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Transformation of classroom pedagogy to digital pedagogy in teaching learning process during covid-19.

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Abstract

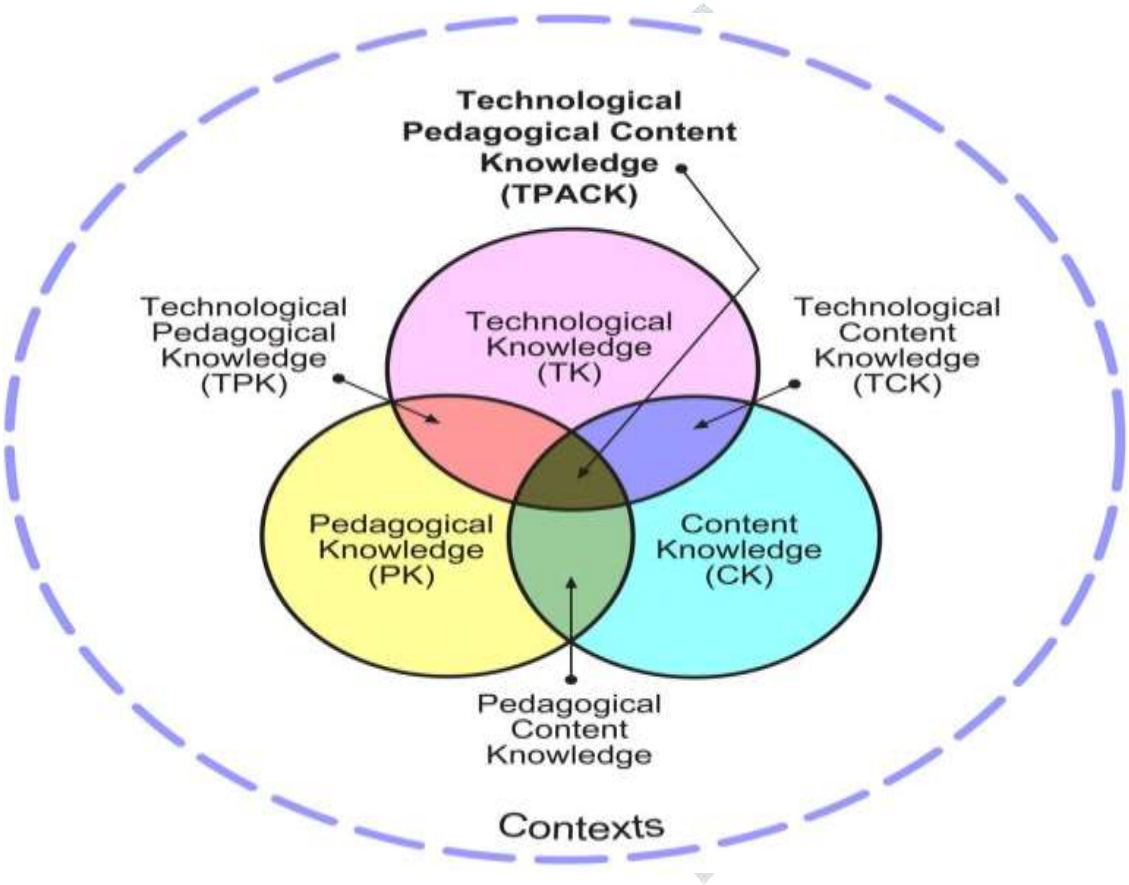
In 21st Century, we have already followed the footprint of digital pedagogy in teaching -learning process. But the use of digital pedagogy has reached to its climax during to the Covid pandemic in 2020. As the globalization of the educational technology and an unprecedented crisis i.e. Covid-19, different educational regulatory bodies (MHRD, UGC, AICTE, NCERT, NAAC, NCTE, etc) are trying to bring a remarkable changes in the education system. There is a worldwide paradigm shift in the teaching-learning process from Classroom pedagogy to digital pedagogy and 'face to face' learning to 'screen to screen' learning. Input-output based teaching learning process is changed into outcome based education. Last few decade, an extensive reforms are being processed to bring about essential changes in pedagogy in terms of what to teach (content) and how to teach (knowledge delivery) and how to assess (student learning). So, the teachers, students and parents are required to update and adapt themselves with modern teaching-learning process transformation. This study aims to impact of digital pedagogy in India to teaching learning process in terms of different socio economic factors. It will also highlight the necessities of classroom climate for implementing the digital pedagogy in a classroom situation. Through this study, constraints for introducing digital pedagogy in classroom situation will be exploited during the covid in India. Further, this article will describe the theoretical background and constructivism behind this digital pedagogy in teaching learning process. May it be called as shifting from classroom pedagogy to pandemic pedagogy.

