

We don't need to improve schools. We need to reinvent them for our times.

We have romantic attachments to skills from the past which are no longer relevant to a curriculum for today's children

Sugata Mitra

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Educationalist Sugata Mitra with pupils at a primary school in Gateshead.
Photograph: Mark Pinder for the Observer

Would a person with good handwriting, spelling and grammar and instant recall of multiplication tables be considered a better candidate for a job than, say, one who knows how to configure a peer-to-peer network of devices, set up an organisation-wide Google calendar and find out where the most reliable sources of venture capital are, I wonder? The former set of skills are taught in [schools](#), the latter are not.

We have a romantic attachment to skills from the past. Longhand multiplication of numbers using paper and pencil is considered a worthy intellectual achievement. Using a mobile phone to multiply is not. But to the people who invented it, longhand multiplication was just a convenient technology. I don't think they attached any other emotions to it. We do, and it is still taught as a celebration of the human intellect. The algorithms that make Google possible are not taught to children. Instead, they are told: "Google is full of junk."

In school examinations, learners must reproduce facts from memory, solve problems using their minds and paper alone. They must not talk to anyone or look at anyone else's work. They must not use any educational resources,

certainly not the [internet](#). When they complete their schooling and start a job, they are told to solve problems in groups, through meetings, using every resource they can think of. They are rewarded for solving problems this way – for not using the methods they were taught in school.

The curriculum lists things that children must learn. There is no list stating why these things are important. A child being taught the history of Vikings in England says to me: "We could have found out all that in five minutes if we ever needed to."

One of the teachers who works with me said to her class of nine-year-olds: "There is something called electromagnetic radiation that we can't see, can you figure out what it is?" The children huddle around a few computers, talking, running around and looking for clues. In about 40 minutes, they figure out the basics of electromagnetism and start relating it to mobile signals. This is called a self-organised learning environment, a Sole. In a Sole, children work in self-organised groups of four or five clustered around an internet connected computer. They can talk, change group, move around, look at other groups' work and so on.

One of them says: "Aren't we going to do any work?"

"What do you think you were doing?" asks the teacher.

"Learning about electromagnetism."

"What's work, then?"

"Work is when you say things to us and we write them down."

Methods from centuries ago may seem romantic, but they do get obsolete and need to be replaced. The brain remembers good things from the past and creates a pleasant memory of the "good old days". It forgets the rest. It is dangerous to build a present using vague memories of the good old days.

Any standard room in a Holiday Inn is better than the best facilities in an emperor's room in the 15th century. Air conditioning, hot and cold running water, toilets that flush, TV and the internet. The middle class lives better today than any emperor ever did. Going back to horse-drawn vehicles is not the solution to our traffic problems and pollution. Beating children into submission will not solve the problem of educational disengagement.

If examinations challenge learners to solve problems the way they are solved in real life today, the educational system will change for ever. It is a small policy change that is required. Allow the use of the internet and collaboration during an examination.

If we did that to [exams](#), the curriculum would have to be different. We would not need to emphasise facts or figures or dates. The curriculum would have to become questions that have strange and interesting answers. "Where did language come from?", "Why were the pyramids built?", "Is life on Earth sustainable?", "What is the purpose of theatre?"

Questions that engage learners in a world of unknowns. Questions that will occupy their minds through their waking hours and sometimes their dreams.

Teaching in an environment where the internet and discussion are allowed in exams would be different. The ability to find things out quickly and accurately would become the predominant skill. The ability to discriminate between alternatives, then put facts together to solve problems would be critical. That's a skill that future employers would admire immensely.

In this kind of self-organised learning, we don't need the same teachers all the time. Any teacher can cause any kind of learning to emerge. A teacher does not need to be physically present, she could be a projected, life-sized image on the wall. A "Granny Cloud" of such volunteer teachers have been operating out of the UK and a few other countries into schools in India and South America for more than five years, using a combination of the internet and admiration to provide a meaningful education for children. We don't need to improve schools. We need to reinvent them for our times, our requirements and our future. We don't need efficient clerks to fuel an administrative machine that is no longer needed. Machines will do that for us. We need people who can think divergently, across outdated "disciplines", connecting ideas across the entire mass of humanity. We need people who can think like children.

Sugata Mitra is professor of educational technology at Newcastle University, and the winner of the \$1m TED Prize 2013. He devised the Hole in the Wall experiment, where a computer was embedded in a wall in a slum in Delhi for children to use freely. He aimed to prove young people could be taught computers easily without formal training.