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A Comparative Approach of Traditional and AI Assisted Personalized Learning for Cognitive and Comprehensiveness.

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Abstract

AI impacts on every walk of life. It is a Qualitative study which focus on both aspects of learning. Traditional learning (T-L)and AI assisted Personalized Learning (A-I-P-L) as well. It includes kinds of learning such as Students centric, experiential, collaborative, project based. It discussed on virtual mentor, voice assistance and automatic assessment of learners. Since, Emotional attachment, counseling, mentoring to solve personal stress related issues are the pillars of traditional learning. It helps to put light on challenges in A-I-PL like privacy and security concerns, too much dependency on technology, dehumanization learning experience, unemployment in teaching profession. In spite of this, AI learning refuses one –size- fits-all approach. AI detects the learner's needs, interests, learning style and provides the demanded literature. In the conclusion , it is a kind of SWOC analysis for cognitive and Comprehensive learning.

Key Words: AI Personalized learning, Virtual Mentor, Assistance, Student centric, Privacy ,security, voice assistance.

Introduction: In an ancient India, Education system was based on 'Gurukul Shiksha'. As time passed by the education system upgraded day by day from schooling, coaching to self learning. Nowadays, all possible active ways of learning are centered at AI. The qualitative study of AI based on personalized learning put light on the different aspects of learning like student centric ,experiential ,collaborative, project based, problem solving methodologies, personal counseling for cognitive and comprehensive way. Comparing the tools of learning through oral citations, books, pictures ,Televisions etc. took long time to spread all over the globe. But AI covered the distance of decades in very less time due to Audio visual aids as if the globe get contracted in AI.AI makes learning and education more quick, interesting and trustworthy. The time showed that print media increases linearly spread of growth while there is exponential spread growth in AI assisted tools. In T-L, one teacher taught to many students with different grasping levels, emotional abilities, matter of subject interest etc .which sometimes become too heavier to low grasping students. A-I-P-L motivates one on one teaching learning as per the requirement of knowledge gap of the learner. It provides continuous, tiredness teaching through A/V aids which helps to activate involvement of learner. In repetitive activities in continuous evaluation of students there are very low chances of

committing errors to update the progress report of the learner. The AI in the education structures the revolution in knowledge more adaptive , inclusive and effective.

Methodology:

This study is carried out in qualitative approach to analyze the impact of AI powered personalized learning systems on student performance and engagement. It also identifies the challenges and ethical concerns in their implementation**.** It also discusses the various measures like Traditional learning, equitable access for diverse population, Ethical Risks , teacher reskilling programs to efficient implementation of AI-P-L.

Discussion:

I)Immobile reservoir of T-L:

T-L is conventional source to spread knowledge unto the last beneficiary of the society. It is mounted on a classroom structured with desks, benches, blackboard, chalks, books, notebooks and the teacher: only the source of knowledge to provide academic information. Though T-L model is good successful in very primary abilities like identification of alphabets, pictures, symbols and numbers, reading, writing, solving mathematical sums, it is very weak to inculcate critical thinking, creating new ideas, problem solving abilities which are very much essential in 21st century digital era. It chose one-size-fits-all concept, very stubborn, rigid meager scope to learner's knowledge expansion and implementation. Not only teaching and learning but also assessment is done on fully memory based mugging up way without cognitive and comprehensive understanding which affects the final output of learner at huge extent. The learner become passive recipient of information who only focused on quantitative results like percentages and grades instead of understanding. For tutor teaching is like one year experience repeated 'n' number of times. T-L prepared the learner as unquestioned experts. The learners with low grasping abilities didn't have any scope to upgrade in not even marks and knowledge rather than bombarding of syllabus and pressure. Applying T-L in digital Era is that impracticable experiment which hardly results in success and satisfaction. To overcome all mentioned consequences A-I-P-L is master key towards success.

