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An Analysis of Various Policy Views on ICT in Teacher Education

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Abstract

ICT is playing a major role in shaping the minds and capabilities in 21st century to meet the global market demands. In the field of education different ICT tool and devices are being used by the educators & students to explore, and access the education. ICT helps in increasing the quality of education among the stakeholders of the institutions by expanding their digital capabilities, to synergies the curriculum, teaching-learning process. The Government of India has been formulating various education policies and those policies focus & recommend the role of teachers in using ICT in the teaching-learning process. The quality of a good teacher always lies in the updating their knowledge and skills. As the curriculum demands the up to date knowledge of society to function in globalized world and technology revolutionizes with its updating of knowledge time to time. In the age of technology skilled educators are need of the hour. Therefore, the researcher explores to know about different policy perspectives related to ICT in teacher education, which will provide a comprehensive document for teachers.

Keywords: Information and Communication Technology, Policy Perspectives, Teacher Education

Introduction

Quality of Teaching-learning, quality of teachers and teacher education are key important to providing quality education for all. The **Sustainable Development Goal 4** too supports that teachers are the major contributors to accomplishing the education goals by 2030 Agenda - *'Equitable Quality Education for All'*. The technological interventions are to improve teaching learning and evaluation processes, support teacher preparation and professional development, enhance educational access, and streamline educational planning, management, and administration (National Education policy 2020). National Education Policy 1986 & revised National Education Policy 1992 highlighted the need to use Educational Technology (ET) to enhance access, quality and governance of education. Two central government schemes emerged out of these policies. They include IT and computer literacy and schooling (classes). Since then, many educational policies have come up and made various recommendations about the use of technology in teacher education.

Teacher training is extremely important in any country because teachers are the creators of future generations. It is a well-known statement that teachers build nations. The quality of teacher education programs should be improved in order to change the world. To be able to take on such a responsibility as a Teacher, it is very necessary for the Teacher to become aware of his role towards society and to resolve future challenges. The government of

India has formulated various commissions and committees for quality teacher education and teachers need to be aware of these policy perspectives.

Table 1: Comparisons of software topics of ICT curriculum

Content		
Concepts and Issues	1) Evolution of software applications 2) Intellectual property 3) Social context of software design	1) 2) The concept of software 3) Distinguishing between software and system software; 4) Operating system; File and file management; 5) Communicating with the operating system; file processing;
Introduction to Software Development	Learning a programming language (C/C++, Java, Visual Basic, Python) Defining and understanding the problem; planning and designing software solutions; 1) Implementing software solutions; 2) Testing and evaluating software solutions; 3) Maintaining software solutions 4)	Learning a programming language (Pascal, or C/C++) Text editor; 1) Some concepts of programming and programming languages; Simple program; 2) Branching and loop structure; 3) Structured data types; 4) Files and file operations; 5) Subprograms and structured programming 6) Implementing algorithms 7) 8)
Developing Software Solutions	1) 2) Project management 3) Documenting software solutions 4) Developing software solutions Social and ethical issues related to software solutions	1) The concept of a database system; 2) System Administrator database 3) Microsoft Access; System database relations
Development & Impact of Software Solutions	1) Social and ethical issues 2) Application of software development approaches	Not included in the Vietnamese curriculum

Software Development Cycle	1) 2) 3) 4) 5)	Defining and understanding the problem Planning and designing software solutions Implementation of software solution Testing and evaluating of software solutions Maintaining software solutions	Knowledge and security database systems

Needs and Significance of the Study:

In 21st century circumstances, need and demand of ICT is increasing due to drastic change of Science and Technology in education. So, the government of India has taken different initiatives in different time for broadcasting as well as providing the quality of education. It is possible when teachers are aware &competent about ICT related different initiatives. Thus, the researchers want to explore different ICT related policies for creating awareness among educational stakeholders in Teacher Education. Because those ICT related policies can relate teachers with teaching Learning process. Therefore, this paper provides resources to help stakeholders in better understanding regarding the roles of ICTs in teacher education programmes.

Objectives of the Study: The objective of this study is to know about different policy perspectives in relation to ICT in Teacher Education in India.

Method: The present paper prepared through the analysis of the different documents and policy regarding on ICT in Education.