Introduction:

Digital pedagogy is the study and use of contemporary digital technologies in teaching and learning process. This pedagogical approach may be applied to online, hybrid, and face-to-face learning environment through Online mood, partially online mood and offline mood. The concept of Digital pedagogy was rooted from the theory of constructivism. Constructivism is an approach that based on the construction of knowledge by an individual, based on one's prior knowledge, skills and competences. Balkan Kiyici (2003) claims that constructivism approach is a model which arose with the idea of making education more efficient and lasting; and one that uses the existing instructional strategies but gives a new direction to them. In constructivism, learning occurs with the active efforts of the individual and constructed in one’s mind

(Gunes, 2013). Digital Pedagogy is not only about using digital technologies for teaching and learning process but rather approaching digital tools from a critical pedagogical perspective. So, it is also emphasised on when not to use digital tools, and about paying attention to the impact of digital tools on learning.

Digital pedagogy or techno-pedagogy consists of three areas of knowledge, i.e.: content, pedagogy, and technology. Content (C) is the subject matter is to be taught. Technology (T) includes latest technologies such as computer, Internet, mobiles, digital video, e-books, Open educational resources and commonplace technologies including overhead projectors, blackboards, and books. Pedagogy (P) describes the collected practices, processes, strategies, procedures, and methods of teaching and learning. It also includes knowledge about the aims of instruction, assessment, and student learning (Khirwadkar 2007).



Integration of technology involves the understanding of the relationships among the aforementioned three components. According to Koehler and Mishra (2005), "good teaching is not simply adding technology to the existing teaching and content domain; rather, the introduction of technology causes the representation of new concepts and requires developing sensitivity to the dynamic, transactional relationship between all three components suggested by the TPCK.

Depending upon the nature and scope of content, and level of learners, appropriate technology integration must be looked for. Technology as an assistant enhance the process of learning and helps in achievement of higher-level objectives.

Paradigm shift of pedagogy from Ancient to modern

In ancient educational system, a pedagogical thought was observed as Imitation, repetition and rote method, Explanation and Illustration method, Question-answer method, Discussion and Debate method, Demonstration and Practice method, Shravan, Manan and Nididhyasan, Logic method, Lecture method, Storytelling method. But, in modern educational perspective, an inductive-deductive or scientific pedagogical thought is being emerged. these are Computer Assisted Instruction (CAI), Computer Mediated Teaching (CMT), Multimedia Assisted Teaching (MAT), Role Playing, Simulation, Hand-sign Language, Team Teaching, Heuristic method, Project method. These above teaching methods are being now assisted by digital tools and technology. So Digital pedagogy is now very essential assistant of teaching learning. This is an transformation of pedagogical reformation.

Digital Learning Environment for Digital pedagogy

A Digital Learning Environment (DLE) can play a central role in community development. an approach for introduction of an ICT education program for Higher Order Cognitive Skills (HOCS) improvement, building capacity and infrastructure in a LDC using the DLE tool. The proposed "Learning by construction" approach, as a mechanism for the effective integration of ICT in the educational process following Bloom's Taxonomy as a general framework for learning using the DLE is described. Based on the work of Brown, Dehoney and Millichap, in their 2015 EDUCAUSE whitepaper on the Next General Digital Learning Environment (NGDLE), [1] the five key characteristics of the UW System DLE (UWS DLE) are:

- **Accessibility.** Universal design principles are fundamental to the DLE, enabling it to ensure that all students—regardless of ability and learning preference—can succeed in all instructional modes.
- **Analytics support.** The platform supports learning and administrative analytics, while also providing data to inform intervention strategies that support student success.
- **Collaboration.** The platform encourages and supports collaboration among users both within and outside the institution.
- **Interoperability.** DLE components are interoperable—that is, they are standards-based and work together seamlessly at the core rather than being stapled together to sit side-by-side.
- **Personalization.** The DLE is student-centered and allows for a personalized student experience in terms of both course content and learning pathways.

