ISSN- 2349-7076

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter)
Patron: Prof. R. G. Kothari
Chief Editor: Prof. Jignesh B. Patel
Email:- Mo. 9429429550 ctefeduinspire@gmail.com

EduInspire

- An International Peer Reviewed and Refereed Journal

Vol: XIII
Issue: I
January-2026

Patron
Prof. R. G. Kothari

Chief Editor
Prof. Jignesh B. Patel
Mo. 9429429550
drjigp@gmail.com
ctefeduinspire@gmail.com

Council for Teacher Education Foundation

(CTEF, Gujarat Chapter)

ISSN- 2349-7076

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter)
Patron: Prof. R. G. Kothari
Chief Editor: Prof. Jignesh B. Patel
Email:- Mo. 9429429550 ctefeduinspire@gmail.com

Implementation of ICT in Teacher Education under NEP 2020: Challenges and Opportunities in context to Diphu, Karbi Anglong

Miss Mayuri Das
Assistant Professor
Department of Education, Nanda Nath Saikia College
mayuridas146@gmail.com

Miss Bonmilee Kropi
Diphu Govt Boys' Higher secondary school

Abstract

This research study explores the dynamic landscape of Information and Communication Technologies (ICT) adoption in teacher education within the framework of the National Education Policy 2020 (NEP 2020). Recognizing the pivotal role of technology in shaping contemporary education, the investigation delves into both the advantages and challenges encountered during the integration of ICT tools in teacher education programs. The objectives of this research comprise a thorough study of NEP 2020 guidelines pertaining to ICT integration, an analysis of challenges faced by teacher education institutions, an exploration of the impact of ICT on pedagogical practices, and an assessment of innovative approaches employed in this transformative process. The study employs a qualitative approach, incorporating surveys and interviews to gather qualitative data. The present study therefore will be helpful for the stakeholders of education i.e. teachers, administrators, curriculum planner, policy makers, educators, and institutions about the challenges faced and the opportunities that arise in the pursuit of aligning teacher education with the evolving technological landscape outlined in NEP 2020. Ultimately, the research provides a foundation for informed decision-making and strategic planning in the ongoing efforts to modernize and enhance teacher training programs.

Keywords: - NEP2020, Teacher education, Information and communication Technology

Introduction

A quality teacher education program is essential to build teachers proficiency and competence so that candidates can face new challenges while educating students. Teaching occupies a

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

central place in the total education programme. It is the key to the qualitative improvement of society. A major turning point in the direction of educational modernization and reform is the National Education Policy (NEP) 2020. With an emphasis on innovation and inclusiveness, NEP 2020 aims to entirely transform the educational system in order to fulfil all of the demands of students and create a culture of lifelong learning. The main goal of this vision is to give educators the tools they need to succeed in an increasingly digital society by integrating ICT into all aspects of education, including teacher education.

Worldwide, teaching and learning processes are being transformed by Information and Communication Technology (ICT), which has become a transformative force in the constantly evolving realm of education. The potential for ICT integration in education is massive: it could enhance learning outcomes, modify traditional pedagogical approaches and provide educators the skills they require to effectively navigate the obstacles and opportunities of the twenty-first-century classroom. Many countries have developed extensive policies to encourage the adoption of ICT at all educational levels, realizing the vital function technology serves in education.

Moreover, there are many obstacles in the way of ICT adoption in teacher education, from resource and infrastructure constraints to pedagogical challenges and resistance to change. Despite these obstacles, there are an enormous number of possibilities that simply need investigation - prospects to change pedagogical approaches, customize educational possibilities, and promote cooperation and creativity among instructors.

Within the context of NEP 2020, this study aims to go deeper into the issues surrounding the implementation of ICT in teacher education. This study aimed to provide informative evaluations and suggestions to policymakers, educators, and stakeholders involved in the advancement of teacher education and achieving the objectives of NEP 2020 goals.

Information and Communication Technology

In the contemporary world, technology has become an inseparable aspect of human life, influencing almost every sector, with education being one of the most significant. Continuous innovations in hardware and software have transformed education into a more accessible, engaging, and creative process. Technological advancements have made education widely available by reducing barriers such as distance and time, thereby enabling learners to pursue educational opportunities that were once beyond their reach.

