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The Future of Education

The Global Challenge

The education systems in almost all countries are obsolete. They date back from several hundred years ago and are based on a model devised, in the main, by the Victorians running the British Empire. They were created during the pre industrial era where the only way to communicate was to write information down on paper and deliver it on horseback or by boat. In order to run things successfully it was therefore necessary to create the physical equivalent of a global processer, using clerks instead of computers. This was the bureaucratic administrative machine. Schools were designed to produce students to become part of that machine. Good handwriting, the ability to read and excellent mental arithmetic were all skills that enabled the machine to function successfully so these were the key requirements for all students. This is not the case today.

Now that our society and economies have evolved beyond that era, our schools must also be reinvented. These days we have computers to do clerical roles, efficient transport systems and the Internet means there is no longer a need to write beautifully or be able to do long division in your head. Two hundred years ago there was a need to produce administrators who could function in an existing system so early industrial education was focused on producing "identical people" who could easily replace each other in whatever administrative role was required. It was part of a hugely successful process, and helped build and run a great, global bureaucratic machine. Time has moved on and employment opportunities have changed. The world no longer needs such identical people yet we are still educating our children in a system designed to produce them.

Education Systems are Obsolete
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Options and Possibilites

We don't know what the jobs of the future will be but we do know that we will be able to do them anywhere at anytime. It is not difficult to predict that 2024 will be vastly different, but it is difficult to predict exactly how things will be different. We can see that no one will do arithmetic on paper, almost no one will write by hand, hence cursive writing will be obsolete and we know spelling and grammar will be dealt with by machines. Machines may also read to us. Reading, writing and arithmetic,

the three pillars of primary education will therefore become redundant. Knowing will be obsolete because information will be forever at our fingertips. We therefore need to teach our children to think discerningly. This is not easily achievable using the education system we have today. The challenge is to establish a process that fits this r purpose. What should people know? How should they know these things? How should their learning be assessed?

The End of the "3 Rs"
Machines may also read to us. Reading, writing and arithmetic, the three pillars of primary education will therefore become redundant. Knowing will be obsolete because information will be forever at our fingertips.

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🎓 Proposed Way Forward

Delivering Education for All
We should devise a process that can be made available in the places on earth where, for various reasons, good schools cannot be built and good teachers cannot or do not want to go to. This is a priority because these are the same areas where, in general, trouble comes.

Self-Organised Learning
If you take away adult restrictions, and provide children with Internet access, they will self organize and learn.

Learning to Learn
Children thrive best when left alone to uncover knowledge, particularly when their imagination is charged with difficult questions and achieve more when they are encouraged and praised for their achievements.

Sparking the Imagination
Profound changes to how children access vast information is yielding new forms of peer-to-peer and individual-guided learning. The cloud is already omnipresent and indestructible, democratizing and ever changing. We should use it to spark the imaginations and build the mental muscles of children worldwide.

I believe that primary education needs to be changed completely. I also believe that increasing the number of teachers will not solve the problem. We must acknowledge that there will always be areas on the planet where good teachers will not want to go (see, for instance, Hindustan Times, 2007; Thomas, 2003). The best teachers tend to want to be near to urban centres so they often move from remote areas towards the town. The quality of education therefore is inversely related to the remoteness of the school from its nearest urban centre. The Indian Government, as well as governments of many other countries, spends large amounts of their education funds to train teachers, in the hope that this will improve the quality of education. This expectation may have an intrinsic flaw when applied to remote areas. Wherever a teacher wants to migrate away from the school he or she is employed in, teacher training will only enable them to do so more easily.

Given this, we must consider alternative ways to deliver education. In particular we should devise a process that can be made available in the places on earth where, for various reasons, good schools cannot be built and good teachers cannot or do not want to go to. This is a priority because these are the same areas where, in general, trouble comes.

Is there a way to solve the problem by taking the teacher out of the equation? What, for example would happen if you gave computers to children without the support of any human intervention? Can they self-educate? Computers have the advantage of working the same way wherever they are and can do the same for children irrespective of location. This is what the "Hole in the Wall" experiment was designed to uncover. The idea was simple, to adapt the concept of an ATM cash machine for education and place it in areas where there are no teachers or where teachers do not want to go.

We offered internet access via a computer, fixed to the wall in slum areas and positioned at the appropriate height for children to access. The results showed that children in urban slums and remote areas of India, many of which have never seen a computer in their lives, are capable of teaching themselves various things from character mapping to DNA replication all on their own.

Building on our initial findings we went on to test how much children can learn if given internet access and left to their own devices. One such experiment was to see if some Tamil speaking children in Kalikuppam a South Indian village, could learn the biotechnology of how the DNA molecule reproduces using a street side computer that only "spoke" English. At a Western college this would be considered to be a second year undergraduate question. Despite knowing nothing about the subject at the beginning of the process, or being able to speak English, and without being asked direct questions on DNA molecules, it took students only 2 months to have a broad understanding of the subject. When tested they were able to answer about one in four questions correctly. After another couple of months, with only the encouragement of a friendly local, they were getting every other question right. From this it is clear therefore that if you take away adult restrictions, and provide children with Internet access, they will self organize and learn.

What is implied from the experiment outlined above is that children thrive best when left alone to uncover knowledge, particularly when their imagination is charged with difficult questions and achieve more when they are encouraged and praised for their achievements. This we call the "Grandmother method".