Analysis of Various Policies or Policy Documents:

The Government of India established the University Education Commission (1948) and the

Secondary Education Commission (1952-53) to modernize India's education system. The

Institute of Technology was established and the National Council of Educational Research and Training (1961) was launched as an autonomous body to advise the government on the formulation and implementation of educational policy. During this period, emphasis was placed on traditional methods of education and efforts were made to introduce radio and television to expand the base of education to a wider population. The National Policy on Education (NPE) was published in 1986 which was updated with amendments later on 1992. It is a comprehensive policy framework for the development of India's education system. The original policy did not specifically any recommendation about the use of ICTs for promoting Primary and secondary Education. But after that in 1992 Programme of Action (POA) on NPE stressed the need to improve the access to computers in schools. In this present time policy makers realized the demand and needs of technology in education therefore several policy designs and mention the role of ICTs in education.

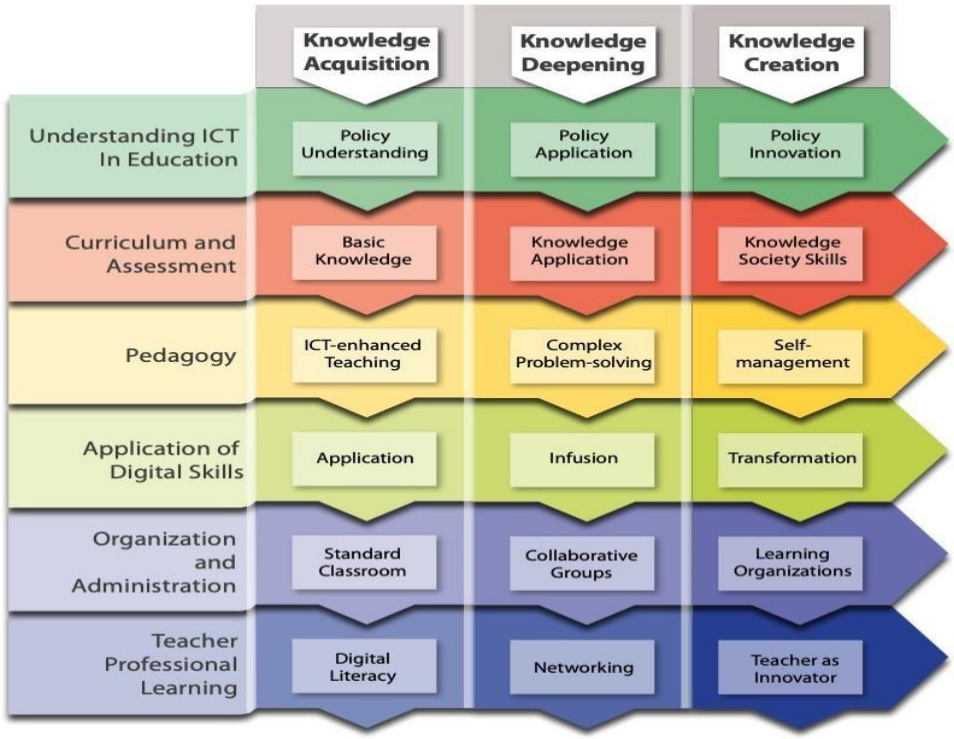
Investigators discussed the policies and documents as below-

I. ICT Competency Framework for Teachers:

Successful integration of ICT into teaching and learning requires rethinking the role of teachers in planning and applying ICT to enhance and transform learning. Education systems need to regularly update and reform teacher preparation and professional development according, ensuring that all teachers can harness technology for education - UNESCO. Integration of ICTs and their implications in teacher education programs are a means to support high-quality teaching and learning- (Panigrahi , M. R. 2016).

ICT Competency Framework:

UNESCO developed the ICT Competency Framework for Teachers as a tool for training preservice and in-service teachers. The objectives of the framework are to provide an up-to-date roadmap for policy development and capacity-building support to national and institutional goals. Here, the target audience is teacher educators, education experts, policy-makers, teacher support staff and other professional development providers. This framework addresses recent technological and pedagogical developments in ICT and education. The policy envisages 18 ICT teacher competencies and these should be subdivided into 64 specific objectives. The competencies range from encouraging teachers to understanding national priorities as identified in national ICT in Education policies, how ICT can support the curriculum, assessment strategies, pedagogy, school and class organization, administration as well ongoing professional development.



