AI in Education

A REASONED SPECULATION

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The onrush of rapid developments in the fields of Artificial Intelligence (AI) and Machine Learning are opening up new vistas in undertaking complex tasks and successfully achieving them at astonishing speeds.

The next, more sophisticated stage of the information and communication revolution has arrived.

Most people are eagerly waiting to see unimaginably complicated tasks being done by computers with a great deal of excitement and anticipation, like a grand show about to begin. However, there are a number of critical questions being raised about the impact and consequences of AI on human society. These questions range from negative side effects of AI such as job losses, to more existential ones like whether the new machines will ultimately overwhelm humans and emerge as the new 'species' in the planet's evolution. The debates are intensifying and some people who were active players in the development of the new technologies are warning us about the adverse possibilities of AI. In this context of imminent change with uncertain impacts, questions are also being raised about the future of education, and education systems.

We restrict our discussion in the rest of this essay to the possibilities of expected changes in education. In doing so, we will necessarily talk about the labour market since the education and the job market are intrinsically linked. What follows is reasoned speculation into future trends.

Let us begin at the very beginning. The infant getting into pre-school and kindergarten will soon not have to go to school at all. Not only would we save on the inefficiencies of commuting, we also would shield the child from acquiring infections preventing common ailments that children of yore were accustomed to. A computer could teach and guide the child with special attention on the child's specific talents and abilities. Customized (and optimized) care would be provided which no school-teacher, at the present moment, could provide.

Teaching and learning resources will move away from books and paper and toys, to things more audio-visual.

Interactions with other children will be virtual. The child would be nudged by the trainer-computer to play games best suited for the child's innate capabilities.

In short, the child would be exposed to a much greater variety of learning experiences, each designed to maximize their potential for growth, as determined by a more intelligent AI system. The child's ability to socialize and adapt to new situations would be limited to simulated experiences as provided by the trainer-computer. The child is likely to be exposed to new subjects and themes with great randomness and frequent alterations. The speed of learning new things and forgetting the old would be a game-changing characteristic of success in the future. Similar traits would be continued into the secondary level.

Two things are likely to happen at the entry level of education. First of all, access to such educational devices might not be available for all. People with lower incomes will be deprived, just as access to the best schools are limited by economic capability in India now. They may continue with the traditional modes of education, or be imparted education with standardized AI systems with limited customizability. That inequality will remain. The second issue of concern would be the intellectual demands made by the new rapid-learning-and-ability-to-apply-that-knowledge system. The intellectual divide would still be there, probably in a more accentuated form. In this new system, education is unlikely to be universal.

This will lead to a sharper divide between the employable and the unemployable, as both the economic and intellectual divide manifests itself within the education system.

In this scenario, eventually, the traditional school could cease to exist as would the classrooms and the teachers. The new school could turn out to be specialized interactive zone with children of exceptional talent who could innovate and share ideas.

Similarly, teachers, much fewer in numbers, would be more of learning coaches than knowledge givers.

In the field of higher education, the role of teachers who transfer their acquired knowledge to students in classrooms will be over.

The transfer can be done at home through super-teacher devices, faster and in a customized fashion. The classroom cohorts would still be required to help the each other who make to this level - possibly an elite with sky-high IQs – to attain problem solving skills. The higher education classroom or laboratory will constantly device ways to solve problems of all types, formulating solutions to new problems and new solutions to old problems. Problems would be solved through simulation exercises in safe settings, as well as through immersion into a problem for a longer time and with more risky, real-world settings.

One thing to note here is that the distinction between learning and training would still be there. The vast majority would learn to solve problems and make themselves useful to society. Learning will remain for learning's sake and for a few who would be able to generate new thoughts and philosophies. However, these students would not find a place of importance in society nor would they be linked to higher education in any traditional way.

Not surprisingly, the skill profile of the teacher would be different from what it is now. The pedagogy would be different too as would be the learning resources like text-books and journals. What is now referred to as the class-room sitting arrangement in flat rooms or sloped galleries would become obsolete. There would be many more institutes of learning and research but physically, these would require much less space.

Traditional publicly funded universities would become obsolete. Institutes of higher education would be funded and controlled by corporations and business houses to ensure that the rapidly evolving new skills are imparted to the best learners who then proceed to work for those corporations. Some scholarly institutions could survive for the deep thinkers and potential philosophers, but without state patronage, they would not exist. In this aspect, the future of a liberal arts education is in question.

The great divide that is likely to emerge in education would imply some interesting changes from the divide of today. Some really talented children who would normally be lost due to economic constraints may be identified and brought into the talent pool. The rest would not have anything to do with the new world of education. Jobs, in the new world would be limited too, since humans would be greatly replaced by machines that can make their own decisions and execute them.

Coming to the job market, where all purposive education leads to, the changes are likely to be remarkably disruptive. A number of things may happen.

First of all, a large number of jobs will disappear as they will be replaced by machines. Secondly, a set of new jobs with new skill requirements will appear (requiring super-fast learning abilities and extraordinary levels of intelligence).

People displaced from old jobs may not fit into the new opportunities that open up since their acquired skills have become obsolete. For instance, a bus-driver around 50 years of age, displaced by autonomous vehicles (driverless cars), cannot get a new job as a highly paid computational statistician.

Some will win, while some others will lose. There will be social disruption. A large number of the labour force participants will not only be out of jobs but also unemployable. What society does with this large army of useless people is a trillion-dollar question that will haunt the deep-thinking minority.

The changes described above, one might argue, has been the story of technological change and economic progress throughout history. It has indeed been so.

However, if the changes we are anticipating happen too fast, as is a possibility, then the disruptions will be large and catastrophic, with labour markets not getting enough time to adapt.

There are two reasons to believe that this cannot be ruled out entirely. The first is the observed fact that over history newer waves of technological progress have tended to be faster than the previous ones. There is acceleration in progress. The second reason is that the developments in AI are picking up fast and growing into a wave with many changes likely to come together within a short span of time. A research project undertaken by Oxford University studying 702 current occupations in USA, found that about 47 per cent of the US labour force was likely to face displacement from automation in the near future of one or two decades.

A new feature of the disruption is the fact that perhaps for the first time in history professions that were deemed to be requiring more cerebration would also be affected by AI. For instance, lawyers would no longer be required to do the backroom research for a brief. The data from all past cases could be analyzed by a single computer with speed and accuracy, and even arguments generated for use in the trial court.

Hence the need for lawyers will diminish perceptibly. In a similar vein the demand for doctors and medical professionals would come down dramatically with the advent of AI powered devices like IBM's Watson. We have already talked about the impact AI could have on the demand for teachers at all levels of the educational system.

We had said that that our descriptions were based on reasoned speculation.

Much of what actually happens will depend upon the speed with which the innovative technologies descend upon us.

The slower the better, but it is likely to be fast. In this context a word about the fortunes of a future business manager. The need for managers in running any business will be much less than what it is now. The role of trainers and coaches with good skills at management tools will increase in demand. The business school of the future will be an interactive workshop for problem solving and learning new skills associated with AI in all its dimensions.

Change is an essential characteristic of social progress and development. We cannot stop the tide. Nor is it desirable. We need to change and adapt so that we may continue to play a socially useful role.

The only type of person who will surely be needed are the ones who can dream dreams and see visions. A rare species, not always in demand, but pricelessly valuable. Yet they may become the hapless minority.

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