DLE fosters the following improvements for our three stakeholder groups:

1. Instructors – increased collaboration and sharing of expertise and resources among instructors, thereby reducing redundancy and spurring innovation

2. Students – a "one-stop" resource environment alleviates the disparate nature of accessing teaching and learning tools and services, thereby increasing retention rates and improving student learning outcomes
3. Administration – reduces and standardizes infrastructure, improves support, and provides cross-institution opportunities for common practices, thereby freeing up resources for innovations in teaching and learning.

What other terms are associated with digital technologies in the classroom?

1. Bring your own device (BYOD): learners bring their own technology into the classroom for use as part of the learning activity

2. E-portfolios: earners and teachers create an electronic catalogue of work that tracks their learning journey. This is usually online and often uses multimedia files

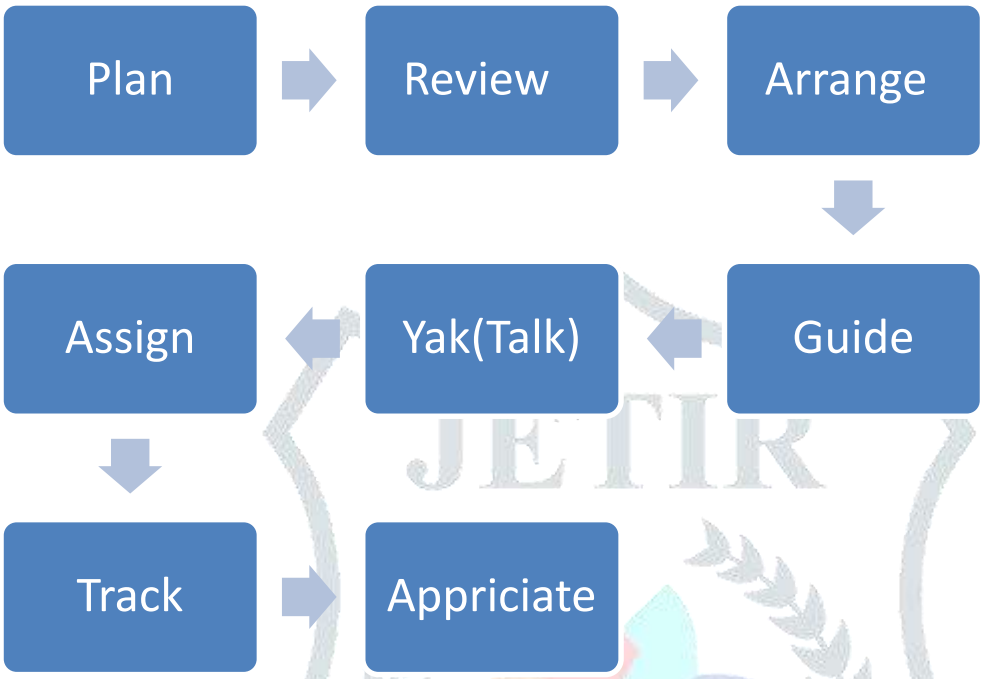
3. Flipped classroom: learners discover new content before the lesson from online videos or resources and then apply this knowledge in more personalised work in the classroom.

4. Personal Learning Network (PLN): a PLN is an individual's loose collection of links with other people or resources. The aim of such a network is to facilitate an exchange of ideas that supports learning

5. Virtual Learning Environment (VLE): a VLE is an e-learning education system that is web-based, but modelled on conventional face-to face education. It provides access to courses, course content, assessments, homework, links to external resources etc.

Steps to be followed for implementing digital pedagogy

MHRD has introduced Eight steps to vibrate and implement of Digital Pedagogy that is called PRAGYATA