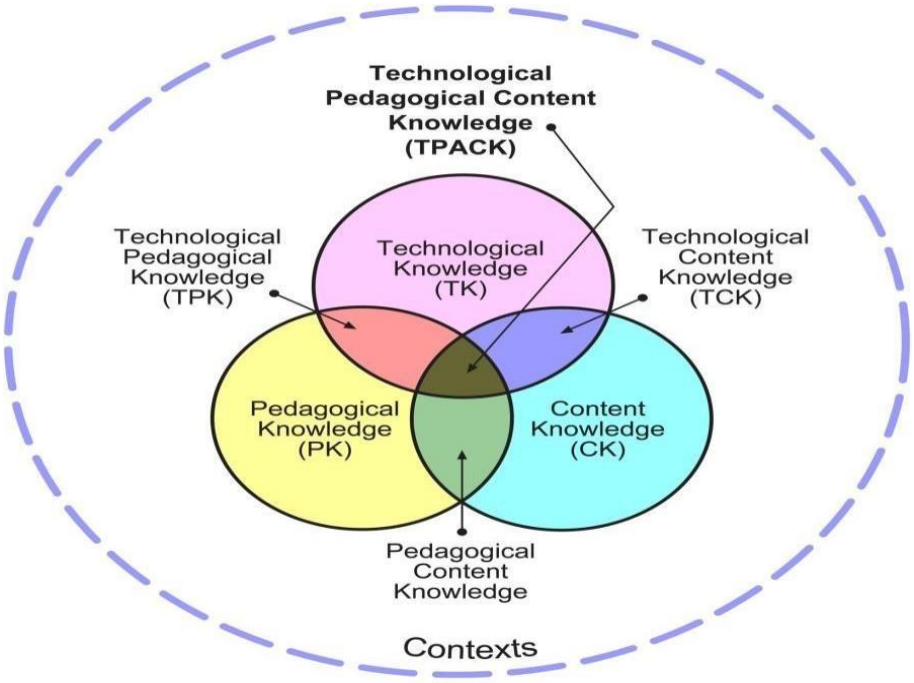
(Source: https://www.unesco.org/en/digital-competencies-skills/ict-cft)

'The framework is intended to inform educational experts, policymakers, teacher support personal, and providers of professional learning on the role of ICT in educational reform, as well as to assist UNESCO member states in developing national ICT competency standards for teachers; (Anchal Sharma 2022). Therefore, it can say that this framework not only emphasis that teachers are equipped with the necessary technical skills but also emphasizes the importance of aligning ICT use with educational goals and national policies. It recognizes the significance of continuous learning and adaptation in the ever-evolving landscape of technology and education. Overall, this

approach appears to be well-designed to empower teacher educators to effectively utilize ICT to enhance teaching and learning arts.

II. TPACK Framework:

The Technological Pedagogical Content Knowledge (TPACK) framework describes the type of teacher knowledge required to teach effectively with technology. The TPACK framework identifies a unifying structure that not only respects this complexity but also provides guidance for appropriate technology integration (Koehler & Mishra, 2008; Mishra & Koehler, 2006). The TPACK framework consists of three thematic knowledge bases—technology, pedagogy, and content. This framework suggests that teacher competence is created through the interaction of these three knowledge bases-



Source: http://tpack.org

The TPACK framework also functions as a theoretical and conceptual lens for researchers and educators to measure pre-service and in-service teachers' readiness to teach effectively with technology. For this purpose, researchers have developed a range of instruments, quantitative and qualitative, to measure TPACK (Koehler, Shin & Mishra, 2011; Schmidt, et al., 2009).

III. National Curriculum Framework for Teacher Education 2009

The National Curriculum framework for teacher Education **Towards Preparing Human Teacher** documents has recommended specifically on ICT in Schools and e-learning. The NCFTE 2009 policy emphasizes the inclusion of ICT in school education for education. This policy said that '*It has become more of a fashion statement to have computers or multimedia in schools, the result being that in spite of its potential to make learning liberating; its implementation is often not more than cosmetic*'.

