



Artificial Intelligence for inclusion: An Essential Outlook

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Abstract

Inclusive Education is a system of education which provide “least restrictive environment “for the education of all types of students regardless their difference and disabilities. The introduction of artificial Intelligence will make it more inclusive and accessible by identifying learning gap and by personalizing the educational experience. The article provides general view on the significance of artificial Intelligence in inclusion and also provides some information regarding the Apps using AI which can be included in inclusive teaching-learning process to make the learning more convenient and comfortable for diverse learners.

Introduction

**“Inclusive ,good quality education is a foundation for dynamic and equitable societies”-
*Desmond Tutu.***

Inclusion encourages quality and equitable education for all, without exclusion, including those who may be potentially marginalized by learning need or social standing. Inclusive education is the most effective way to give all children a fair chance to go to school, learn and develop the skills they need to thrive. Inclusive education allows students of all backgrounds to learn and grow side by side, to the benefit of all.

Inclusive education provides a better quality of education to children with special needs. As the children from different background and disabilities learn together it will create respect, understanding and compassion among them. Inclusion, thus, leads to better civic participation, employment, and community life for all.

Inclusive education -Overview

In simpler words we can state this clearly by saying that inclusive education is an approach to educate children with disabilities and learning difficulties with that of normal children under the same roof. It implies all learners with or without disabilities being able to learn and enjoy the same access. In 18th century itself the inclusion started in Europe for deaf and blind students. The Concept of inclusion first gained recognition in Canada and the USA in 1980s. In 1994, Salamanca statement was promulgated by UNESCO which called countries to promote inclusive settings. This statement was adopted by 92 countries and 25 organizations and movement towards inclusion raised to a global level.



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In 1966, the Kothari Commission had highlighted the importance of educating children with disabilities in regular schools. The government of India launched the Integrated Education for Disabled Children (IEDC) program in 1974. This was the first formal step towards inclusion. The Centre sponsored scheme sponsored aimed at providing educational opportunities to children with special needs in regular schools. It also hoped to facilitate their achievement and retention. “the children with mild disabilities should be permitted to education in the regular school while the children with moderate to severe disabilities should continue to get education in the special school” (NPE, 1986)

Inclusive Education for CWSN has been one of the major interventions of the erstwhile Sarva Shiksha Abhiyan (SSA) RTE and RMSA schemes. From the year 2018-19, Samagra Shiksha lays emphasis on improving the quality of education for all students, including CWSN. The National Education Policy 2020 envisages fair and inclusive education for all, focusing especially on children and youth, especially girls, from socially and economically disadvantaged groups who are more at risk of being left behind. The policy takes on a broader inclusion perspective and aims to achieve learning for all, particularly addressing the exclusion of socio-economically disadvantaged groups. The policy emphasizes the importance of inclusion of children with disabilities from early childhood education to higher education, with the provision of assistive devices and teaching and learning materials.

Inclusive education: Things to keep in mind

Inclusive Education is the implementation of policy and process that allows all children to participate in all programmes. According to UNICEF, Inclusive education means all children in the same classrooms, in the same schools and real learning opportunities for groups who have traditionally been excluded. The fundamental principle of inclusive education relies on the thought that despite of the difficulties or differences they may have, all children have to learn together, whenever and where ever possible .The students’ physical, cognitive, social, emotional and academic difference and diversity should be accepted and we would be understanding and attentive towards them for the successful inclusion in education. Irrespective of gender, language, ability, religion, nationality or other characteristics, every child should participate and learn and develop their potential with their own peers. The inclusive education focuses on the equity and fairness on inclusion without considering the pros and cons. Inclusive education brings all students together in one classroom and community regardless of their strength and weaknesses in any area and seeks to maximize the potentials of all students. It simply affirms that everyone has a fundamental right to obtain education and not be excluded.

The inclusive education is not a substitute for the exclusiveness. It compliments specialized education. Sometimes very few physically challenged children can be admitted to an inclusive educational institution. Seriously, handicapped children who take education in specialized educational institutions, after acquiring communication and other talents, they can also get admission in coordinated schools.

The structure of this education has been designed to ensure that children with disabilities have access to equal educational opportunities and can live their lives by becoming independent like other members of society. It provides a less restrictive and more effective environment to the disabled children so that they can be like a normal child. It promotes a positive social environment and relationships between children with disabilities and normal



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children at all levels of society. It minimizes the distance among different children in the society and provides a feeling of mutual cooperation and understanding. The inclusive education considers physically handicapped children and other marginalized children as important as normal children.

