

AI & EDUCATION - THE WAY FORWARD

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ABSTRACT

The cataclysmic set of events unleashed by the wrath of a single virus highlighted the vulnerabilities and the major fault lines that existed in the Education sector across the globe. India certainly was no exception to it. Mired by the past, the colonial legacy still gets retained by our education sector, despite being changed under various governments. Credit where its due, the New Education Policy 2020 certainly has made a lot of welcome changes to break free of the colonial past and adapt to the rapidly changing contemporary society. However, we need to make our education system more flexible and more amenable to change.

The pandemic certainly made it very challenging for all the stakeholders connected to field of education to adapt with the rapidly changing environment. ICT Pedagogy skills became primary prerequisites for all the different stakeholders, may it be the teachers or the students. We were suddenly on the precipice of a world which is ready to be fully immersed by the rapidly changing universe of AI. AI certainly will become a ubiquitous commodity in the future and the education sector cannot afford to stay behind. AI can bring revolutionary changes to the field of education provided the sector is adaptable and receptive to the changing needs and times.

INTRODUCTION

Machine Learning (ML) and Artificial Intelligence (AI) are key drivers of growth and innovation across all industries, and the education sector is no exception to the same. AI had been an important element in the EDU-TECH space all this while, but the pandemic forced majority of the educators to reassess the various modes of imparting knowledge and had to rely on the 'virtual mode of teaching.' The ultimate goal has always been to harness the capabilities of a 'heuristic AI machine which can exceed the full range of Human Cognition'. That might be a distant dream, but the exponential growth of the AI sector in the recent times, makes us realise that the dream may not be as distant as we thought it to be some years back.

The education sector has evolved over the years but the evolution has always been at a snail's pace, which could be catalysed by the intervention of AI technologies into the traditional pedagogy methods. Numerous stakeholders are involved in the education sector which opens a wide plethora of opportunities for the use of AI to further revolutionise the field of education. Higher education understandably so, has wider implications for the society and the economy at large and so there are a lot of stakes riding on the outcomes of higher education. With the advent of technology, there has been a wider interest in enabling and reaping the benefits of a rapidly changing AI into the education sector as well. Machine learning algorithms are getting more and more sophisticated, and they can identify, predict and organise various learning outcomes and even assess different lesson plans accordingly.

AI systems enable the provision of a personalised interactive learning platform which makes academic learning a choice based and personalised learning process for the students. AI helps to transcend boundaries and extend a wide variety of learning opportunities to learners across the globe. The search engines today are more advanced and powerful, and they provide instant data across a wide spectrum of topics which is also customisable in nature making the students powerful stakeholders and putting the onus on them.

AI systems are also successfully able to identify and assess student behaviour and then further classify a RISK CHART of the student i.e. Identifying the risk level that a student is facing across various sectors, say academically, financially, socially etc. AI therefore becomes a versatile system which ensures multiple benefits across the board.

AN INTELLIGENT & VERSATILE SYSTEM

AI has proven to be a versatile system with a 'heuristic intellectual cognition ability' enabling it with a provision of solving various issues on the go. The education sector has been catapulted to reform by the virtue of AI's multifaceted uses across the board. Various stakeholders involved can harness the advantages of AI across various sectors of education. However, we also need to realise that the full potential of AI has hardly been realised yet and there is yet a lot to achieve and improve. A very important benefit of using AI powered Edu Tech is that it leads the students further onto the path of education along with giving them a sense of autonomy, by enabling them to discover information on their own. This kind of 'individual centred' format of education is also in tandem with the Govt's Outcome Based Education (OBE) provision which is a part of the National Education Policy 2020.

"You don't have to be an AI expert to know that we, in this day and age, are in the middle of something almost magical, infinitely creative, and beautifully applicable in a variety of settings."

This quote aptly sums up the significance of AI and the importance it holds in the contemporary world across various sectors. It would be interesting to note here that Unlike the AI of the past, which was limited to processing straightforward data like test answers, today's technology can take data from multiple sources and make well informed decisions to tailor the experiences of the students in a wholistic manner.

According to Ashok Goel, a Georgia Tech computer science professor who will serve as the institute's executive director,

"COVID-19 has changed our world,". "Though K-12 will become mostly in-person again because kids need teachers, adult education will remain online to a large degree. It will become a hybrid, a mixture. There's a much larger need today than even one year back, and the need is going to grow."

FUTURISTIC

As we move forward into a post covid-19 world, we see how the educators have had to rapidly update themselves with new and coming technologies and develop instructional strategies to somehow cope with the learning needs of their students who are also called 'digital natives'. Along with these rising challenges, what we are now seeing nowadays,

especially in the recent times is a huge increase in the requirement for learning strategies which are dynamic in nature, and which can equip the learners with life-long knowledge. This wouldn't have seemed possible, say in the last decade. Fortunately, it is now a possibility given the recent advances in AI technology.