ICT in school and e- Learning:

- Technology is considered as a panacea for teacher shortage in schools. Although this policy makes a statement *'ICT is detrimental to children's education*'.
- *Teacher education needs to orient and sensitize the teacher to distinguish between critically useful, developmentally appropriate and the detrimental use of ICT.*
- This policy said that in a way, *"ICT can be imaginatively drawn upon for professional development and academic support of the pre-service and in-service teachers."*

The NCFTE 2009 policy encourages a shift towards more meaningful and impactful use of ICT in education. It emphasizes for teacher to be prepared with the necessary skills with sensitivity to the uses of ICT and understanding to leverage technology in ways that genuinely enhance learning outcomes and empower students.

IV. National Mission through Information Communication Technology 2009

The National Mission on ICT 2009 is a project launched by the Central Government. It has three fundamental principles – access, equity and quality. This scheme provides connectivity between all colleges and universities through Technology. The core objective of NMICT-2009 is to deliver accessible low-cost ICT devices to students and teachers for learning. The scheme consists of two main components:

- To Provide connectivity and to create provision for access ICT devices for institutions
- Content generation.

Key points of this policy:

i. This policy focused specifically on higher education with the aim of building connectivity and knowledge networks.

ii. This scheme helps to spreading digital literacy for teacher empowerment and improvement of knowledge.

iii. It also provides quality content to take care of the aspirations of academic community and to deal with to the personalized needs of the learners.

iv. The quality assurance of e-contents to make world class, in the field of pedagogy for development of efficient learning modules for disparate groups of learners, making available of e-knowledge contents, free of cost to Indians, etc.

v. This idea is created to bridge the digital divide, which complete the gap in the skills to use computing devices for teaching-learning among urban as well as rural stakeholders in Higher Education. So, they can join the mainstream of the knowledge economy can make the best use of ICT for teaching and learning.

V. National Policy on ICT in School Education 2012

The Department of School Education and Literacy, Ministry of Human Resource Development, Government of India has revised the *National Policy on ICT in School Education* in 2012. The policy aims to prepare youth generations to participate creatively in the establishment, sustenance and growth of a knowledge society leading to the all-around socioeconomic development of the country and global perspectives. To devise catalyse, support and sustain ICT and ICT-enabled activities and processes to improve access, quality and efficiency in the school system. The initiative of ICT Policy in School Education is inspired by the great potential of ICT for enhancing

outreach and improving quality of education. The policy provides guidelines to assist states in optimizing the use of ICT in school education within a national policy framework. The policy recommended on these key areas –

ICT in School Education:

This dimension included Challenges and issues, ICT Literacy and Competency enhancement,

ICT enabled teaching learning processes, Elective Courses at Higher Secondary Level, ICT for Skill Development (Vocational and Job oriented areas of general Education), ICT for Children with Special Needs, ICT for Open and Distance Learning for the betterment of School Education.

The National Policy on ICT in school Education was also focused on Teachers capacity building in both *in-service Teachers* and *pre-service Teachers*. Keeping in view this policy recommended two following points –

a. Capacity building of In-service Teachers:

