



RESEARCH ARTICLE

STRATEGIES FOR ENSURING INCLUSIVE AND EQUITABLE 'AI' DRIVEN EDUCATIONAL PRACTICES CATRING TO DIVERSE LEARNER NEEDS

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ABSTRACT

Artificial Intelligence and Machine Learning is attaining prevalent acceptance in helping or resolving an assortment of problems in various spheres including social in nature. The AI is having ample array of role or applications in resolving, managing, restoring or maintaining issues in education sector also. The various tools prevailing at present in Artificial Intelligence and allied emerging disciplines can play an efficient or strategic function for ensuring inclusive and equitable learning practices to ensure the overall development of all the categories of students in our society. Inclusive learning is an essential constituent by inculcating various practices in the education system that ensure the educational, physical and social development of the pupils in diverse levels IQ and learning needs. The topic selected for this study is exceedingly significant, expressly at the contemporary era of fast developing and expanding Artificial Intelligence, gaining significant influence in the various spheres of the life of human beings by diversified means. The objective of this study is to examine and analyze the importance, strategies and tools for AI based learning which is upcoming and influencing the students and parents now. The data collected for this study is both primary and secondary. The primary data collected by executing a 5-pointed questionnaire, whereas, secondary data collected from various published contents. The data processing is made by using measures of central tendency particularly Arithmetic mean. The study of AI -driven educational tools for ensuring equitable and Inclusive education, through the survey, conclude that it ensures personalized learning, accessibility to learners effectively, mitigation of biasness, cultural sensitivity, effective data privacy and security, sufficient teacher support and training, smooth access to technology, ensure effectively the collaboration and peer learning, adequate and efficient learner autonomy, inclusive content representation and addressing socio-economic disparities.

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INTRODUCTION

Inclusive Learning or inclusive education is a state of affairs that our schools and other educational institutions plan, design, develop and implement programs, activities, classrooms and other facilities and layouts that all students learn and participate together for the overall development of all in various respects. The concept of Inclusive learning is getting prominent relevance at the present era of diversified group of people in different societies of India where diversified people are living at diversified situations in all respects. 'Education for everyone and everyone should get equal opportunity to learn and grow' is the sole or ultimate objective of inclusive learning. It encourages empathy, respect and understanding amongst pupils of all abilities, enhances academic performances to become a good citizen in the inclusive society. In order to attain the ultimate objective of inclusive teaching and learning, the teachers and the experts in this sector are required to incorporate or inculcate various strategies, tools and techniques.

At the contemporary situation of advanced technologies, Artificial Intelligence is one of the developing technologies that the educators can utilise to ensure the inclusive and participative learning of all class of pupils in the class rooms and the thereby ensure the development of the people at all levels of the society, termed as inclusive society. While depending any external factors or tools for teaching and learning process, it may have various pros and cons. Depending the strategy of AI and various other tools for this purpose is also not free from limitations.

Objectives of Study

- To examine the importance of AI in Inclusive learning
- To Analyse the various strategies and tools of AI used for effective and efficient inclusive learning that cater to the needs of diverse learners.

Importance of Study: The concept of inclusive teaching and learning is attracting much and more academic and practical relevance at the present scenario of NEP 2020 which cater to the needs of various categories of students with diversified needs and capabilities. Inclusive education is the need of the day, as because of the existence of various ill-feeling customs and practices which will never cater some categories of people in this society favourably or empathetically. This study is decidedly imperative as because of the following; To ensure equality to all students of the society irrespective of the cast, creed, religion, location, capabilities or their financial or physical disparities. The different categories of pupils coming from various diversified background in social, financial, demographic etc. is having diverse perspectives, ideas and thoughts which helps to develop critical thinking, interpersonal and interpersonal relationship in the most effective manner.

1. Various researches proved that the inculcation of inclusive education and training results in cultivating the various social values and behaviour amongst the students like social help and service, increase the value of self, improved academic performance, removing the such kind of evil mind due to selfishness.

2. The inclusive teaching and learning with all or diversified pupils from different or diversified background helps to know the real world and help us to acquire and acquaint the apt skills, capability, capacity and customs to live at the real world decently.

The following are some of the key tips for teachers and educators for ensuring the effective inclusive learning:

- Establishing standards of behaviours in a class room.
- Use scaffolding techniques.
- Listen to and support students.
- Consider the specific and special needs of the students.
- Create calm, quiet and favourable environment for teaching and learning.
- Foster the creativity, enthusiastic and curiosity by various games and other activities including group activities.
- Allow the students priorities and preferences in teaching, learning including assignments and other class and home works.
- Always maintain a broader attitude and outlook towards the pupil and their parents.