One of the biggest reasons why AI is a huge asset to the education sector is its ability to be futuristic. Artificial intelligence has proved that it can adapt on the go with the growing needs of the contemporary times and set further benchmarks for the times to come. As we discussed earlier, we need to fill the ever-growing gaps between teaching and learning and the creators and designers of AI's cutting-edge technology have also had to speed up their pace suited with the requirements of the changing times. The futuristic nature of artificial intelligence has enabled the teaching process to become more student centred and it allows the student to seek the help on their own with the help of its hybrid model. There also have been a lot of advances in Natural Language Processing systems in the recent times, which means that even if a question isn't a part of the syllabus or a given text, with the help of AI the students can access information from a variety of sources and access it with just a click of a mouse. We therefore realise that this will not just be a valuable resource for the educators, but it will also provide the students a quick and accessible way to revise and revisit various subjects as many times as they want.

CHALLENGES

We need to realise that along with the numerous benefits that arise from AI's enormous potential, there are also several challenges which arise as the educators learn to grapple with the changing world around them. The adoption of AI in the teaching and Edu Tech sector is quite a recent phenomenon. Legislations related to this field/domain around the world have been quite slow as compared to the growth of the sector. Governments around the world have been hesitant for the same due to the ambiguity around data handling issues. Thousands of new start-ups and companies keep on entering the Edu Tech sector daily which keeps on widening the gap between what can be done and what is ethically and legally acceptable. Therefore, there is a lot of 'legislative vacuum' surrounding this sector which does pose a significant challenge.

Another challenge is the lack of transparency in certain machine learning algorithms. The traditional method of teaching despite its obvious limitations was quite receptive. There was a constant give and take on a human-to-human level. This level of intimacy and transparency can hardly be found when interacting with different machine learning algorithms. For ex. If a form or a document were to be not accepted or declined by an algorithm, it would be nearly impossible to receive subsequent feedback as to why it happened as the entire process would have to be reverse engineered making it quite difficult and cumbersome.

Despite the exponential rise in the sophistication of these machines, they still are as good as the people who make it- a reflection of we collectively exist as human species. The output data tends to only be as good as the input data. Elimination of biases and prejudices might be possible to some extent at the human level which also comes with its set of challenges, however it becomes nearly impossible at the mechanical algorithmic level. Objectivity of the machine therefore can be very difficult to navigate. We tend to pass on our inherent biases

onto the machines and they tend to replicate us at a more advanced level, which can become a major challenge as we try to adapt and adopt these systems.

Another challenge we face is about training the teachers and the students and makes them adept with the complexities of AI and related technologies. Even those countries that have been at the forefront of adapting these technologies are also grappling with this challenge. The introduction of AI led technologies requires the subsequent readjustment of 'people skills' for the educators.

According to a recent McKinsey report,

“That translates into approximately 13 hours per week that teachers could redirect toward activities that lead to higher student outcomes and higher teacher satisfaction.”

This requires a significant shift from the traditional process of mentoring and therefore the educators and the learners should be proficient enough with these new systems before these technologies are adopted and made a part of the education system.

WAY FORWARD

In order to overcome the various challenges discussed above, a collective effort will be required from all the stakeholders involved in the education process. Governments across the world need to work together to clear the ambiguity regarding data related issues. The Legislative vacuum that surrounds the Edu Tech sector is not doing anyone any good and there needs to be an international effort to clear out this 'vacuum' on an emergent basis. The United Nations Broadband Commission is taking a step in the right direction and is catalysing the process further by pursuing its goal to make 'access to the internet a basic human right'. Data is rightly called the new 'oil' and is rapidly becoming the most precious commodity. The world has always been clearly demarcated into the 'haves' and 'have nots' unfortunately, and education can prove to be the most empowering tool required to restore balance. Universal Access to data can level the playfield to a certain extent and will become the foundation to a 'data driven education sector'.

The general issues that stem the growth of the sector can be solved by collective will for change. However certain specific challenges need well researched solutions, that are also pinpointed focusing on a specific issue. We need to move further based on a well thought out plan, as we set further goals to eliminate the stark digital divide across the world. These technologies can be very useful provided we are able to balance their merits with the challenges that they pose.

As we stand today at the crossroads, embarking on the next revolutionary phase of AI in education, we need to do our collective best to overcome these challenges and that will be the wisest way forward. There is no escaping the fact that these technologies have now become an intrinsic part of our lives, especially in the field of education and hence we need to make sure that we harness the huge potential that these technologies have to offer.

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