Inclusive education: as of right now

According to UNESCO's 2020 Global Education Monitoring Report: Inclusion and education – All means all, Fewer than 10% of countries have laws that help ensure full inclusion in education. The report urges countries to focus on those left to foster more resilient and equal societies. The website by UNESCO, 'PEER' shows that many countries still practice education segregation, which reinforces stereotyping, discrimination and alienation. Laws in a quarter of all countries wish children with disabilities in their country to be educated in separate settings, rising to over 40% in Latin America and the Caribbean, as well as in Asia.

The report also shows that education systems often fail to take learners' special needs into account. Today, the educational institutions were more eager to get internet access than to cater for differently abled children. The Report by UNESCO and its PEER website note that many countries were moving towards inclusion by using various innovative approaches. In the countries like Malawi, Cuba and Ukraine, there were resource centres for multiple schools and enabling mainstream establishments to accommodate children of special needs. In the countries like Gambia, New Zealand and Samoa, the underserved populations were taught by itinerant teachers. In Kenya the curriculum is adjusted to the nomadic calendar and, in Australia, to match the students' needs with their outcomes the curricula were adjusted.

In a country like India, the problems of disabled people and minorities are much more complicated. One of the reason is people's attitude towards marginalized people. In our country people have poor attitude towards them. The number of children with disabilities (CWD) enrolled in school in our country is decreasing significantly with each successive schooling. CWD rarely progresses beyond primary school, and only 9% complete secondary education. Only a few girls with disabilities are enrolling in schools than boys. The reason for all this is the lack of inclusive schools in our country. At present, due to the lack of inclusive schools, Open schooling is the only option for the children with special needs.

Inclusive education: Technology inclusion

ICTs offer a great potential to support lifelong learning for all groups of students, including those who have special needs. The use of ICTs improves these individuals' independence, integration, and access to equal opportunities, which facilitate their inclusion in society as valued, respected, and contributing members.

For the students with special needs proper educational software and assistive technology should be included in their learning process. And we have to assure that the resources for the students must meet the needs of all students with no exclusion. Nowadays many software, gadgets, and applications are available that facilitate teaching and learning in inclusive classrooms.

The technology applied in the inclusive classroom should be in such a way that the students with special needs can keep up with their peers. There are various resources that using technology to make the children with special need to be competent with normal children in their inclusive classroom. Some of the examples of ICT for inclusive education are-Digital



textbooks, eBooks, and Audio-books which supports students with learning disabilities who benefit from the ability to hear and view the text simultaneously.

Inclusive education: inclusion of AI

Intelligent Learning Environments (ILEs) are specialized Technology Enhanced Learning systems that aim to produce interactive and adaptive learning experiences that are customized for a learner using various AI techniques (Brusilovsky 1996). In education sector artificial intelligence can be used in several ways :-

- **For personalizing Education:** According to the potential needs and preference of the individual, the teaching and learning process can be personalized.
- **Humanoid robot teachers:** It can assist human teachers in teaching process and will make it more interesting and informative for the students..
- **For tutoring:** The chatbots like chat GPT and other AI enabled tools will solve the problems and doubts of the learners, thus become a good tutor outside the class room.
- **Virtual Reality:** The learner will get the real time like experience by introducing virtual reality in the classroom thus VR makes the education more interesting and enjoyable one to all the types of learners especially to the learners with special needs.
- **Multilingual teaching:** The AI offers multilingual teaching which will help the students can learn beyond the barrier of the language. Thus we can assure the sharing of knowledge in the wider level beyond the language barrier.

In India, by considering the recommendation of NEP 2020, NCERT is developing a new Curriculum Framework for School Education, in which an Introductory course on AI will be implemented in secondary level.

Inclusion of AI: Challenges and opportunities

AI has the power to make education more inclusive and accessible for all. Integration of AI in inclusive classroom comprises the personalized learning experiences, identify and address learning gaps, and support students with special needs. However the integration of Artificial Intelligence also has some challenges that have to be addressed to ensure its benefit in the field of education.

One of the significant applications of AI in inclusive education is personalized learning. AI-applications can realize each and every students' learning styles, strengths, and weaknesses and there by create customized plans for their learning. This makes teachers to customize their teaching methods and materials according to student's unique needs, and thereby ensure equal chances for everyone towards success. AI analyzes the student's previous performance and then provide learning content according to that. Natural language processing (NLP) technology is an example for personalizing. It is suitable for the students with the learning disability dyslexia, who often have problem with spelling, grammar, and sentence structure.

