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Evolution of Teaching-Learning Process through Techno-Pedagogical Competency

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Abstract

The world is changing daily, and the educational system has grown to meet the needs of society while retaining its philosophical component. In this age of globalization and modernization, paradigm shift has been observed in a number of areas of the education system, including teaching methods, the use of TLM, and teacher training programs. The current teaching-learning approaches are not thought to meet the needs of the younger generation of students. Building a digital village where the next generation acts as a digital nation is crucial for the younger generation of learners. In order to build a new teaching-learning environment, the phrase Techno-Pedagogical Competency has been used in bite-sized learning, cloud learning, steam curriculum, etc. However, the way that students have been using cloud-based applications will be significant since it will help teachers create more effective digital apps for the education sector and better course designs for online learning settings. The purpose of this study is to demonstrate how, in the wake of COVID-19, the use of Techno-Pedagogical Competency through the use of cloud learning, bite-sized learning, and steam curriculum has altered our way of thinking, working, and maintaining our way of life.

Key Words: Competency, Evolution, Pedagogy, Teaching-Learning Process, Technology

Introduction

A paradigm shift from the traditional chalk-and-duster teaching style to digitizing the pedagogical approach using electronic gadgets is currently being witnessed by the educational system. It is observed that such a change improves students' ability to learn about themselves in a global setting in addition to improving teachers' abilities.

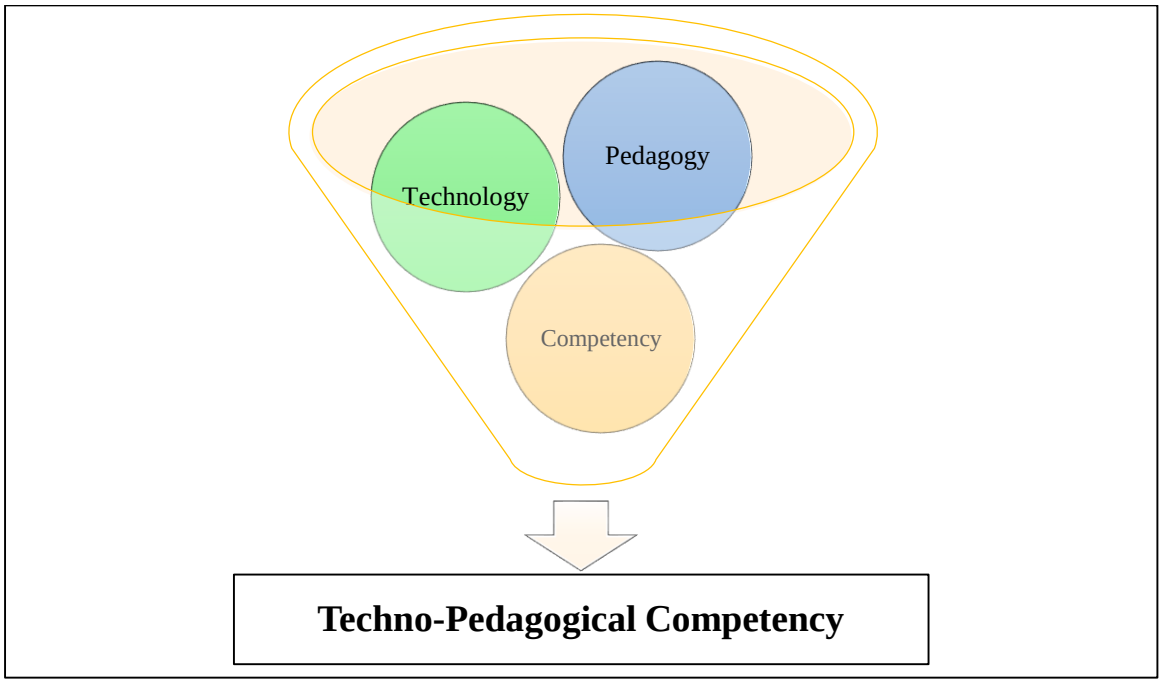
Hybrid technology, which uses ICT to teach and learn in a classroom setting, is associated with Techno-Pedagogical Competency. The Greek word "technologia," which implies study of art, skill, and craft, is where the word "techno" originates. Conversely, competency refers to the capacity to do an action effectively, while pedagogy refers to the "teaching of science and art." So, now a days Techno-Pedagogical Competency provides us an advance teaching-learning process which improves academic achievement of students and also assists in remote learning. Effective technology incorporation in classroom learning, demands an understanding of how ICT tools are correlated to the content area and pedagogy part. Hence, along with content and pedagogical knowledge a 21st century's teacher must be the owner of ICT knowledge as well.

