Interview with Manu Kapur

ETH Zurich's learning sciences expert discusses his own 'cut-throat' schooling, why lecturing fails, and how students can fail 'productively'

www.timeshighereducation.com/people/interview-manu-kapur

February 21, 2019 by David Matthews

Source: Manu Kapur

Manu Kapur holds a chair in learning sciences and higher education at ETH Zurich. Before Switzerland, his academic career took him to the United States, Hong Kong and Singapore. His research has tackled questions ranging from how students can fail productively to whether stereotypes affect learning.

Lucknow, in the north of India, in 1974.

How has this shaped you?

I was in India for 16 years. I grew up there and my family is still there. Growing up, dinner table conversations were about something or the other – it doesn't matter what the topic was – but there was always the sense that you have the right to an opinion, but you must take that right on to the responsibility of building an argument. Maybe it's Indian culture – Amartya Sen wrote a book called *The Argumentative Indian* that resonated years later after I'd left India when I read it.

Did your own education lead you to want to understand how people learn?

I had great teachers but, growing up in India, the competition in schools was so cut-throat, and it was the same in Singapore. It was probably a disaffection with the idea that either people make it or they don't, and it's their fault. Either you're bright or not. If you make the grade, that's great, but what about everybody else? It can't just be about the people who get it.

After training as an engineer, you first taught high school maths in Singapore, but then decided to do a PhD on mathematical cognition. What triggered this switch?

Unlike the sciences, maths is very abstract. You can't assume that novices will see what you want them to see, even if you do a really good job explaining things, because "seeing" [a mathematical concept] is not just a perceptual exercise, it's a cognitive one. Why are some kids able to "see" but not others? One could easily say: "Some people get it, others don't, that's just individual differences, let's get on with life." But I just felt that everybody should be able to see.

What big myths about teaching and learning do universities believe that are not backed up by evidence?

They divorce knowledge from doing. If you want to be a carpenter, suppose someone says: well, you need to learn some mathematics, geometry, chemistry, materials science and so on, and when you've passed all these courses, you can do carpentering. That doesn't work very well because the whole idea is to learn things about carpentering – and about physics, chemistry – in the practice of carpentering. We've almost convinced ourselves that I can give you the knowledge, and then hope and pray that you'll be able to use it.

Some universities have introduced dedicated critical thinking courses for their students. Do you approve?

I don't think it's a good idea. You don't learn critical thinking outside [a specific context]. It's another example of knowledge being divorced from the processes of doing. Critical thinking is a way of being. To think you can do that in isolation, divorced from the context and the knowledge, is just not supported by science at all.

So why do universities do it?

It's such an intuitive additive model – oh, I've got it covered in the curriculum: content here, critical thinking here, project work here. That's exactly the divorce that is dangerous. You don't suddenly learn soft skills in a communications course. Again, integration is key.

What other teaching myths do universities cling to?

Lecturing, as the starting point of learning something new. So if you're a novice, it's not true that the best way to help you understand something new is just to tell you, simply because the extent to which you can as a novice encode something is a function of what you see. So, suppose you're watching a football match, and you're a novice, and sitting next to you is a football manager. You're both watching the same game, but do you think you'll see what the football manager sees? No. Even if the football manager tells you, even then you will not be able to see it, because you don't have the knowledge to see at that point.

How then should students be taught?

To get the novice to “see”, we have to design ways to engage them in problem-solving activities that lead to failure. Students generate many ideas and solutions – except that they invariably fail to come up with the right ones. However, it is this failure that is the locus of powerful learning, and when the teacher then explains the correct underlying concept, that is when deep learning takes place. And that is what I call productive failure.

Do you sometimes fail to take your own advice about how to learn?

Absolutely: it’s like doctors who smoke and drink. I’ve been guilty of not practising what I preach, whether it’s learning how to cook something new, or learning a language, or how to ski, now that I’m in Switzerland. One has to take it against the stakes as well – if it’s a low-stakes thing, when there’s no need to go deep into something, then it’s easy to depart effortful, intentional, persistent learning. Not everything needs to be optimised. But in other things where your job or your life depends on it, I think that’s when we need to take science into account a lot more. Preparing children for school or higher education – that’s high stakes.

david.matthews@timeshighereducation.com