While traditional education forms the foundation of the present educational system, modern education increasingly relies on technology-based methods. From the Gurukul system to

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

present-day digital learning environments, teachers have remained central to educational reform, as no teaching–learning process can be considered complete without their guidance. In the 21st century, teaching methods have become more interactive and learner-centred, enabling teachers to identify students' potential and making the learning process more dynamic and meaningful. Furthermore, students are now actively engaged in self-learning through various digital tools, audio-visual aids, and software applications.

The integration of Information and Communication Technology (ICT) in teacher education has gained considerable importance, particularly through e-learning platforms. ICT refers to the use of digital technologies such as computers, the internet, mobile devices, and multimedia tools to support the processes of teaching, learning, and assessment. E-learning equips teachers with essential ***ICT competencies***, which include the ability to effectively use digital tools, applications, and online resources for instructional purposes. ICT competence enables teachers to design innovative instructional materials such as videos, presentations, virtual lessons, and interactive content.

Equally important is ***infrastructure readiness***, which refers to the availability of adequate technological facilities such as reliable internet connectivity, hardware devices, software applications, and technical support systems within educational institutions. Without proper infrastructure, the effective integration of ICT in teaching and learning becomes challenging.

Another crucial aspect of ICT integration is its ***pedagogical use***, which involves the purposeful application of technology to enhance teaching strategies, learner engagement, and learning outcomes. Pedagogical use of ICT encourages experimentation with innovative teaching practices, promotes collaborative learning, and facilitates continuous feedback between teachers and learners. Thus, ICT plays a transformative role in teacher education by enhancing instructional effectiveness, fostering professional development, and improving the overall quality of education.

Nep 2020 on Teacher Education

According to National Council for Teacher Education Act (NCTE 1993). "Teacher education means programs of education research or training of persons for equipping to teach at primary, pre- primary, secondary and senior secondary stages in schools and includes non-formal education, part time education, adult education and correspondence education through distance mode." It is aptly said that the fate of the conflict largely depends on classroom and the fate of the classroom is being shaped by the teacher. The teacher plays a huge role in shaping the overall personality of the students. Teacher education can be referred to the

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

policies programmes procedures and provisions design to equip teachers with knowledge, attitude, behaviour, skills that they required to perform their task effectively in the classroom schools and wider community. In the era of the 21" century Teaching has become more explorative and interactive. Because of the paradigm shift from Teacher centred education to student centric education teachers are not just lectures but a facilitator and guide for students. The teachers play exactly the role of a friend philosopher and guide and further more students are not just passive listener but co-explorers of knowledge. Education has become more interactive and experiential for both the parties.

Therefore, teacher education becomes a major and vital condition to propagate high-quality education in the country. In other words, effective school education anticipates effective teacher education programmes.

NEP 2020 The New Education Policy 2020, introduced by the Ministry of Human Resource and Development brought a remarkable change in content to uplift and modernize the Indian education system with quality education, and also inculcating the teachers with Indian values, languages, knowledge and traditions. It also stated that from 2030 onwards teacher recruitment process will completely base on Integrated teacher on teacher education.

NEP's Suggestion to Improve Teacher Education Program

1. To take Action on irresponsible Teacher Education Institutions for not fulfilling the academic norms.

2. To make 4-Year integrated B.Ed. the minimum degree qualification for school teachers by 2030.

- The 4- Year integrated B.Ed. will be a dual-major holistic Bachelor's degree in education as well as a specialized subject such as language, history, music, mathematics, computer science, chemistry, economics, art, physical education etc.
- The Higher Educational Institutions offering 4-Year integrated B.Ed. may also run a 2-Year B.Ed. for students who have already received a Bachelor's degree in a specialized subject.
- 1-Year B.Ed. may also be offered for candidates who have received a 4-Year undergraduate degree in specialized subject.
- The NEP 2020 aims establishing scholarships with the aim of attracting outstanding candidates to the 4-year, 2 year and 1 year B.Ed. program.
- The NEP2020 aims establishing institution to work together with government and private schools.