Techno-Pedagogical Competency is a combination of three words. Here Techno means Technology, by which teachers and students can creates an understanding of how to use computer hardware and software like digital video, smart boards, e-books and common technologies including OHP etc. in education. Competency is often defined as the capacity to

perform an action effectively or successfully. Here, teachers can use technological competency in a variety of ways to promote learning both within and outside of the classroom. The Greek words "paid" and "agogos," which translate to "to lead the child," are the origin of the word "pedagogy." Pedagogical competency is dependent on ideal, large, comprehensive and up to date knowledge of subject matter, which enhance teaching-learning process. Hence, The Techno-Pedagogical Competency can be defined as the utilisation of technology in teaching-learning situation that is used by teachers efficiently to collaborate technology and pedagogy within the classroom and without the classroom. The best examples of embracing technical knowledge in pedagogy are MOODLE (Modular Object-Oriented Dynamic Learning Environment), MOOC (Massive Open Online Course), and LMS (Learning Management System), which are new concepts of virtual learning that have emerged as a result of the development of techno-pedagogical knowledge.

The popping up of the new technology has affected every aspect of human life. In the absence of technology and the techno-pedagogical competent teacher, today's classroom is unthinkable. The 21st century would see greater learning standards than the 20th century because of modernization and globalization.

Diagram 1: Techno-Pedagogical Competency



Review of related literature

Very few researchers have actually been undertaken to study the teacher knowledge of techno-pedagogical competency. The finding of their researches reveals that the techno-pedagogical competencies changes our present teaching-learning environment. However, during the review of the literature researcher find a very few studies undertaken to check the teacher techno-pedagogical competencies in relation to past, present and future scenario and also the role of Teachers, Students and Stakeholders. Therefore, it is of prime importance to study about the "Evolution" which take place in our teaching-learning process through techno-pedagogical competency, present study is an attempt to fill such a gap in this article.

Objectives

- To ascertain the paradigm shift of Techno-Pedagogical Competency.
- To find out the evolution of Techno-Pedagogical aspect.
- To highlight the changing scenario of Techno-Pedagogical Competency for planning tomorrow.
- To analyse the new application software which supports Revised Bloom's Taxonomy.
- To describe briefly the past, present and future scenario of Techno-Pedagogical Competency through the role of Teachers, Students and Stakeholders.

Methodology

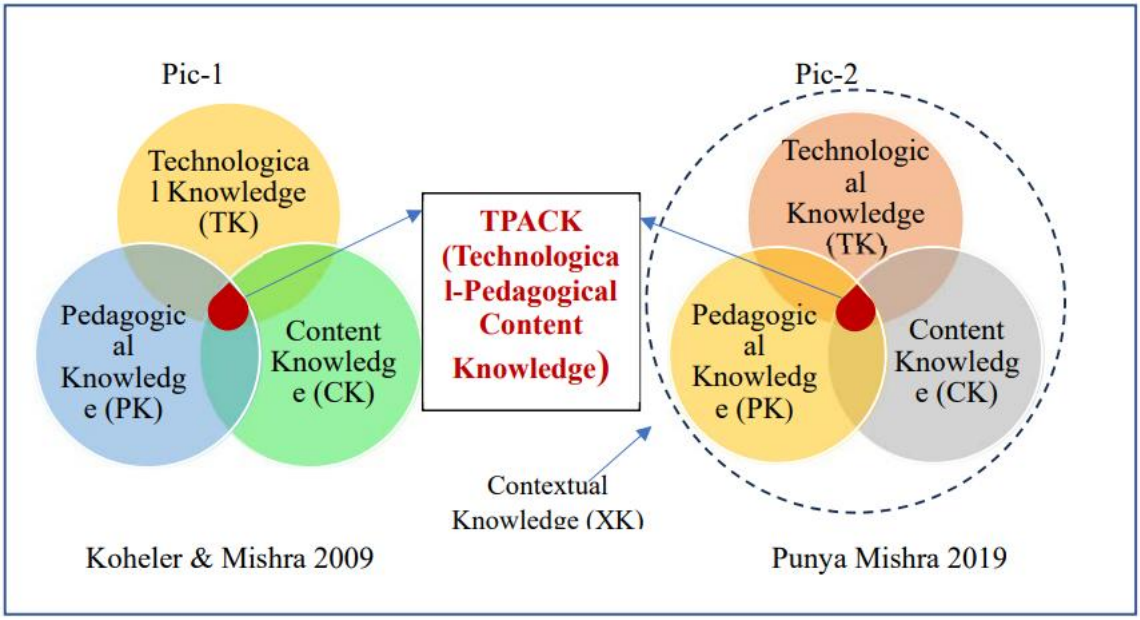
This article is generally descriptive in nature. The data and information in it are purely from secondary data. All of the data has been gathered from journals, websites report of various organizations, e-books, articles published in National, International and local papers etc. This paper will give a brief description of changing scenario of teaching-learning process through Techno-Pedagogical Competency.