Unlocking the power of new technologies for self-guided education is one of the 21st century superhighways that must be opened. Profound changes to how children access vast information is yielding new forms of peer-to-peer and individual-guided learning. The cloud is already omnipresent and indestructible, democratizing and ever changing. We should use it to spark the imaginations and build the mental muscles of children worldwide. This is why we have created "SOLEs," "self organized learning environments," where children group around Internet-equipped computers to discuss big questions. The teacher offers support rather than direction and merges into the background to observe as learning happens. SOLEs can inspire good teachers, provide a powerful learning tool to poorer teachers and offer basic essential resources and inspiration to pupils where there is no teacher.

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🎓 Impacts and Implications

In the networked age, we need schools, not structured like factories, but like clouds. We know the way we will work in the future will change. For example, general purpose doctors will no longer be needed, we will have no factory workers, no clerical jobs and no drivers and most tasks will be delegated to machines. It stands to reason therefore that the way we are educated and learn must change too. We need to teach children to make the machines of the future. We need a curriculum of big questions, examinations where children can talk, share and use the Internet. We need new, peer assessment systems. We need children from a range of economic and geographic backgrounds and an army of visionary educators. We need a pedagogy free from fear and focused on the magic of children's innate quest for information and understanding.

The information revolution has enabled a style of learning that wasn't possible before and education systems need to evolve accordingly. If this happens everything will be different. It is difficult to know where this will eventually lead, but if adopted widely enough and used for long enough, I believe self organised learning could eventually inspire a fundamental reassessment of our value system, decentralisation of business and the breakdown of monopolies. After all knowledge isn't a commodity that's delivered from teacher to student but something that emerges from the students' own curiosity-fuelled exploration. In the future, teachers will provoke curiosity, suggest avenues of exploration, not answers, and then they will step aside so students can teach themselves and one another. They will create ways for children to discover their passion and in so doing will uncover the next generation of geniuses in the process.

School in the Cloud
In the networked age, we need schools, not structured like factories, but like clouds.

An Education System for our Time
We need to teach children to make the machines of the future. We need a curriculum of big questions, examinations where children can talk, share and use the Internet.

Access to Knowledge
The information revolution has enabled a style of learning that wasn't possible before and education systems need to evolve accordingly. If this happens everything will be different.

Freedom to Learn
In the future, teachers will provoke curiosity, suggest avenues of exploration, not answers, and then they will step aside so students can teach themselves and one another. They will create ways for children to discover their passion and in so doing will uncover the next generation of geniuses in the process.

Lead Expert – Sugata Mitra

Professor of Educational Technology at the School of Education, Communication and Language Sciences at Newcastle University
Lead expert on the Future of Education.

Sugata Mitra is Professor of Educational Technology at the School of Education, Communication and Language Sciences at Newcastle University, UK. He was the instigator of the 1999 Hole-in-the-Wall experiment that involved placing a computer connected to the Internet within a wall overlooking a slum area in New Delhi and allowing the local children to have free access and use of this. Hundreds of such self-learning PC-equipped kiosks are now in use throughout India and in Cambodia, six countries in Africa and one at Newcastle University. He was given the $1m TED Prize in 2013 in recognition of his work and to help build a School in the Cloud, a creative online space where children from all over the world can gather to answer 'big questions', share knowledge and benefit from help and guidance from online educators.

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About Future Agenda

Context – Why Foresight?

In an increasingly interconnected, complex and uncertain world, many organisations are looking for a better understanding of how the future may unfold. To do this successfully, many companies, institutions and governments are working to improve their use of strategic foresight in order to anticipate emerging issues and prepare for new opportunities.

Experience shows that change often occurs at the intersection of different disciplines, industries or challenges. This means that views of the future that focus on one sector alone have limited relevance in today's world. In order to have real value, foresight needs to bring together multiple informed and credible views of emerging change to form a coherent picture of the world ahead. The Future Agenda programme aims to do this by providing a global platform for collective thought and innovation discussions.

Get Involved

To discuss the future agenda programme and potential participation please contact:

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Future Agenda 1.0

The Future Agenda is the world's largest open foresight initiative. It was created in 2009 to bring together views on the future from many leading organizations. Building on expert perspectives that addressed everything from the future of health to the future of money, over 1500 organizations debated the big issues and emerging challenges for the next decade. Sponsored globally by Vodafone Group, this groundbreaking programme looked out ten years to the world in 2020 and connected CEOs and mayors with academics and students across 25 countries. Additional online interaction connected over 50,000 people from more than 145 countries who added their views to the mix. All output from these discussions was shared via the futureagenda.org website.

Future Agenda 2.0

The success of the first Future Agenda Programme stimulated several organizations to ask that it should be repeated. Therefore this second programme is running throughout 2015 looking at key changes in the world by 2025. Following a similar approach to the first project, Future Agenda 2.0 builds on the initial success and adds extra features, such as providing more workshops in more countries to gain an even wider input and enable regional differences to be explored. There is also a specific focus on the next generation including collaborating with educational organizations to engage future leaders. There is a more refined use of social networks to share insights and earlier link-ups with global media organizations to ensure wider engagement on the pivotal topics. In addition, rather than having a single global sponsor, this time multiple hosts are owning specific topics wither globally or in their regions of interest. Run as a not for profit project, Future Agenda 2.0 is a major collaboration involving many leading, forward-thinking organisations around the world.

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