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

3. There will be National Level Entrance Exam in order to maintain uniform standard for teacher education which will be conducted by the National Testing Agency (NTA).

4. NEP 2020 aims for all multidisciplinary universities and colleges to set up a department of education, which would conduct research in various aspects of education as well as to run B.Ed. Programs,

5. Quality PhD. Program-

- All fresh Ph.D. entrants will be required to take credit- based courses in teaching/pedagogy/ writing related to their chosen Ph.D. subject during their doctoral training period.
- During Ph.D., opportunities should be provided to research students for pedagogical practices, curriculum building, reliable assessment system etc.

Reforms Suggested by Nep 2020 For Teacher Education

- Teacher Education will be gradually be moved by 2030 into multidisciplinary colleges and universities.
- Multidisciplinary higher educational institutions offering the 4- Year in-class integrated B.Ed. programme to also provide blended and or ODL mode of teaching to students in remote areas.
- All B.Ed. programmes will include training in time-tested techniques in pedagogy, multilevel teaching and evaluation, teaching children with disabilities, teaching children with special interests or talents, use of educational technology, and learner- centred and collaborative learning.
- All teacher education programmes to be conducted within composite multidisciplinary institutions.
- New and comprehensive National Curriculum Framework for Teacher Education.
- Only educationally sound multidisciplinary and integrated teacher education programmes to be made available.
- Setting up of National Mission Mentoring with large pool of outstanding senior/retired faculty.
- National Higher Education Regulatory Council (NHERC), to function as single point regulator for higher education sector including teacher education.

Significance of Study

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

A quality teacher education program is essential to build teachers proficiency and competence so that candidates can face new challenges while educating students. Teaching occupies a central place in the total education programme. It is the key to the qualitative improvement of society. A major turning point in the direction of educational modernization and reform is the National Education Policy (NEP) 2020. With an emphasis on innovation and inclusivity, NEP 2020 aims to entirely transform the educational system in order to fulfil all of the demands of students and create a culture of lifelong learning. The main goal of this vision is to give educators the tools they need to succeed in an increasingly digital society by integrating ICT into all aspects of education, including teacher education.

Moreover, by recognizing the pivotal role of technology in shaping contemporary education, the investigation delves into both the advantages and challenges encountered during the integration of ICT tools in teacher education programs.

The present study therefore will be helpful for the stakeholders of education i.e. teachers, administrators, curriculum planner, policy makers, educators, and institutions about the challenges faced and the opportunities that arise in the pursuit of aligning teacher education with the evolving technological landscape outlined in NEP 2020. Ultimately, the research provides a foundation for informed decision-making and strategic planning in the ongoing efforts to modernize and enhance teacher training programs.

Objectives of Study

1. To study the NEP 2020 guidelines for ICT integration in Teacher Education.
2. To study the challenges faced by Teacher training institutions.
3. To suggest innovative methods for best use of ICT in teacher education.

Research Questions

1. What principles and objectives does NEP 2020 set for ICT integration in teacher education?
2. What major challenges do teacher training institutions face in implementing ICT under the NEP 2020 ?
3. What best practices and innovative methods in ICT integration align with the NEP 2020's goals for teacher education?

Area of the Study

The investigator has chosen Karbi Anglong district of Assam, India for the present study. Diphu, the headquarters of East Karbi-Anglong, reflects a diverse educational demography

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

with higher literacy rate in town areas (79%) compared to rural regions (64%). While male literacy outpaces female literacy, the district hosts a wide network of primary ,secondary and higher educational institutions including Diphu Government College, Assam University Diphu Campus and a medical college, highlighting growing educational infrastructure despite rural-urban disparities.

Methods Adopted for the Study

The descriptive survey method was adopted for the present study. Descriptive methods enable us to know what exists at present by studying the nature of the existing conditions.

Hence, based on the qualitative approach the investigator used a descriptive survey method to obtain information about the dynamic landscape of Information and Communication Technologies (ICT) adoption in teacher education within the framework of the National Education Policy 2020 (NEP 2020).