Parameter to be consider about a learner for applying digital pedagogy

1. Demographic
2. Cognitive
3. Physiological
4. Affective
5. social

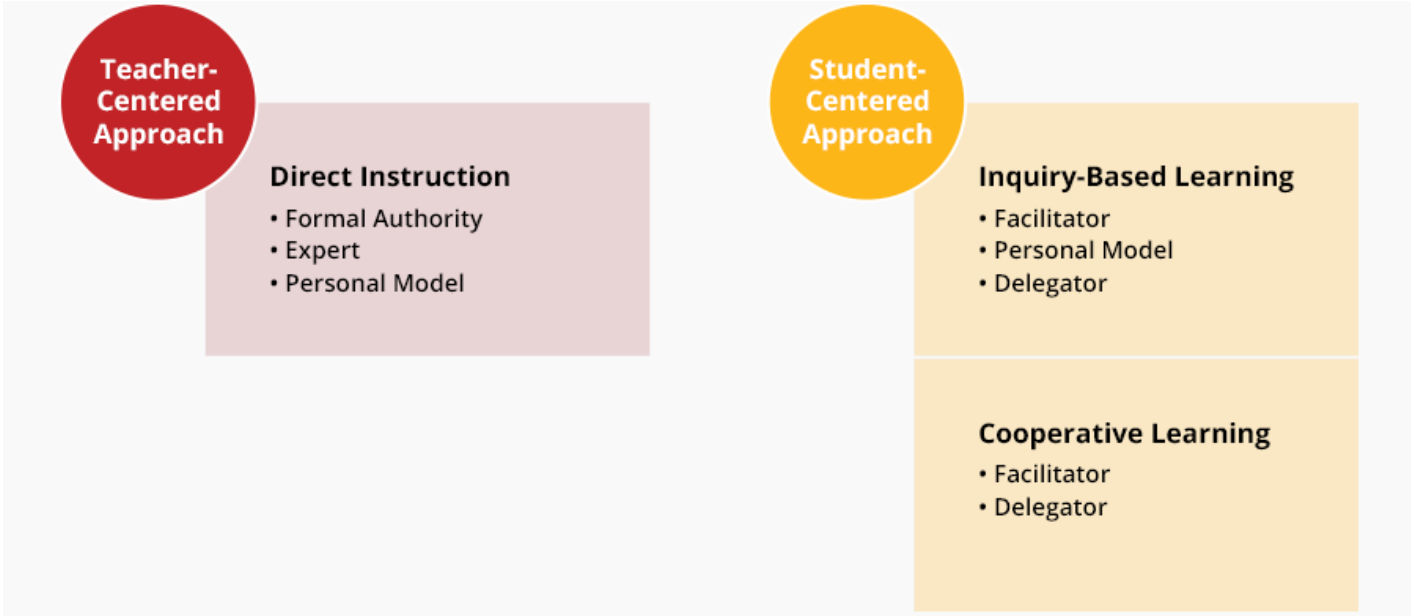
Mode of Digital Pedagogy

1. Online Mode: Educational Technology (ET1) and Educational Technology (ET2) is available with sufficient internet connectivity.

2. Partially Online mode: Educational Technology (ET1) and Educational Technology (ET2) is available without internet connectivity.

3. Offline Mode: Internet connectivity is not available or available with very less connectivity.

Paradigm shift of digital pedagogy from Traditional classroom to constructivist classroom