Methodology of study: In this article entitled "Strategies for Ensuring Inclusive and Equitable AI Driven Educational Practices Catering to Diverse Learner Needs" is a study of the position of AI driven educational practices, the need of the day, is effective for meeting the needs of the diverse learner needs and thereby ensure the inclusive learning to all categories of the students. The data which are to be collected for the study are of Primary and secondary in nature. The primary data collected for the purpose of this study is by executing questionnaires amongst the group of teachers, educators and the interested group. For collecting the secondary data, the researcher depends on Published reports and records relating to this subject collected from books, journals and downloads from websites. For data analysis and interpretation, the researcher applied measures of central tendency-Arithmetic Mean and data presentation techniques.

RESULTS AND DISCUSSION

AI powered tools helps students with visual or hearing impairment access educational materials more easily. Personalized learning expected to grow from 5.2 Billion USD in 2022 to 48.7 Billion USD by 2030. AI in education is forecast to grow at 43.3%, reaching 88.2 Billion USD by 2035. The intersection of AI and education is a critical area for education development and social development. 10% of the educators think that teaching AI should be a top priority for schools for inclusive education. 33% of the educators says it is very important to teach AI in schools to ensure inclusive education.

- Only 13% of educators says it is not important at all.
- 54% Parents think AI could potentially have a positive effect of their child's education.

Data Analysis from Questionnaire: The researcher executed a questionnaire survey from the suitable respondents containing 12 questions with 5-pointed scale. The following are the results of this primary data:

- **Personalization of Learning:** The questions in this regard, 76% of the respondents are recorded either 'Moderative Effective or Very Effective' and 4% recorded that 'Extremely Effective. Personalized learning is effectively possible by AI powered tools.
- **Accessibility for All Learners:** The respondents of this survey 68% recorded "To a moderate extent", 24% 'To a large extent' and 2% 'Completely'.
- **Regarding 'Bias Mitigation':** 54% of the participants of this survey recorded that 'Very Well' 2% 'Extremely Well' to mitigate biases in algorithms in relations to race, gender and socio-economic status.
- **Teacher Support and Training:** In this issue of teachers and educators training on using AI tools, 64% recorded their opinion that 'Very Adequate' 4% 'Extremely Adequate'.
- **Cultural Sensitivity:** 58% of this survey have opinion that 'To a larger Extent' 34% 'Moderately', can conclude that the majority of the respondents expressed an opinion that AI-driven educational tools take into account the cultural differences and content is relevant and respectful to all student's populations.
- **Data Privacy and Security:** Regarding AI Powered tools to protect the privacy and security of learners 74% logged that 'Very Well'. Hence, the data privacy and security is highly relevant and important while applying AI powered tools.
- **Access to Technology:** Concerning the query that 'how effectively AI based tools ensure access for students, 76% participants of this survey stated that 'Very Effective' 8% 'Extremely Effective'.
- **Collaboration and Peer Learning:** To what extent AI powered systems support collaboration and peer learning, 74% stated that 'To a Large Extent' and 6% 'Completely'. Therefore, the AI driven system strongly support the collaborate and peer learning.
- **Feedback and Continuous Improvement:** 72% of the participants recorded that 'Very Well', 8% 'Extremely Well'. The feedback and continuous improvement of the student is very well and good with AI driven technology.

- **Learner Autonomy and Agency:** Regarding the learner independence, autonomy flexibility, 70% says 'Very Effective' and 16% 'Extremely Effective', can conclude that AI driven system is very effective for inclusive learning to every category of students with flexibility and autonomy in their studies.
- **Addressing Socio-Economic Disparities:** With respect to the query that AI educational tools helps to fill the gap between student's different socio-economic background, 76% specified that 'Very Well', 16% 'Moderately Well'. This statements states that AI driven educational tools helps to reduce the social-economic disparities or differences.
- **Inclusive Content Representation:** To what degree AI driven platforms to ensure that educational content 72% stated 'To a Large Extent', 16% 'Moderately' and 4% specified 'Completely'. Hence, the AI powered educational tools helps to ensure educational content in wider perspectives and experiences especially from marginalised groups.

Tools and Techniques of Inclusive Learning

- **Personalised Learning:** Tailor made educational experiences to accommodate to individuals. Individual learner's unique needs, special needs, learning styles and pace. The teaching-learning process might be completely transformed by AI by personalised techniques which will provide a wonderful and joyful experience to the students. This personalised tools and techniques through AI will cater all the requirements, needs and necessities of the diversified inclusive students. The benefits of adaptive learning, targeted interventions, cognitive tutoring, predictive analytics, dynamic content delivery, enhanced accessibility etc. are possible through AI application in education sector. Many companies like Newton and Dreambox have created intelligent learning systems based on AI to foster the inclusive learning.
- **Assistive Technologies:** Assistive technologies are those devices and services used to increase, maintain and improve the capabilities of students of diversified students to ensure inclusive learning. G Suite for Education (GAFE) and Office 365, Mindomo, Antidote 9, Britannica School, Sketchup Pro, Frames 5, Xpress Lab are some of the examples.
- **Adaptive Assessments:** Tailor-made assessment specifically to each examinee based upon their performance previous items on the assessment. This assessment is highly accurate, positive candidate experience, faster, innovative and learning edge.
- **Augmented Technologies:** It is an interactive experience that combines the real world with 3-D computer generated content. This experiences largely similar to the reality.
- **Behavioural and Emotional support Chatbots** should be developed to ensure the mental (behavioural and Emotional) well-being of the students. For example, 'Wysa' is a chatbot developed AI driven app to provides immediate support to the students. 'Breathhh', 'Woebot' are another variety of chatbots developed to impart support to the needy people by applying AI which are highly effective and efficient to handle such situations.
- **Automated Administrative Tasks:** It is about using the AI technology to automate the various administrative

tasks related to the education systems which consists of grading and Assessment, attendance tracking, scheduling, audits and compliance, student registration, management, back-office processes etc.