Delimitation of the Study

1. The study was delimited to 100 respondents.
2. The study was delimited to Karbi Anglong District of Assam.
3. The study was delimited to four educational institutions i.e. DIET Karbi Anglong (District institute of Education and Training), BTC (Basic Training Centre), Rong Nihang L.P & M.E school and Government Boys Higher Secondary School.

Methodology

Research methodology is a way to systematically solve the research problem. Research methodology has several dimensions that include designing the research process with suitable research methods (Kothari 2005, p.8) it is a crucial step in every research study that explains how the researcher will seek to find answers to the research questions

Population

The population of the present study comprises the respondents from DIET Karbi Anglong (District institute of Education and Training), BTC (Basic Training Centre), Rong Nihang L.P and M.E school, Government Boys Higher Secondary School and also the stakeholders of education.

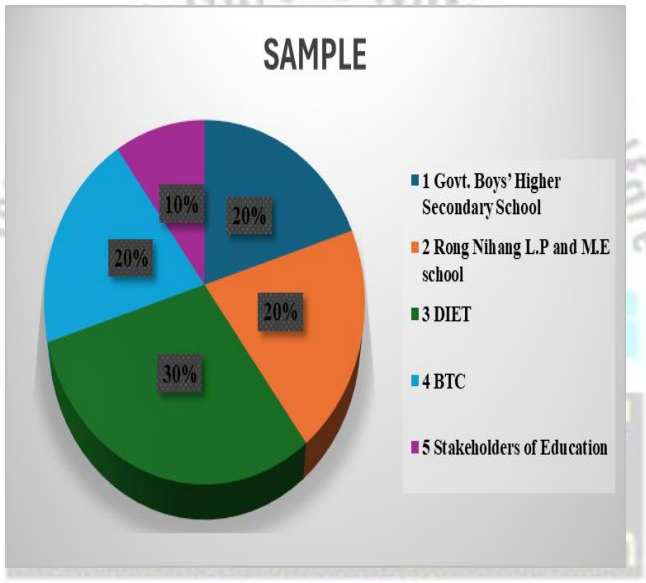
Sample

For the purpose of the study the sample was randomly selected using simple Random Sampling technique. Out of the total population 100 respondents are selected as sample.

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

SL NO	NAME OF THE EDUCATIONAL INSTITUTIONS	SAMPLE TAKEN
1	Govt. Boys' Higher Secondary School	20
2	Rong Nihang L.P and M.E school	20
3	DIET	30
4	BTC	20
5	Stakeholders of Education	10
TOTAL		**100**

Source:- Field study



Sampling Technique

Stratified sampling technique has been used for the present study.The sample selected for this study comprises 30 respondents from DIET Karbi Anglong (District institute of Education and Training) 20respondents from BTC (Basic Training Centre), 20 respondents from Rong Nihang L.P and M.E school, 20 respondents from Government Boys Higher Secondary School and 10 respondents from the stakeholders of education.

Sources of Data

Both primary and secondary sources have been used for collecting the data. Primary data were collected using direct face-to-face interview methods and open-ended questionnaires.

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

Secondary data have been obtained from various books, magazines, articles etc. related to the topic under discussion.

Tools of Data Collection

The most fundamental and crucial aspect of any research is data collection which provides answers to the questions under the study. Data collection depends on instruments/tools.
For the study the investigator used a self-constructed open-ended questionnaire for the collection of data. The questionnaire consisted of 20 items.

Data Analysis and Interpretation

Objective Wise Data Collection

After data collection, the data collected were analyzed on the basis of the following objectives:

Objective 1: - To study the NEP2020 Guidelines for ICT integration in Teacher education.