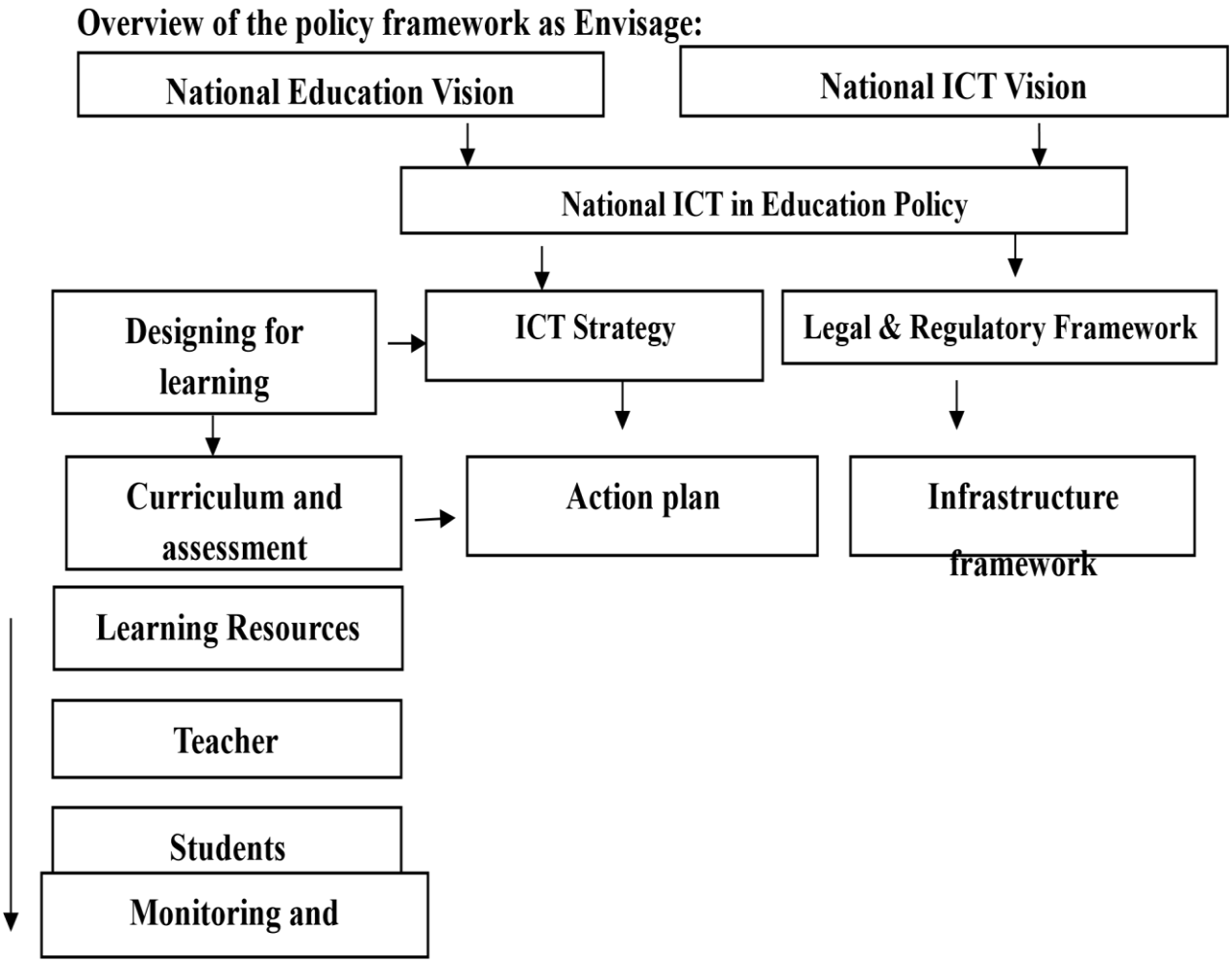
Capacity building of teachers will be key to widespread ICT-enabled practices in school systems. In-service training for teachers will include **induction training** as well as **refresher courses.** The induction trainings will be impacted by the Regional Institutes of Education of the NCERT, State Councils of Educational Research and Training (SCERTs). Refresher courses will be conducted every year to enable teachers to share, learn and keep abreast of the latest trends in ICT based teaching learning process. Induction training will be followed by teacher evaluation to ensure minimum competencies are achieved.

- Training in ICT will be integrated into general training programs organized for all levels of teachers and school leaders to popularize its use and demonstrate effective practices in ICT.
- Beginning with an initial sensitization through ICT operational skills and ICT enabled ***subject teaching skills,*** teachers will become part of online professional groups to continue their education, pool in their resources and actively contribute to the strengthening of domain specific knowledge within the country.
- Teacher participate in the ***Digital content development*** process will catalyse its broad based usage in the classrooms. Teacher capacities will be developed in instructional design, selection and critical evaluation of digital content, and strategies for effective use of digital content to enhance student learning.

b. Capacity building through Pre-service Teacher Education:

- Teacher educators will be suitably ***Oriented and Trained*** to use ICT in their pre-service teacher training programmes.
- All pre-service teacher education programmes will have a ***Compulsory ICT skill***. All teacher trainees who pass the teacher education program will acquire adequate ***Competency in ICT and ICT enabled education.*** These skills will gradually form part of the eligibility criteria for teacher recruitment.

Although this national policy on ICT is specifically focused on the school education field, that inservice and pre-service teachers need to understand that all these policy perspectives.