Paradigm shift of Techno-Pedagogical Competency

The 21st century teacher has been blessed with upcoming technology by providing new techniques, methods and tool that make their teaching so easy and innovative. Students should be exposed to technology-based learning in the classroom to prepare them for life in the twenty-first century. Because they play a crucial role in comprehending the educational objectives of a dynamic society, teachers must possess both general and specialized techno-pedagogical competence in order to succeed in the future of the institution's environment.

The foundation of TPACK (Technological Pedagogical Content Knowledge) describes the types of knowledge that educators require to successfully integrate technology into their lessons. Since 2009, Koheler and Mishra have maintained the same TPACK image (Pic-1). The three underlying circles at the middle of the pic-1 & 2 (T, P & C) reflect the features of teacher knowledge, the K in TK, PK and CK. Since the area is surrounded by a circle, it can be said that knowledge is represented by an enclosed space. Because of this, the underlying TPK, PCK, and TCK can be identified as knowledge and as enclosing space. This brings us to a big dotted circle that encloses an area but isn't considered a type of knowledge. It's just labeled as Contexts. Punya Mishra added contextual knowledge (XK) in his 2019 paper "Considering Contextual Knowledge: The TPACK Diagram Gets an Upgrade." Naturally, this contextual knowledge should cover everything from the viewpoint of the instructor on the current technology at their disposal to the students' understanding of the policies that are in place at the school, district, and state levels and the implications of those policies.

Diagram 2: Paradigm shift of Techno-Pedagogical Competency



Pic-1 Pic-2

Source: Pic-1 https://edtech-class.com/2021/06/30/all-about-tpack-a-teachers-guide-to-the-tpack-tech-integration-model/

Pic-2 https://educationaltechnology.net/technological-pedagogical-content-knowledge-tpack-framework/

'Evolution' for….

Who takes Evolution?

Techno-Pedagogical Competency of the teachers takes changes in post covid-19 teaching-learning process.

Evolution for What?

Educational technology changes its direction to cope with the Post COVID-19 crisis period and present 21st century's education system.

Evolution for Whom?

It includes teachers, learners, parents, school administration, community, regional, district, state, national level Governments and all humanitarian development partners of our country.

Evolution for When?

This new contextual Techno-Pedagogical Competency should be accepted by us to cope with post COVID-19 crisis and future of new normal life.

Evolution for Where?

It is essential to make changes in our education system through digital technology.