Table 2: - Knowledge of NEP2020 on Teacher Education

Sl.No	Teacher Education and ICT integration
1	Knowledge on NEP2020 for Teacher Education
2	Integration of ICT in Teacher Education
3	Application of ICT tools and resources in teaching practices
4	Training on ICT integration in Teacher Education
5	Role of policymakers in imparting ICT in Teacher Education

Source: - Field Study

Table 2. depicts the parameters chosen to analyze the first objective, where it was found that the first and second parameter was positively responded by all the five groups namely – **teachers, teacher trainees (Pre-service and In-service), teacher educators and other educational stakeholders**. All five groups were found to have the knowledge about NEP 2020 for teacher education and they were in favor of the integration of ICT in teacher education. The third parameter i.e. ***Application of ICT tools and resources in teaching***

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

practices, was chosen specifically for the **three groups- teachers, teacher educators and teacher trainees (In-service)** where it was found that most of the members in three of the groups have been using the ICT tools frequently in their teaching practices. Only countable members were found to be using them rarely the reason behind might be geographical factors and improper allocation of educational resources. The fourth parameter i.e. ***Training on ICT integration in Teacher Education*** is chosen for all five groups, where it was found that only less than half of the members of the groups have received formal training, the rest did not receive any formal training. The main reason behind it is the lack of awareness and no coordination in the formal educational system. The fifth and the last parameter i.e. ***Role of policymakers in imparting ICT in Teacher Education*** is also for all the five group members where it was found the most common answers were- fundings, proper allocation of resources, innovative techniques to include ICT in different subjects, introduction of economic ICT tools, feasible ICT tools, sensitization programs specially for the pre-service teacher trainees and refresher trainings for in-service teacher trainees, teachers, teacher educators, proper monitoring and supervision.

Objective 2: - To study the challenges faced by Teacher Training Institutions

Table 3: - Challenges faced by Teacher Training Institutions

Sr. No.	Challenges faced by Teacher Training Institutions
1	Objectives of Teacher Training Institutions
2	Challenges faced by Teacher Training Institutions
3	Importance of ICT

Source: - Field study

Table 3. depicts the parameters chosen to analyze the second objective. In The first parameter which describes about the objectives of teacher training institutions where the members of the five groups responded differently-

Teacher, teacher trainees (In-Service) and Teacher Educators -to produce skilled teachers, to understand the various methods and techniques of teaching and to provide proper guidance to their students / trainees.

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

Teacher trainees (Pre-Service)- They have mentioned about understanding the teaching learning process, also to develop a good rapport between the teacher and the taught and to teach the taught in the best way possible to co-op with world.

Educational stakeholders- The educational stakeholders have written responses like to develop effective, feasible and convenient TLM, to address the issues of teaching learning process and to allocate the resources provided wisely.

The second parameter described about challenges faced by the teacher training institutions to which the members of the five groups responded.

Teachers, teacher trainees (In service) and teacher educators – They have mentioned about the limited resources, the poor retention strategy, also lack of information rich environment, the scarcity of funds/ improper use of funds, then the lack of ICT tools, and lastly about the unfavorable student –teacher ratio.

Teacher trainees (Pre-Service): Being the aspirants of teaching they have written about keeping up with the advancements in education, also about limited resources, about meeting the diverse needs of the students, then about practicum opportunities and technological integration.

Educational stakeholders- According to them they found lack of ICT infrastructure, lack of proper funding, improper allocation of teacher training institutions in various regions, and additional workload

The third and the last parameter describes about the importance of ICT in general, to which also the members of the five groups responded-

Teachers, teacher trainees (In service) and teacher educators: They found that innovative teaching-learning process and data preservation were the major importance about ICT in general.

Teacher trainees (Pre-service) According to them, access to resources, personalized learning, virtual classrooms and simulations and lastly data driven insights were the major importance of ICT in general.

Educational Stakeholders- The stakeholders of education mentioned that providing innovative solutions to enhance teaching strategies and developing teaching methods for global interests are the importance of ICT in general.

Objective 3: - To suggest innovative methods for best use of ICT in teacher Education

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

Table 4: - Using of Innovative methods in Teacher Education

Sr. No.	Using of Innovative Methods in Teacher Education
1	Challenges in the application of ICT in Teacher Education
2	Benefits of ICT in Teacher Education
3	Innovative method to be used in Teacher Education

Table 4. depicts the parameters chosen to analyze the third objective.