Source: Informational Communication Technology for Teacher Education, SanthoshVallikkad)

VI. The National Education Policy- 2020

The National Education Policy 2020 includes two themes of ICT in Education namely- ***Use and Integration of Technology***, *and* ***Online and Digital Education****: Ensuring Equitable Use of Technology***.** This policy covered comprehensives roles and uses of ICT in education. The NEP 2020 emphasizes the Digital India campaign that will help '*Transform the entire nation into a digitally empowered society and knowledge economy'.* The policy reflects the explosive pace of technological development, allied with the sheer creativity of tech-savvy teachers and entrepreneurs, including student entrepreneurs. The policy said '*Use and Integration of technology to improve multiple aspects of education'*. Technology interventions provide in teaching learning and evaluation process, supporting teacher preparation and professional development, enhancing access, management and administration. Another important issue recommended by NEP 2020 is related to teachers' concerns -**point number *23.6***. *A rich variety of educational software, for all the above purposes, will be developed and made available for students and teachers at all levels. All such software will be available in all major Indian languages and will be accessible to a wide range of users including students in remote areas and Divyang students. Teaching-learning econtent will*

continue to be developed by all States in all regional languages, as well as by the NCERT, CIET, CBSE, NIOS, and other bodies/institutions, and will be uploaded onto the DIKSHA platform. ***This platform may also be utilized for***

Teacher's Professional Development through e-content. *CIET will be strengthened to promote and expand* ***DIKSHA*** *as well as other education technology initiatives. Suitable equipment will be made available to teachers at schools. Technology-based education platforms, such as DIKSHA/SWAYAM, will be better integrated across school and higher education, and will include ratings/reviews by users, so as to enable content developers create user friendly and qualitative content 'Under national initiatives like 'National Mission on Education through Information and Communication Technology (****NMEICT)*** *and '****Digital India'****, to leverage the potential of ICT to make the best quality content accessible, various digital platforms have been launched. Digital platforms like* ***DIKSHA, NISHTHA, SWAYAM,*** *online courses,* ***MOOCs*** *have supported teachers to upgrade their knowledge and skills. Dedicated Modules and courses on using ICT also have been proven crucial for pre-service teacher training programs'.* **Sharma, Anchal (2022).** This policy said that Teacher's continuous professional development for college and university teachers will continue through the existing institutional arrangements and ongoing initiatives; these will be strengthened and substantially expanded to meet the needs of enriched teaching-learning processes for quality education. The use of technology platforms such as SWAYAM / DIKSHA for online training of teachers will be encouraged, so that standardized training programmes can be administered to large numbers of teachers within a short span of time. The policy mentions the '*use of technology for online and digital education adequately addresses concerns of equity in education'.* Policy recommends the following key initiatives at higher education level (a) Pilot studies for online education: (b) Digital infrastructure: (c) Online teaching platform and tools: (d) Content creation, digital repository, and dissemination: (e) Addressing the digital divide: (f) Virtual Labs: g) Training and incentives for teachers: (h) Online assessment and examinations: (i) Blended models of learning: (j) Laying down standards. **Discussion:**

Professional development to incorporate ICT into teaching-learning is an ongoing process. It is rightly said that Personal development must be accompanied by organizational development in schools, training centers, and universities. The most obvious technique for professional development for teachers is to provide courses in basic ICTs knowledge and skills, delivered by experts in national and regional centre. After review these importance education policies and documents, it is clear that every policy maker realized and understands of needs & demands of ICTs in education. Therefore, some educational policies include the role of ICT as *'Integration of ICT in Education'*. These policies are indicated that the professional commitment and holistic competence of teachers should be desired. *Teacher education as continues process, its preservice and in-service components being inseparable (POA 1992).* There is a need to develop skills and competencies to prepare teachers and teacher educators according to the demands of the curriculum and society needs. To enable them to organize competency based and commitment oriented professional programmes. To enable teachers to acquire capabilities to organize continuing education programmed. For the purpose of competent skillful teachers these policies are taken many more initiative like National Educational technology forum (NETE), where teachers can create to provide a platform for the free exchange of ideas on the induction, deployment, and use of technology to enhance learning assessment, planning, administration

(NEP2020), *DIKSHA platform which* ***is Teacher 's Professional Development through econtent.,*** Build intellectual and institutional capacities in educational technology, e-Pathshala , NISHTHA, and the National Teacher Platform (NTP). Therefore, we can say that ICT has taken a special place in Indian education keeping up with the needs and demands of the current situation.