II) Artificial Intelligence based Personalized Learning (A-I-P-L): A ray of hope with new Morn:

Technology is the weapon which works as catalyst in improving education system. The traditional infrastructure changed into computers, Laptops, Tablets, LCD screens, Projectors, smart boards to make learning more and more captivating. In Kindergarten, Rhymes, stories ,puzzles using A/V aids keep durable print on memory of kids. In higher education, online platforms of learning like SWAYAM , Massive Open Online Courses(MOOC) provide free web based learning for distance learners. With the help of AI based tools like ChatGPT, Chatbots improves critical thinking, Mathematical, Logical reasoning ability over passive learning. AI connects the remote learners all over the globe in one click. Worldwide library resources are open to distant learners. It replaced print media, genres, books of T-L by digital tools can. Using AI, one get good fluency on texting.

III) Wide range of Virtual - assisting - Tools (V-A):

A/V aids play vital role in more engaging and deep learning. Through these tools

one can communicate with Web .

1) Virtual -Texting -Assistance:(V-T-A):

Search Engines, ChatGPT, Chatbots etc. interacted with writing texts to search on Web. Messaging on Apps like Whats Apps, websites widely and primarily used even by new user. Searching by texts creates big data to internet. Use of varieties of APPS, Softwares are based on texting.

2) Voice-Assisting (V-A):

To overcome the texting mistakes,errors, time V-A such as Alexa, Siri, Google now , Microsoft Copilot proved as milestones in digitization.V-A rely on speech ,words recognition technology to get verbal commands and responds in very adequate ,simple quick manner. To search dictionary ,songs ,films pictures ,to set alarms ,to send messages etc. V-A are used upto large extent even by illiterate persons and also by multilingual users. It made significant change in A-I-P-L.

3) Auto -Assessment (A-A):

Eklavya, ChatGPT are the online platforms for automatic assessment. For Example: It helps to guess the questions asked by the hiring Institute if Resume or CV is uploaded on ChatGPT. These tools provides descriptive suggestions and guidance. It is benefitted in:

a) Increased Objectivity: Unbiased grading and accurate reports.
b) Speed: It assess large scale data in few seconds with correct outputs.
c) Feedback: Immediate feedback in variety of aspects.

In short A-I-P-L I is good mentor of learner.

Case Study: AI Integration in implementing National Education Policy (NEP) 2020 :

NEP 2020 is a landmark policy of India which sets vision and direction to transit the education for betterment .It emphasizes the integration of technology to propagate teaching learning and to improve quality in educational access and shape learners with necessary sills for 21st century. The NEP 2020provides holistic and learner centric view on education focusing on the development of cognitive ,social ,emotional and vocational skills.AI is the master key to achieve these goals. The aspect of NEP 2020 is the integration of digital tools and resources access for diverse education. It emphasizes AI , virtual reality to generate interactive and engaging learning culture among learners. The NEP 2020 has focus on bridging the digital divide by ensuring equitable access to AI based education. The policy ensures the need to give equal opportunities to learners from different levels of society.

Moreover NEP 2020 emphasizes on teacher training and professional development in utilizing technology effectively. The policy also focus on the need for comprehensive teaching up skilling programs to boost their techniqual skills , digital literacy and adoption of innovative teaching methods. To facilitate the effective implementation of NEP 2020 ,it requires robust digital infrastructure with high speed internet connectivity ,well equipped computer laboratories and the supporting software's and devices. It highlights the importance and necessity of generating digital content in local languages and promoting open educational resources to blend educational accessibility and inclusivity in AI based education will prove revolution in Teaching learning practices. It will help to improve educational outcomes and develop more inclusive and equitable education system.(6)

Applications of AI in education within the framework of NEP 2020:

1) Personalized learning and adaptive instructions.
2) Auto generated assessment and feedback
3) Natural language processing and virtual assistance

Smart content creation and recommendation system

I)Teacher Reskilling /Upskilling Program:

To cope up with challenges to implement AI tools by technically non expert teachers with AI ,Teacher Reskilling /Upskilling Program are to be framed to get access to these teachers .these programs focus on practical implementation over just theory which provides essential training in generative AI ,practical classroom integration to enhance teaching efficiency and student engagement. Googles's generative AI for education, Coursera training with AI ,India's skill India digital hub (SOAR) are the courses cover automatic administration task ,lesson plans for productive teaching and fostering personalized learning.