The first parameter describes the challenges in the application of ICT in teacher education to which the members of the five groups responded

Teachers, teacher trainees (In-service) and teacher educators: Being in the teaching profession already they wrote about lack of network, no proper infrastructure, no training beforehand and in the middle, no follow up, no guidance, generation gap and lastly old traditional method of teaching are the challenges in the application of ICT in teacher education.

Teacher trainees (Pre-service)- The aspiring teachers wrote about poor supply of electricity, network problems, lack of adequate source, lack of ICT tools, digital divide, pedagogical integration gap and assessment are the challenges they assumed might be there.

Educational stakeholders- The stakeholders of education mentioned about training and awareness programs, lack of ICT tools, lack of ICT labs, no Monitoring and supervision, and no active participation of all educational stakeholders.

The second parameter describes the benefits of ICT in Teacher education to which the members of the five groups responded-

Teachers, Teacher trainees (In-service) and Teacher educators- They found enhanced teaching learning, professional development, development of teaching skills, collaboration and communication, improved feedback and assessment, preparation for the digital era, and globalization are the benefits of ICT in teacher education.

Teacher trainees (Pre-service): They have assumed that increased efficiency, reforming execution, adaptation, easier way with visual interpretation, quality education, scientific and highly developed human resource for future, enhancement of ICT base knowledge and to

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

manage time effectively, and understanding the theoretical concepts in practical way are the benefits of ICT in teacher education.

Educational stakeholders: They have found that enhanced teaching learning, professional development, development of teaching skills, increased efficiency, reforming execution, adaptation, easier way with visual interpretation, quality education, scientific and highly developed human resource for future, enhancement of ICT base knowledge and to manage time effectively are the benefits of ICT in teacher education.

The third and the last parameter describes the innovative methods that can be used in Integrating ICT in teacher Education to which the members of the five groups responded-

Teachers, teacher trainees (In-Service) and teacher Educators: They have suggested that promotion of critical thinking in students, advancement in robotics and artificial intelligence, collaborative learning, reduction of paper-works, gamification of learning, and lastly mobile learning can be some of the innovative methods.

Teacher trainees (Pre-Service): They have suggested that learning through global perspectives, experiential learning, flipped classrooms, online professional development, assistive technology, worshops, and positive rapport building might be some of the innovative methods for the ICT integration in teacher education

Educational stakeholders- the stakeholders of education have suggested that proper planning of curriculum , proper infrastructure for ICT integrated classrooms, advancement in robotics and artificial intelligence, collaborative learning, reduction of paper works, gamification of learning and mobile learning could be great in integrating ICT with teacher education.

Major Findings

- It was found that all the group members were well aware of the NEP 2020 and the Integration of ICT in Teacher Education.
- There was also findings of lack of formal training of ICT and its applications to the five groups.
- It was found that the use of ICT tools in Teaching practices was lesser comparatively to ones who didn't use .
- It was found that the role of policymakers are to fundings, proper allocation of resources, innovative techniques to include ICT in different subjects, introduction of economic ICT tools , feasible ICT tools , sensitization programs specially for the pre-service teacher

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

trainees and refresher trainings for in-service teacher trainees, teachers , teacher educators, proper monitoring and supervision.

