme is transformative, shaping the next generation of educators to succeed in a digital world. It is indispensable for

teacher training institutions to adopt a holistic approach that combines pedagogical innovation, professional development, curricular integration, and modern assessment methods to prepare teachers for the challenges and opportunities of 21st-century education. It is hoped that this paper can become a helpful document for government and teacher training governing bodies like NCTE to take the steps accordingly for the incorporation of Information and Communication Technologies (ICTs) in teacher education.

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