For the inclusive education another benefit contributed by AI is identifying and addressing learning gaps. AI can bring about the areas where the students are struggling by analyzing the previous data, and will provide suitable interventions .Moreover, AI can also help to recognize patterns and trends in student performance, allowing teachers to adjust their teaching strategies accordingly.



AI can be used to create adaptive learning environments for the students having unique needs and also for the students with physical or cognitive disabilities. AI analyzes the way the learner studies and by the information obtained, it will create customized content thereby ensure equality in accessing education.

Despite benefits that AI brings, there are also several challenges that need to be addressed. One of the main challenges is the potential for bias in AI algorithms. AI systems have the potential to reinforce existing biases and inequities, which could result in students from particular groups being treated unfairly if they are not carefully created and maintained. To avoid this risk, we have to ensure the transparency of AI algorithms.

The requirement for suitable infrastructure and resources to facilitate the integration of AI in education is another difficulty. There must be a considerable investment in technology, training, and support for educators before AI-powered tools and platforms can be implemented. Schools and institutions in low-income or rural locations, where access to resources and technology may be limited, may find this to be especially difficult. In addition to this if we consider its cost of installation, maintenance and repair it is clear that the AI is more expensive. Using AI for our everyday learning will create over dependency and it will lead to addiction to AI. Moreover, it is debatable whether they can implement intuition-based decision making in new situations, which often arises in the classroom. It is essential to overcome these inequalities and strive towards granting all educational institutions equitable access to technology and resources in order to ensure that AI helps all students.

AI Apps for inclusive education

1. Virtual Teaching Assistants

Virtual teaching assistants built using artificial intelligence is taking up the roles and responsibilities of a qualified trainer. For eg- **Go Talk Now**: It's an easy-to-use augmentative and alternative communication (AAC) app allows even nonverbal kids of 5 can communicate by tapping on images that represent words. Communication books can be customized using texts, voice photos, and videos. **Avaz Pro**: An augmentative and alternative communication (AAC) app that empowers to communication and customization. The interesting features are its color coding and child-friendly voices. **Cortana**: Microsoft created this virtual assistant. It helps visually impaired users to navigate on their computer by their voice. **VoiceOver**: It is a screen reader directly integrated on iPhones. it is used to enunciate email or textual message. VoiceOver also uses AI to describe apps icons, the battery level like information. **Nuance**: It is especially helpful for students who struggle with writing or have limited mobility. Nuance uses speech recognition software used for both students and faculty to transcribe up to 160 words per minute.

2. Multilingual Chat Bot/Voice Bot

Chat Bot enables the people with intellectual disabilities to develop and improve their social skills and thereby can develop autonomy through the training of communication skills. It also enables people with intellectual disabilities to understand, analyze and respond to different situations and also helps to initiate, maintain and end an interaction with others. It also makes the people with intellectual disabilities to be able to respond to the demands of others. These chatbots are especially for making the learning process a personalized one.



Duolingo is popular multilingual AI platforms with chatbots that help users learn languages without attending formal classes. AI chatbots like **ChatGPT** can significantly improve it for people with hearing or speech impairments. The chatbot analyzes input given by users and create responses by understanding of the their needs and goals

3.Adaptive Learning Management System

ALMS is a system designed to cater the individual needs of students like resources, assignments, activities, tasks, etc. ALMS which is also known as adaptive learning environments builds on the individual learner models. **STABLE** (Students who are ABLE) is the first-ever adaptive learning management system for hearing-impaired students of age 6–12 years old in the world. Prodigy Math is a perfect example of ALMS technology by which the kids can easily learn mathematics. **Kidaptive** is an Adaptive Learning Management System that support educational institutions to increase engagement of learners in learning activities. This ALP platform uses AI to introduce and challenge students based on each student’s perceived strengths and weaknesses

4.AI powered Test Generation and Evaluation Tools

PrepAI is an automated question generation platform which is using AI to assess the knowledge of students comprehensively. It reduces the effort of teachers in preparing test materials and thus will get enough time for them to take care of the children. Another example is **Kahoot** which is a game based learning platform. It helps teachers in conducting tests and surveys for students. It also enhances peer to peer learning and encourages student’s participation in learning.

Conclusion

AI has the power to revolutionize inclusive education by delivering personalized learning experiences, recognizing and fixing learning gaps, and assisting students with special needs. Integration of AI is changing the conventional thinking and thereby transforms the traditional mode of teaching and learning. But AI inclusion is also prone to errors which will may damages academic life of the children with special needs. Thus utmost care should be taken in the implementation of AI in the inclusive classroom so as to create an equitable educational world for all children.

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