- It was also found that the objectives of teacher training institutions are - to produce skilled teachers, to understand the various methods and techniques of teaching and to provide proper guidance to their students / trainees, to understand the teaching learning process, to develop a good rapport between the teacher and the taught and to teach the taught in the best way possible to co-op with world, to develop effective, feasible and convenient TLM, to address the issues of teaching learning process and to allocate the resources provided wisely.
- It was also then found that the problems faced by teacher training institutions are- limited resources, poor retention strategy, lack of information rich environment, scarcity of funds/ improper use of funds, lack of ICT tools, unfavorable student –teacher ratio, keeping up with the advancements in education, limited resources ,meeting the diverse needs of the students, practicum opportunities, technological integration,lack of ICT infrastructure, lack of proper funding, improper allocation of teacher training institutions in various regions, additional workload
- The investigator also found that the importance of ICT in general, innovative teaching, learning process, data preservation access to resources, personalized learning, virtual classrooms and simulations, data driven insights, providing innovative solutions to enhance teaching strategies , to develop teaching methods for global interests.
- It was found that the challenges in the application of ICT in teacher education are-lack of network, no proper infrastructure , no training beforehand and in the middle, no follow up, no guidance , generation gap, old traditional method of teaching, poor supply of electricity, network problems, lack of adequate source, lack of ICT tools, digital divide, pedagogical integration gap, assessment ,training and awareness programs, no ICT tools, no ICT labs , no Monitoring and supervision, no active participation of all educational stakeholders'.
- The investigator also found the benefits of ICT in Teacher education are- enhanced teaching learning, professional development, development of teaching skills, collaboration and communication, improved feedback and assessment, preparation for the digital era, globalization ,increased efficiency, reforming execution, adaptation, easier way with visual interpretation, quality education, scientific and highly developed human resource for future, enhancement of ICT base knowledge and to manage time effectively,

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

understanding the theoretical concepts in practical way, enhanced teaching learning, professional development, development of teaching skills, increased efficiency, reforming execution, adaptation, easier way with visual interpretation, quality education, scientific and highly developed human resource for future, enhancement of ICT base knowledge and to manage time effectively.

- Lastly the investigator found the innovative methods that can be used in Integrating ICT in teacher Education are- to promote critical thinking in students, advancement in robotics and artificial intelligence, collaborative learning, reduction of paper works, gamification of learning, mobile learning, learning through global perspectives, experiential learning, flipped classrooms, online professional development, assistive technology, workshops, positive rapport building.

Educational Implication

- **Institutionalization of ICT Capacity building programs-** the findings underscore the imperative of embedding structured and sustained ICT training modules within both pre-service and in-service education programs. Such initiatives would move beyond mere awareness to ensure pedagogically meaningful integration of technology in instructional practices.
- **Augmentation of ICT infrastructure and accessibility –** the recurrent challenges of inadequate infrastructure, poor connectivity, and limited technological resources necessitate strategic investments in cost-effective, scalable ICT infrastructure. This includes the establishment of ICT laboratories, reliable power supply, and digital resource repositories to ensure equitable access across teacher education institutions.
- **Curricular Reforms for technology enhanced pedagogy-** teacher education curricula should undergo a systematic reorientation towards technology-enabled pedagogical models such as blended learning, flipped classrooms, gamification and experiential simulations. Such reforms would align teacher preparation with global best practices in digital pedagogy.
- **Policy driven resource allocation and quality assurance-** the role of policy makers is crucial in ensuring judicious allocation of financial and material resources , designing sensitization and refresher training programs, and instituting robust monitoring and evaluation mechanisms to sustain ICT integration in teacher education
- **Promotion of inclusive and contextually relevant ICT practices-** to mitigate the digital divide and address learner diversity, teacher training institutions must adopt ICT

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

interventions that are locally feasible, contextually responsive and globally relevant. Such approaches would enhance inclusivity, foster critical thinking and prepare educators to navigate the demands of a digitally mediated educational landscape.

Suggestions and Recommendations

- **Localized ICT Training:**
  Structured training and periodic refresher programmes should be organized for both pre-service and in-service teachers in Diphu. These programmes must emphasize hands-on and practical use of ICT tools such as digital content creation, learning management systems, and online assessment methods, as envisioned in NEP 2020. Contextualized training will enhance teachers' confidence and competence in integrating technology into everyday classroom practices.
- **Infrastructure Development:**
  Strengthening ICT infrastructure is crucial for meaningful technology integration. Government initiatives, along with public–private partnerships, should focus on ensuring reliable internet connectivity, uninterrupted electricity supply, and access to affordable digital devices across Karbi Anglong. Improved infrastructure will create an enabling environment for both teachers and learners, particularly in rural and remote areas.
- **Pedagogical Innovation:**
  ICT-enabled pedagogical approaches such as flipped classrooms, mobile learning, blended learning, and gamification should be introduced in ways that are culturally and linguistically appropriate to the local context. These innovative methods align with NEP 2020's emphasis on flexible, experiential, and learner-centred education, while also promoting active participation and self-directed learning.
- **Policy and Monitoring:**
  Region-specific ICT policies should be implemented under the Karbi Anglong Autonomous Council (KAAC). These policies must address resource allocation, monitoring mechanisms, supervision, and continuous sensitization programmes for stakeholders. Effective monitoring will ensure accountability and sustainable implementation of ICT initiatives.
- **Inclusive Practices:**