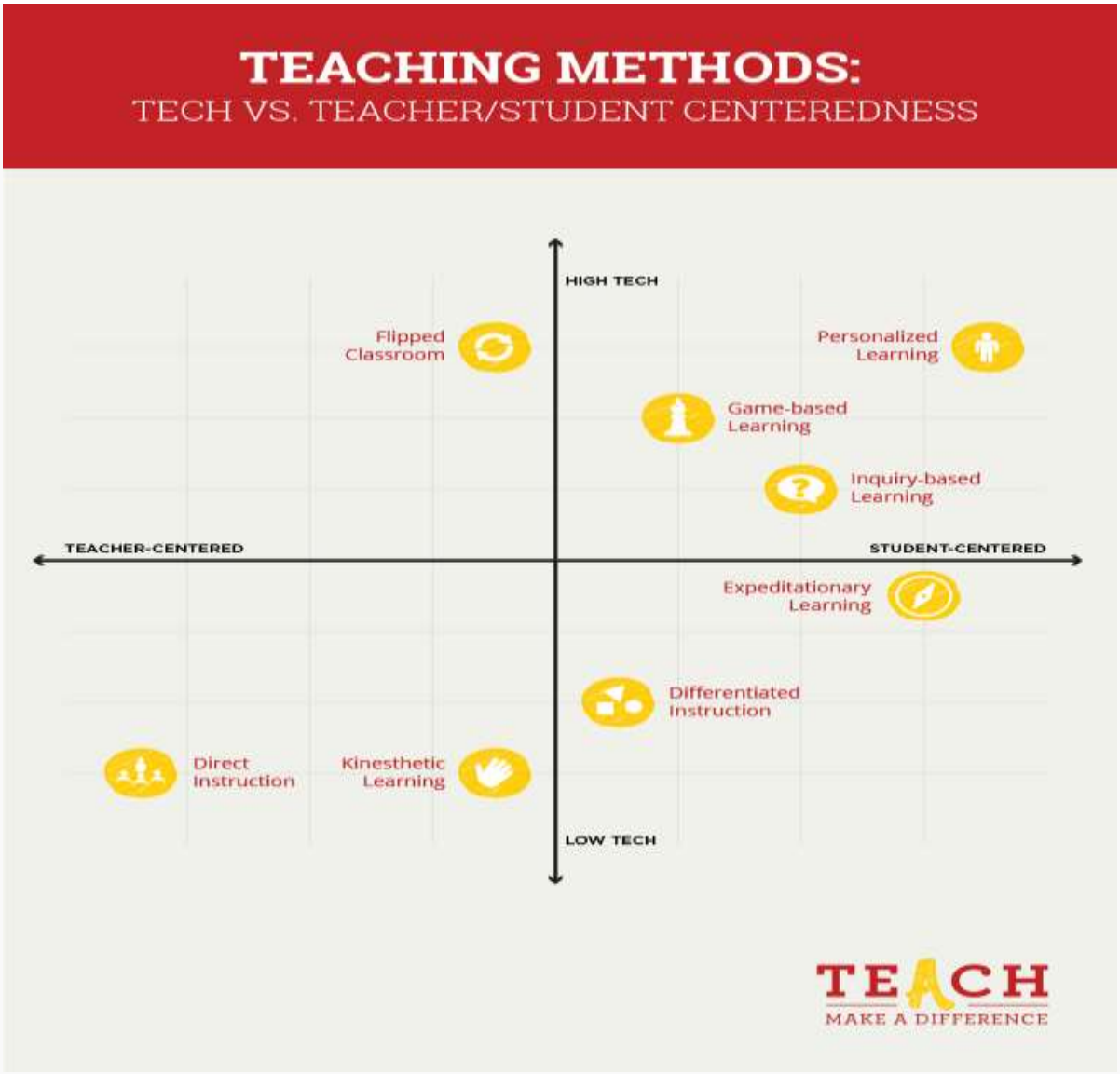


High Tech Approach to Learning

Advancements in technology have propelled the education sector in the last few decades. As the name suggests, the high tech approach to learning utilizes different technology to aid students in their classroom learning. Many educators use computers and tablets in the classroom, and others may use the internet to assign homework. The internet is also beneficial in a classroom setting as it provides unlimited resources. Teachers may also use the internet in order to connect their students with people from around the world.

Below are some tech tools used in classrooms today:

- G Suite External link (Gmail, Docs, Drive, and Calendar)
- Tablets/laptops
- Gamification software (such as 3DGameLab External link and Classcraft External link)
- Education-focused social media platforms
- Technology for accessibility External link for students with disabilities



Govt. Initiatives;

Online Learning Resources of MHRD MHRD initiated a number of projects These initiatives cover educational requirements of learners ranging from school to Post Graduate. The introduction of those projects as follows.

1. National Academic Depository (NAD): An online store house for all academic awards (Certificates, Diploma, degree etc.).

2. National Digital Library (NDL): It is also a store house that stores information about the different types of digital contents including books, articles, videos, audio, thesis and other educational materials.

3. E-Shod Sindhu (eSS): It is a consortium to provide access of peer reviewed journals, citation d factual databases in different disciplines to the research h and academic community.
4. virtual Lab: It is an initiative of MHRD and NMEICT (National Mission of Education through Information and communication Technology). It provides remote-access to Labs in various disciplines of Science and Engineering.

5. e- Yantra: It is coordinating by IIT-Bombay sponsored by MHRD. It is an initiative to spread education in Embedded system and robotics.

6. E-acharya: A portal to host all e-content project developed or funded under the NMEICT. E-content includes Audio-Video learning material, text material, multimedia enriched material.