Conclusion:

In presents digital era Information communication Technology (ICT) takes a special role in the strategic development of teacher educators, enabling environment and overall improvement of education that different policies are already addressed. According above policy suggestions its rightly say that teachers are using ICT for making teaching-learning process easy & interesting as well as for quality education. Where, a good competent teacher has several skills and techniques for providing successful teaching. Therefore, it is important to the teacher's considerable concern about the educational policy perspective related to ICT, but also the development and enhancement of the teacher's skills, and abilities to use ICT devices for interactive teaching-learning.

References:

[1] Angadi, G. (2016). Evaluation Framework for ICT Use in Teacher Education (A case study of the
[2] colleges of Teacher Education). *International Journal of Research in Engineering,* IT and Social Sciences https://www.academia.edu/30311570/
[3] Agarwal, N., Singh, S. D., & Eqbal, M. (2009). Paradigm Shift in Teacher education. New Delhi:
[4] Vayu Education of India.
[5] Bhattacharjee, B. & Deb, k. (2016). Role of ICT in 21st Century's Teacher Education.
[6] *International Journal of Education and Information Studies,* ISSN 2277-3169 Volume
[7] 6, Number 1 (2016), page. 1-6
[8] Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A
[9] framework for integrating technology in teachers' knowledge. Teachers College
[10] Record, 108 (6), 1017–1054
[11] MHRD. (2020). National Education Policy 2020
[12] https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
[13] MHRD. (1992). Program of Action
[14] https://www.education.gov.in/sites/upload_files/mhrd/files/documentreports/POA_1992.pdf
[15] MHRD. (2009). National Mission through Information Communication Technology
[16] https://nmeict.ac.in/wpcontent/uploads/2020/04/documents/Mission%20Document/M issiondocument.pdf
[17] NCTE. (2009). National Curriculum Framework for Teacher Education: Towards Preparing
i. Professional and Humane Teacher, NCTE, New Delhi
[18] https://ncte.gov.in/website/PDF/NCFTE_2009.pdf
[19] Panigrahi , M. R. (2016). ICT Integrated Teacher Education". Commonwealth Educational
[20] Media Centre for Asia https://www.cemca.org/ckfinder/userfiles/files/ICT%20Integrated%20Teacher%20Education-Final_Low%20with%20Cover%20Back.pdf
[21] Richard,J., A. (2016). Digital Technology in Teacher Education, *International Journal of Engineering Research and Modern Education (IJERME),* ISSN -2455 - 4200 Volume
[22] I, Issue I, p-757-759 (www.rdmodernresearch.com)
[23] Siddiqui, M. H. (2007). Technology in Teacher Education. *APH Publishing Corporation New*
[24] *Delhi*- https://readersend.com/product/technology-in-teacher-education/
[25] Sharma, A. (2022). Information and Communications Technology for Teacher Training in India, ICT India Working Paper, No. 64, Columbia University, Earth Institute, Center for Sustainable Development (CSD), New York
[26] https://www.econstor.eu/bitstream/10419/249853/1/ICT-India-Working-Paper-64
[27] Schmidt, D. A., Baran, E., Thompson, A.D., Koehler, M.J., T.S., T.S., & Misra, P. (2009). Technology, Pedagogy, content Knowledge (TPCK): The development and validation of an assessment instrument for pre-service teachers. Research Journal of Technology in Education, 42(2), 123-149.
[28] https://files.eric.ed.gov/fulltext/EJ868626.pdf

[29] Siddiqui M.A., Sharma A.K., & Arora G.L. (Eds) (2009). Teacher Education Reflections Towards Policy Formulation, Member Secretary, NCTE, New Delhi.
[30] TPACK Framework. (2011)
[31] https://matt-koehler.com/tpack2/using-the-tpack-image/
[32] United Nation. (2015). Agenda for Sustainable Development web.pdf
[33] https://www.undp.org/sustainable-development-goals/quality-education
[34] UNESCO.(2018). ICT Competency Framework for Teachers https://en.unesco.org/themes/icteducation/competency-framework-teachers
[35] Vallikkad, S. (2009). Information Communication and Technology For Teacher Education.
[36] *Kanishka publishers, Distributors*, ISBN 978-81-8457-114-1.