Google –GenAI ,Canva ,Microsoft lesson ,IITM Pravartak ,IBM Skill build are some AI Courses for educators. These courses covers skills in :

1) **Time saving** : Streamlining lesson planning and grading .
2) **Context generation**: AI tools like Gemini for creating Quizzes and personalized and interactive materials
3) **Responsible AI** –Understanding ethics, data privacy and avoiding biasedness.
4) **Student engagement**: Utilizing AI to enhance learning experiences.

II) Equitable access to AI tools:

The role of equitable access is the effort to ensure that the benefits opportunities and advancements of AI are distributed fairly across all demographic groups, geographical regions and socio- economic levels.

Following are the strategies to promote equity:

1) **Collaborations:** Collaborations of Government and IT companies to provide affordable AI devices in education.
2) **Open Source**: Promoting open sources like Hugging face, Tensorflow, PyTorch to reduce financial barriers for innovations and Experimentation.
3) **Inclusiveness:** Involving diverse groups, Including marginalized communities and disabled people.
4) **Linguistic Context**: Developing systems that work in local language and contexts. NLP can help in good extent.
5) Multilingual AI tools:

These tools are revolutionary communication across the globe. It just not help to translate word to word but helps to understand the context based on voice to text, text to text and speech to text. Here are some of them :

i)**Content Generation and translation**: ChatGpt, Gemini, Claude, support high quality translation and content creation in many languages. DeepL is accurate ,context aware translations.

ii)**Language learning**: Duolingo Max, Speak Tutor, Glinglish, TalkPal use for conversation practice and personalized learning.

iii)**Design:** Sivi.ai generates editable in multiple language.
iv)**Academic Writing**: Ailasya for AI writing, translation, AI voice generator, AI transcription, AI images and designs for print.
v)**Indian Languages** : Anuvadini, AI4Bharat,BharatGpt, Sarvam AI, e-translation, Indic NLP library.

III) Policy Frameworks for data privacy:

The word privacy traditionally means to enter in one's physical personal space without their knowledge or permission. It has become much larger in the cyber space .Data privacy and security emerging as basic right of consumer. In certain countries it is recognized as fundamental right granted by the constitution and supporting legal framework. To protect privacy of personal information from unauthorized user, disclosure, modification or misuse, DSCI (Data Security Council of India) has conceptualized its approach towards privacy framework. Creating and visibility over the personal data helps to understand how the data is handled by the user. The privacy should guide and provide direction for the privacy implementation.
Information usage, access, monitoring and training-A significant level of measures should deploy to limit information usage and access. A mechanism should develop for privacy monitoring and managing incidents that compromise security.

IV) Ethical Frameworks and guidelines:

The framework should address the issues such as algorithmic transparency, data privacy, bias mitigation and responsible use if AI. Clear guidelines must be provide to the developers, educators and policy makers to ensure ethical AI practice. (UNESCO2021)

Establishment of strong data privacy and security measures to protect and preserve student data including strict data protection policies, ensuring data de-identification obtaining informed consent and maintaining secure storage and transmission of data.(European Commission 2021)

As this paper includes the SWOC (Strengths, Weaknesses, Opportunities and

Challenges) Analysis, the tables below shows the comparative approach between T-L and A-I-P-L.