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

To bridge the digital divide in remote tribal areas, the promotion of low-cost, multilingual, and offline digital learning resources is essential. Such inclusive practices support NEP 2020's vision of equity and inclusion by ensuring that learners from marginalized and geographically isolated communities have access to quality education.

Structured Educational Implication of the Study

- **Implications for Policy Planning-** Policy planning must adopt a decentralized and region-specific approach that reflects the socio-cultural realities of Karbi Anglong. ICT policies aligned with NEP 2020 should prioritize equitable funding, infrastructure development, and inclusive digital education strategies. Involvement of local governance bodies such as KAAC will ensure contextually relevant decision-making and effective implementation.
- **Implications for Institutional Governance-** Educational institutions must strengthen governance mechanisms to support ICT integration. This includes establishing ICT committees, maintaining digital infrastructure, and ensuring transparent utilization of resources. Institutional leadership should encourage innovation, monitor ICT usage, and foster a culture of digital readiness among teachers and students.
- **Implications for Teacher Training-** Teacher education programmes should integrate ICT training as a core component rather than an optional skill. Continuous professional development, mentoring, and refresher courses are necessary to keep teachers updated with emerging technologies. Emphasis on pedagogical use of ICT will enable teachers to design meaningful, inclusive, and engaging learning experiences.

Implications for Community Engagement- Community participation is vital for the success of ICT initiatives in tribal and rural regions. Awareness programmes for parents, community leaders, and local stakeholders can enhance acceptance and utilization of digital education. Collaboration with community organizations can also support infrastructure maintenance and promote a shared sense of ownership.

Reference

Joyce, A. (2021). Integrating e-learning in teacher education. Journal of Emerging Technologies (JET), Vol.1, ISSN No. 2710- 0189.https://journals.jfppublishers.com/jetl

Lokman, A (2015). Teacher Education. Ashok Publication

Dhirubhai, P.N & Valvi, N (2021). A study on teacher education & new education policy 2020. Zeichen Journal, Vol.7, PP.344, ISSN No. 0932-4747

EduInspire-An International E-Journal
An International Peer Reviewed and Referred Journal (www.ctegujarat.org)
Council for Teacher Education Foundation (CTEF, Gujarat Chapter) Email:- ctefeduinspire@gmail.com

National Council of Teacher Education. Government of India. https://ncte.gov.in/website/about.aspx

Kler, Shikha. "ICT Integration in Teaching and Learning: Empowerment of Educationwith Technology." Issues and Ideas in Education 2, no. 2 (September 1, 2014): 255 71. http://dx.doi.org/10.15415/iie.2014.22019

Rao, Y. Srinivasa, M. Anil Ramesh, and V. Vishnu Vandana. "A Study on Faculty Perspectives on ICT Integration in Teaching Learning Process." International Academic Journal of Business Management 06, no. 01 (June 14, 2019): 68–75. http://dx.doi.org/10.9756/iajbm/v6i1/1910009.

Nyamekye, Ernest, Daniel Baffour-Koduah, and Esther Asare. "Exploring the Perspectives of Basic School Ghanaian Language Teachers on the Integration of ICTs in Teaching and Learning." African Journal of Teacher Education 10, no. 1 (June 25, 2021): 242–64. http://dx.doi.org/10.21083/ajote.v10i1.6587.

Pannen,Paulina."Integrating Technology in Teaching and Learning Mathematics." Southeast Asian Mathematics Education Journal 5, no. 1 (December 28, 2015): 31 48. http://dx.doi.org/10.46517/seamej.v5i1.31.

Ministry of Education, Government of India. (2020). National Education Policy2020. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf Education Ministry+1