7. Vidwan: Vidwan is supported by NMEICT. VIDWAN is the premier database of profiles of scientists / researchers and other faculty members working at leading academic institutions and other R & D organisation involved in teaching and research in India

8. BAADAL: This is a MHRD initiative cloud based and virtualized management software. Baadal has extensive solution for you hosting and infrastructure needs like Virtual Machines, Public IP, Baadal container service, Load balancer, VPN Gateway, Baadal DNS and Baadal storage.

9. GIAN-Global Initiative of Academic Network : Govt. of India approved a new program titled Global Initiative of Academic Networks (GIAN) in Higher Education aimed at tapping the talent pool of scientists and entrepreneurs, internationally to encourage their engagement with the institutes of Higher Education in India.

10. IMPRINT (Impacting Research Innovation and technology): It is developing new engineering education policy and Creates a road map to pursue engineering challenges.

11. SAKSHAT: It is an ICT based teaching supported by NMEICT. It provides connectivity to all institution of Higher learning to world of knowledge in the cyber space.

12. Digi Locker: It is a platform for issuance and verification of documents and certificates in a digital way.

13. NPTEL (National Programme on technology Enhanced Learning): It is initiated by 7 IITs and IIMs and it covers 14000 different types of courses. It provides web coursed based Video lectures and Exam is conducted by NTA and issuance of certificate.

14. OSCAR (Open Source courseware Animation repository): It provides a repository of web based interactive animations an simulations.

15. Shodhganga & Shodh Gangotri; It is a digital repository of research work.

16. Shagun: The Department of school education and Literacy, GOI had launched the 'ShaGun' Repository and online monitoring websites with the aim to capture and showcase innovations in the elementary sector of school education and continuously monitoring of the Sarva Shiksha Abhiyan (SSA).

17. SWAYAM : It provides Massive Open Online Courses (MOOCs) with 140 universities approved credit transfer feature. Students enrolled in Jan-20 & in total are 26 Lakhs & 1.57 Cr respectably. Total 1900+ courses covering school & higher education.

18. SWAYAMPRABHA: It provides high quality educational programs 24*7 through 32 DTH channels. Around 56,000 total videos have been telecasted covering school & higher education. It has 3+ crores total views on Youtube since inception.

19. FOSSEE : It is acronym for Free/Libre and Open Source Software for Education, which developed, promote open source softwares for education as well as professional use.

20. Virtual Labs: It has developed Web-enabled curriculum based experiments designed for remote – operation. Its 275 labs with 2200+ experiments made 18+ Lakhs students benefitted.

21. e-gyankosh: It is a National Digital Repository to store and share the digital learning resources. Its content developed by the Open and Distance Learning Institutions in the country.

22. Gyan Darshan: It is a web based TV channel devoted to educational and developmental needs for Open and Distance Learner.

23. Gyan Vani & Gyandhara: These are an internet audio counselling service where students can listen to the live discussions by the teachers and experts on the topic of the day and interact with them through telephone.

24. DIKSHA: It is a National Platform for Our Teachers & all other learner.

25. Epathshala: It provides Free access of e-books (class I to XII) through website and app.

26. e-PG Pathshala: It is a gateway for e-books upto PG which provides High quality, curriculum based, and interactive content in different subjects across all disciplines.

27. Shodh Shudhhi (PDS): It is a Plagiarism Detection Software Encourage original information by preventing plagiarism.

How to involve the learners

1. Objectives of the activity or expected observation should not be declared in advance.
2. Start the session with different poster or innovation.
3. Emphasis should be on process and inquiry approach.
4. Observation and conclusion should be noted down by each students.
5. Use of scientific vocabulary should be emphasized.
6. making diagrams and figures should be encouraged.
7. Activity should be followed by discussions.
8. a variety of activities should be conducted to provide space for individual differences.
9. Give the productive activity as assignment.
10. Debate and discussion.
11. Interact with the students with their ethnographical and cultural issues.

Future beyond the digital pedagogy

1. Virtual Reality (VR) in Education
2. Artificial Intelligence
3. Cloud Computing for Education
4. 3D Printing
5. Social Media in Educational Institutions
6. Gamification – one of the most innovative trends in educational technology
7. Seamless Technology
8. Flipped learning
9. Video Streaming
10. Augmented Reality
11. Learning Simulations
12. Block chain
13. Flip Grid

14. 5G

15. Learning Analytics

14. Automation

15. App-Based Learning

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