Table I: Strengths

Sr.	Criteria	Traditional - Learning(T-L)	AI based Personalized Learning (A-I-P-L)
1.	Student Centric Learning	One -size-Fits - all approach, same curriculum for all, No need of testing academic potential of learner, diversity in learning styles.	Personalized learning experience, high involvement of learner, provides literature as per demand of learning style.
2.	Experiential -Learning	Mostly focus on curriculum of practicals over years,less need of technology and HighTech aids.	Hands on activities, more engagement of learners, real world based examples for cognitive and comprehensiveness.
3.	Collaborative - Learning	Memory based learning, offline group discussions.	Online collaborations for group learning, project activities, internships in case of remote learners.
4.	Project -based learning	Main focus on paper work, no need of any technology or softwares or Apps ,Less Scope for practical Applications.	Application of knowledge and skills, Fostering creativity and sharing innovative ideas, practical implementations.
5.	Problem Solving - Methodologies	Tests, tutorials, Numerical, theoretical solutions to the curriculum based problems only.	Improves Critical thinking, curiosity through exploring questions beyond academic, syllabi and seeking answers.
6.	Personal- Counseling	Day to day touch ,healthy communications with ,discussions, interactions, talks on academic and other issues with teachers and mates.	Virtual mentoring through A/V aids ,very free and friendly questions answers on any personal stress related issues provides solution at 24x7 time.
7.	Continuous - Assessment	Repetitive task for teachers ,errors mistakes are invitable, Time consuming.	Quick Assessment , error free , online learners ,paperless ,easy to preserve and able to refer number of times.

Table II : Weaknesses

Sr. No.	Criteria	Traditional - Learning(T-L)	AI based Personalized Learning (A-I-P-L)
1.	Creativity	No scope to apply new ideas beyond Curriculum.	Highly imitation of projects, programs ,write ups, literatures etc.
2.	Ethical risks	Discriminations in case of gender, and other social aspects	Biasedness, privacy violations lack of transparency, usage of personal data by AI, legal and moral responsibilities.
3.	Social development	Peer pressure to show academic progress/success.	No scope for socialism, lack of human mentor, too much importance for individuality.
4.	Over reliance	Dependency on tutor	Too much dependency on technology, required updated digital literacy, skills, Increase in rate of mental and physical issues because of too much screen time.
5.	Decision Making	Very low ability to make decisions, Slow adaptation of new matrices	Over Confident, engaged in virtual world , sometimes impracticable decisions, decisions beyond capabilities.

Table III : Opportunities

Sr.	Criteria	Traditional Learning(T–L)	AI based Personalized Learning (A-I-P-L)
1.	Holistic Development	Through healthy discussions, showing good attachment, love ,respect, honors toward teachers .	Multidimensional approach that integrates technical, ethical impacts to strengthen emotional intelligence.
2.	Intergenerational knowledge Transfer	It transfers from print media, genres, books, citations also through arts micro life-long teachings for overall development of learner.	Transfers through A/V aids ,eventually change as per Era's need.
3.	Mentoring	Need more counselors and mentors to solve stress related issues, more need of Psychiatrists and Doctors.	Virtual mentoring may sometimes prove harmful as AI can use personal data for prediction.

Table IV : Challenges

Sr. No.	Criteria	Traditional- Learning (T-L)	AI based Personalized Learning(A-I-P-L)
1.	Data Privacy Concerns	Less challenges as it available in materialistic form such as books etc.	Usage of personal data, detects overall personality, emotions, likes, dislikes, Interests, Weaknesses of learners. Threat of using it for another apps, High risk of data privacy and security, Increase in cyber crimes.
2.	Dependency	No scope to connect with digital world.	Too much technological dependency, risks of dehumanization Increased in mental And social issues if not set the limits.
3.	Deployment	Possibility that less number learners prefer it.	No need of schools, colleges, friends, Colleagues, Highly job displacements in teaching, Rat racing.

Conclusion :

In the concluding portion of the study, A-I-P-L surely uplift the learners in qualitative and quantitative as well. It also helpful the administrations, Institutes, Corporate, Government offices to improve framing, and implementing to betterment work set ups. It makes the learner and user most efficient, multitasked, multidimensional employee. It is learner friendly tool and trustworthy Mentor. Though A-I-P-L is sensationless artificial tool, it can be proved as Friend, Philosopher and Guide in coming days if equipped wisely. The existence of AI to provide knowledge to students to develop or to inspire to become good character citizens in teacher's job which can't be done by AI. The role of teacher is providing motivation, inspiration and developing good characters which never be replaced by AI. In fact it is not replacement for teacher but it is strong support system to learners and teachers.

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