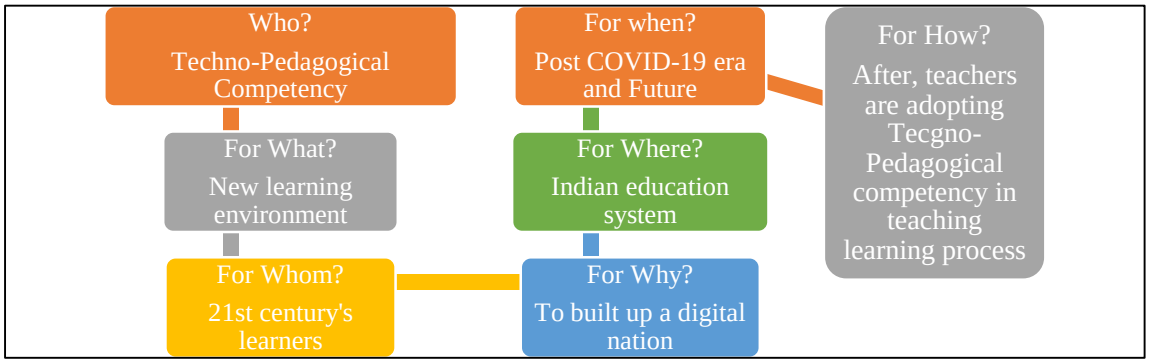
Evolution for Why?

Technology furnishes educators and learners with new different ways to meet the needs of individual learners.

Evolution for How?

Technology can assist educators to facilitate students inside of the classroom and outside of the classroom. It is no confidential matter that the education sector in India needs reform. Technology has reorganized the Indian education system by enhancing student's engagement.

Diagram 3: Evaluation for cope up with new Era



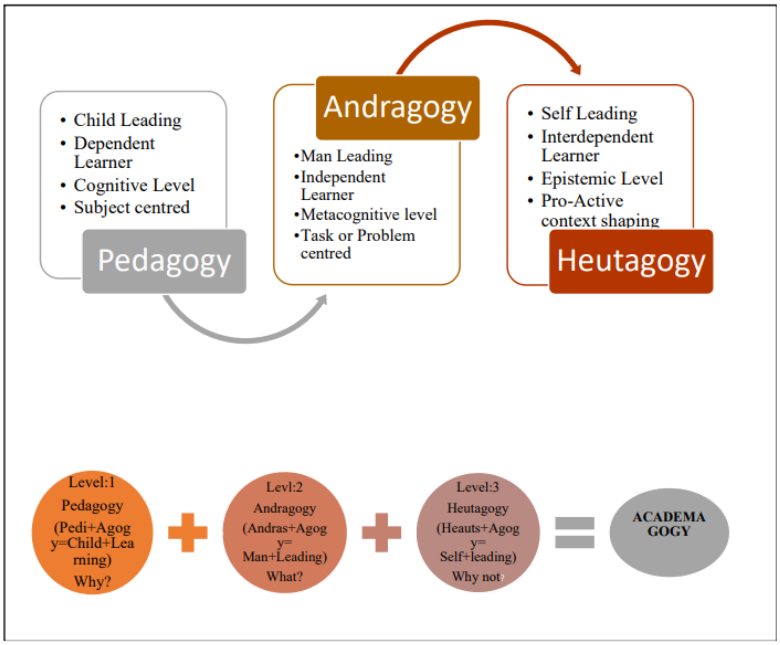
Changing scenario for planning Tomorrow

The fact that the Indian government and educational institutions have been attempting to alter the current educational model cannot be disregarded. We are all aware of how important education is in shaping our lives, and it has been a significant problem in our nation. The Indian education system is facing a number of challenges.

- Diversified Curriculum:

Curriculum trends in education are always moving forward to educators and students with the most effective and relevant learning experiences. In order to balance with the changing requirements of society, schools are embracing new approaches to curriculum design and delivery through Pedagogy, Andragogy and Heutagogy. These three make a new concept of a meshed model Academagogy. Academagogy means the process through which the educator mingles all three gogys to the advantage of student's learning needs.