- **Enhanced Accessibility:** AI tools will be applied extensively in inclusive learning process to provide more and enhanced accessibility of various required inputs. For this purpose, the students may use speech recognition, text to speech technologies, AI driven adaptive assessment and feedback tools, augmented reality tools etc. to enhance accessibility.
- **Text-to-Speech Software or Screen Readers:** This is another most important AI tool for ensuring inclusive education for all the category of students. It consists of 'Balabolka' 'Capti voice' 'Orbit Note', 'read aloud' 'Read aloud', 'Speechify'.
- **Provide AI Tutors- Chat-bots:** It is an intelligent tutoring system, computer programs designed to deliver individualized instructions and feedback to learners. 'Khanmigo' from Khan Academy, Byju's app are some of the AI tutor to train their students.
- **Educations Games and Simulations:** To improve the students reading, writing and learning capacity, the educators are required to depend the games and simulation techniques. It may help to implement the differentiated learning effectively.
- **Automated Assessment and Feedback:** It is the process of evaluating and grading programming assignments or coding tasks using computerised systems.
- **Student performance analysis with early interventions**
- **Natural language processing (NLP):** It is a field of Artificial Intelligence that uses Machine Learning to enable computers to understand and communicate with human language. It is a part of everyday life, for powering many search engines, prompting chatbots for customer service with spoken commands, voice operated GPS system, Apple's 'Siri', Microsoft 'Cortana' are few examples.

Impact of AI in Education

- Automate Admin Tasks
- Reduce overheads
- Lower education costs
- Real time feedback about the students learning
- Flexibility to adjust according to the strengths and weakness of the students
- Customized Learning
- Personalized curriculum design

Principles / Strategies of Inclusive Education

- Fair play and admittance
- Admiration for multiplicity
- Divergent tutoring
- Association and Cooperation
- Elevated Outlook
- Personage Support
- Constructive Learning Environment
- Continuous Evaluation and Reporting
- Professional Development

Advantages AI-Powered Tools

- Automating Administrative Tasks- Grading, conducting exams, attendance, submission of assignments, reports, etc.

- Personalizing Lesson Plans:
- Curriculum Development
- Streamlines Assessment:
- Improves efficiency
- Spanning the skill gap
- Smart content creation
- Conversational AI with 2x 7 Assistance
- Secure decentralized Learning system

Challenges and Considerations

- **Misuse of personal information:** AI require lot of data to provide personalised information, it may lead to the misuse of personal information.
- **Digital Gap:** In order to provide AI powered learning, it is essential to resolve the digital gap and some learners may not have computers and internet with appropriate speed. Such issues should be properly addressed.
- **Algorithmic Bias:** Inadequate and inappropriate design and training of AI may intentionally or unintentionally enter some prejudices and biasness which are creating some adverse impact upon the ultimate objective of inclusive education.

The inclusive teaching and learning are possible effectively now with the help of various AI tools.

Chatbots- ChatGPT, Bingchat, Bard, Claud.

Presentations- Gamma, Magicslides, SlidesAI.

Teaching Assistants- Magicschool AI, EduGPT, Curipod, Eduaide, Almanack.

Course Creation- CourseAI, Coursebox, Lingio, Eduapp, Mindsmith, Learnworlds.

Content writing- ChatGPT, Bard, Copy.ai.

Image Generation- Canva AI, Midjourney, Bing Image creator.

Image Editing- Clipdrop, Pixelcut, Remove.bg, Cleanup.pictures.

Animated Images- Animated drawings, Scribble Diffusion, Capcut, Pika.art. **Video Generation-** Pictory, D-ID, DeepBrain AI, VyondGo.

Video Editing- Lumen5, Descript, Pictory, Fiki, Runaway.ML.

Research- ChatGPT, Bing Chat, HumataAI, Research Rabbit. **Text-to-Speech-** Speechify, ElevenlabsIO, SynthesisIO, Listnr.

CONCLUSION

The practice of inclusive learning is vital to ensure the social justice and empathy to all the categories of students in a system of education. In order to reach at he ultimate objectives of education to all the categories of people in this society irrespective of the caste, creed, religion or any other disparities, the AI-powered education helps in a wider extent and thereby attain the objectives of education to the needy people universally. This attempt of AI- driven tools helps to foster the formal education and also accelerate the informal education to finally or ultimately attain the goals of education globally.

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