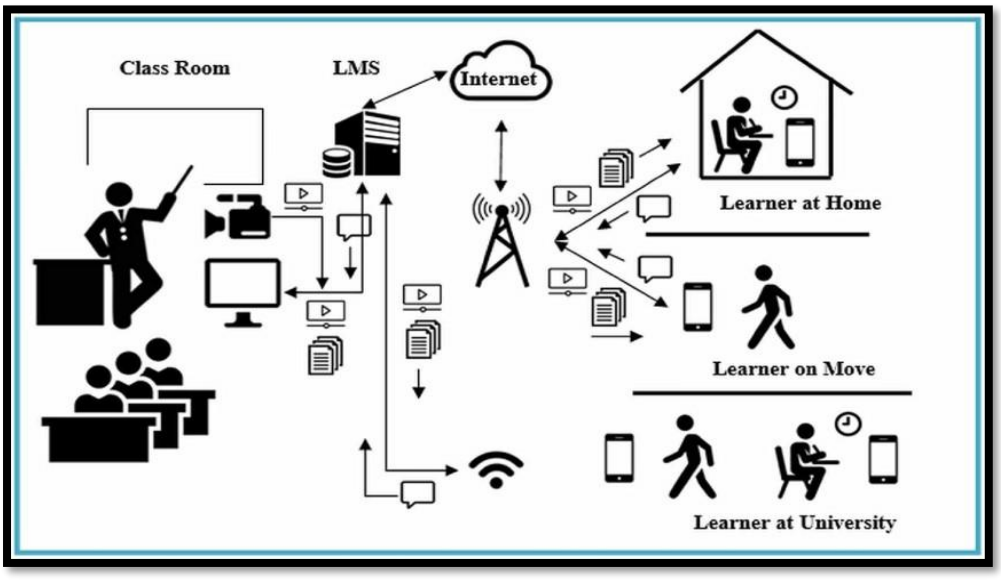
Diagram 4: Concept of Academagogy



➢ Institution Environment:

The learning environment plays a leading role in child's life. It is not just a wall or the atmosphere that effects the child but rather the connection and the warmth of a teacher. Teachers accept that a effective classroom environment assists students to encourage and motivate with routines and options for learning style. A positive classroom environment can make students to feel comfortable to share their thoughts, experience and quarries in anytime anywhere.

Diagram 5: Today's educational environment

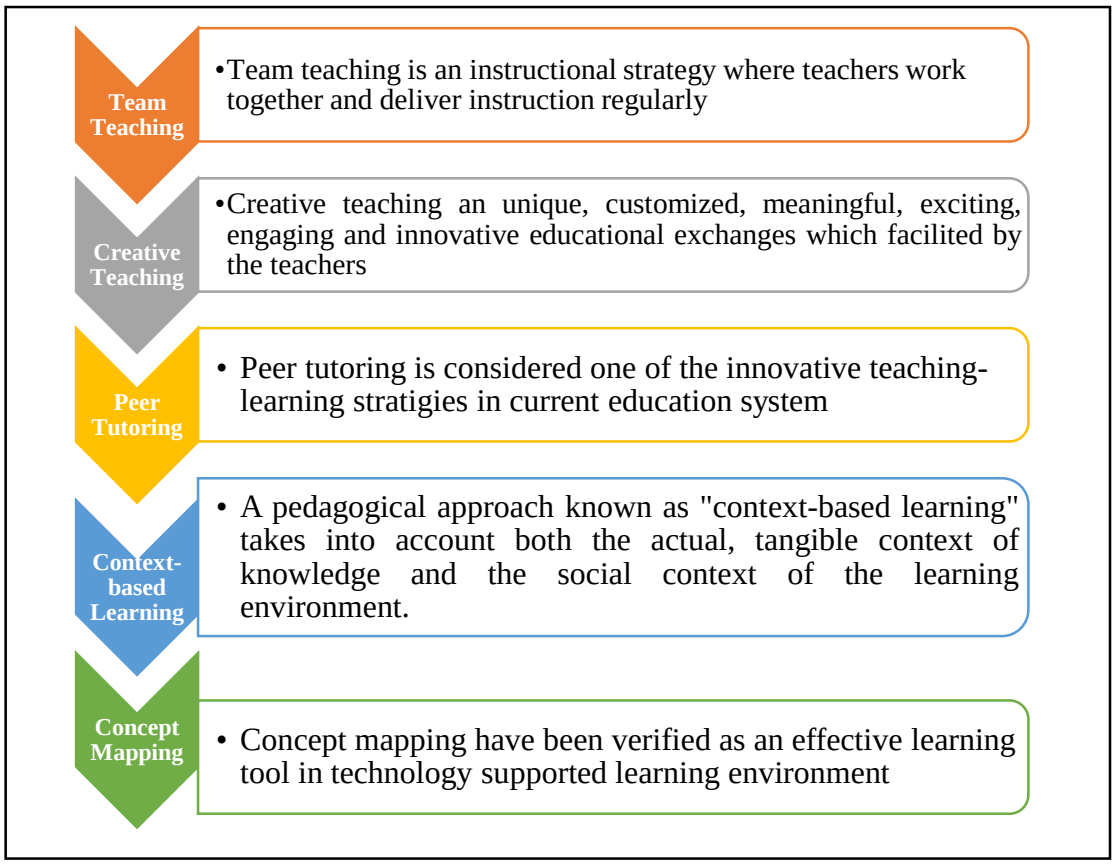


Source: https://www.researchgate.net/figure/Smart-learning-approach-for-interactive-video-based-learning-for-university-learning_fig5_335207821

➢ Teaching Strategies:

Teaching strategies have advanced significantly and are now an essential part of the teaching-learning process. The teachers try to facilitate their learners through expressing their in-depth knowledge of every concept. Mainly in the early years of teaching, methods like sensory remembering, sensory understanding are turned into cloud learning, bite size learning, gamification, digital learning etc. There are different innovative pedagogical strategies that a teacher has to use in their synchronous and asynchronous teaching.

Diagram 6: Different teaching strategies in changing scenario



➢ Teaching-Learning Material:

Teaching-Learning resources also play a crucial role whereas the students connect, extend and challenge their learning set up various skills in nature. Learning materials are the best path to tingle the creativity and innovation of learner. These types of aids have changed, wherefore multimedia modes are playing an interesting role to foster, innovate, create and engage a child's thinking and imagination.

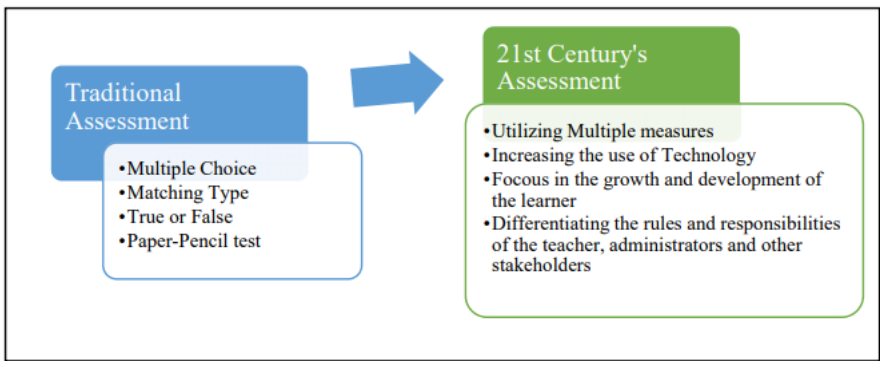
Diagram 7: Digital Teaching-Learning material to support Revised Bloom's Taxonomy

Source:http://educationaltechnologyguy.blogspot.com/2012/05/apps-to-support-blooms-taxonomy-android.html

Assessment for Learning:

Conducting timely assessment of the learner's progress abide a crucial step, but this step does not need to be scary. The learners are now judged according to multiple parameters get into account their hard and soft skills. Finally, the grades and report cards are no longer the aspect where a learner is judged.

Diagram 8: Current trends in assessment in learning

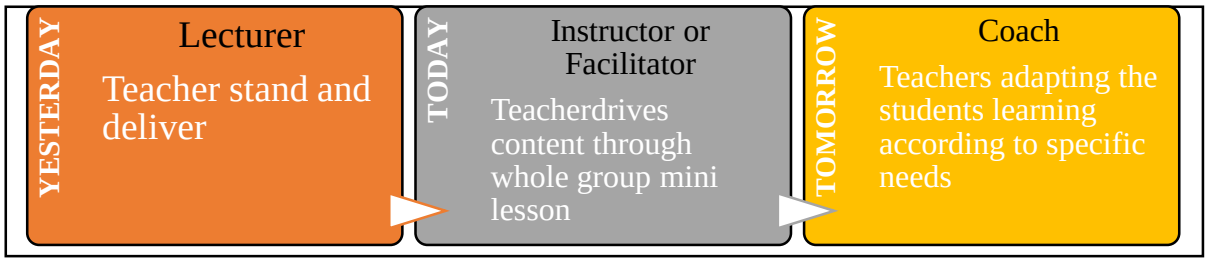


Transforming role through Techno-Pedagogical Competency

- Role of the Teacher:

The teacher of today is not cramped by the textbooks. They can gather information and content from the most authentic sources from anywhere in the world and make sure that their learners have also access information for engaging and educating himself at the same time.

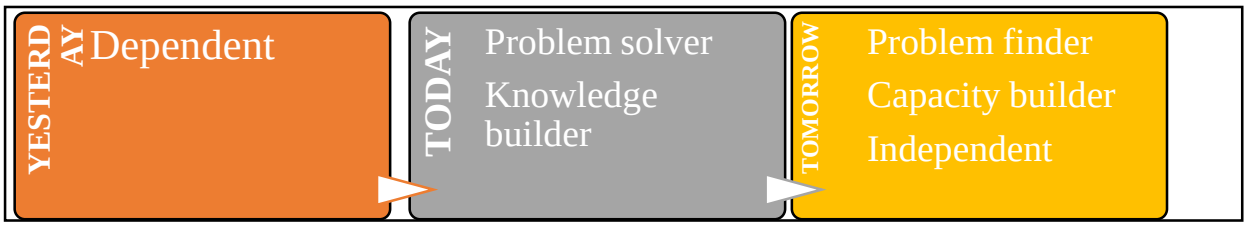
Diagram 9: Shifting role of Teacher



- Role of the Learner:

Learners are instructed by digital technologies and inspired to bring computers in class so that they can access a variation of materials easily. Students are cheered to search information in new and exciting ways through the help of educational applications and digital technology.

Diagram 10: Shifting role of learner



- Role of the Stakeholder:

However, developing and executing educational technology is not a simple task. It needs collaboration and communication among various stakeholders like parents, curriculum developer, society builder, technology provider and researchers. Now a day's educational technology set a guideline for the effective use of technology in teaching-learning process.

Diagram 11: Shifting role of Stakeholders

Findings

- After the COVID-19 pandemic hit the World, **Mobile learning and digital content** have become turn into more wanted platform.
- Learning through **Gamification** is a new trend of technology, which is adopted by different educational institution.
- **Mobile learning** is becoming steadily popular for teachers and students to stay connected with their anytime anywhere learning.
- **Social Media** has fabricated new opportunities for learners to attach with each other and access and share knowledge with each other.
- The **automated assessment tools** can also prepare analytical data to help learners in diagnosing weak areas and work on them.
- **Adaptive Learning** can help teachers to meet the needs of a diversified learner as population and maximize their outcomes.
- Having appreciate the use of **Techno-Pedagogical Competency** in education, throughout the time of pandemic, most teachers want to grasp the fully benefits of blended technology.

Future Direction

The past few years of COVID-19 outbreak has made us witness dramatic change in the teaching-learning system. The way learners are being taught today is very unique from the teaching method which was adopted few decades ago. Technological aspects have brought about many changes in the way education is conveyed and received. Digital learning through teacher's techno-pedagogical Competency has become a significant part of the present education system. These changes could not be possible without the help of Information Communication Technology (ICT). The adaptation trends of technology in education system shaped the schools and universities to cope up with future directional strategies in order to improve our country's teaching-learning process. These following trends are described as future direction of our present new normal environment.

- **Artificial Intelligence (AI)** related technologies mainly facial recognition, machine learning and natural language processing will be used increasingly in anywhere situation for making learning easier and more interesting.
- **Augmented Reality (AR)** and **Virtual Reality (VR)** would help learner to create fascinating and engaging learning experiences.
- In addition, learner can listen lectures, make class notes, receive voice notes of teachers through **wearable technology** such as VR headsets and smartwatches.
- **Cloud computing** will carry on with an important tool for educators and it also allows students access cloud-based book in anywhere.

Conclusion

Techno-Pedagogical Competency of teachers as well as students have always been a prime driver of change in the education sector. As we walk into the future, it is clear that emerging inclination of educational technology will remain to build the educational topography in a variety of ways. In this article we will explore some of the vital emerging inclinations in education system that are anticipated to give impact on 21st century's education system of India.

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