



Knowledge thirsty, cash poor

Rigorous economic studies present a mixed picture of ed tech's impact on learning, but recent evidence indicates that the cost-savings could be substantial, finds **Gabriel Heller Sahlgren**

Anybody who's paid a visit to an education conference in the past decade is bound to have been subjected to the claim that ed tech adoption will lead to unprecedented improvements in learning at significantly less cost.

For all the theoretical attractiveness of these arguments, it's actually tremendously difficult to draw hard and fast conclusions about the efficacy of new technology on the strength of the studies that have been undertaken to date.

Few offerings have been subjected to the type of research that is necessary to decide whether or not they actually are useful – the type, that is, that can distinguish between factors that have causal influence and those which merely correlate, and even among those that have been subjected to trial the picture is mixed. A 2017 review of randomised tech interventions undertaken by the Centre for Education Economics found that some work while many don't. This may be because of poor pedagogy, the medium itself, the quality of the software, usability, or any number of contextual and background issues.

So what we need to do is establish what works, under what circumstances, and for whom. This is under-scored by one of the few generalisations that does in fact find support in the literature: that indiscriminate use of technology rarely leads to improvements. The fear that over-use of technology may compromise children's ability to concentrate is better grounded than the reverse hypothesis. Technology can indeed act as a great distracter in the classroom.

This does not mean that ed tech will not have an important, even crucial role, to play in teaching and learning. In the future it just means that there's a lot more trial and error, and investigation to go than one could be forgiven for thinking.

In the meantime, those in developing world countries all grappling with the challenges of keeping pace with growing demand for education. These providers will be heartened by recent government-funded research carried out in Honduran primary schools, which found that shifting from printed to digital delivery of content had the positive

effect of decreasing marginal costs, while avoiding potential distraction effects.

In the study, Rosangelo Bando and colleagues analysed the effects of replacing print textbooks in mathematics and Spanish with laptops that contained digital versions of these books, adapted for on-screen use. During the trial, the government randomly selected a couple of hundred schools to receive laptops which allowed pupils to do exercises and access educational content online.

Unsurprisingly, the researchers found that laptop use increased sharply, especially as educational tools, in schools that were subjected to the intervention. But what happened to pupil performance? It turns out that the shift to digital content had essentially no effect at all on achievement in either mathematics or Spanish (regardless of pupils' backgrounds), while digital literacy increased.

Of course, the programme turned out to be more expensive than the cost of print textbooks: even though the marginal cost of providing the digital content was lower than using textbooks, it also involved higher fixed and maintenance costs. Assuming that digital literacy also brings a future wage premium, the researchers calculated that increasing the number of textbooks stored on the computer to five instead of two would be sufficient to ensure that digital provision would be more cost-effective than print textbooks.

While we need more research of how similar interventions work in other contexts, the study therefore shows that shifting from print to digital content has the potential to induce cost savings. This is an area where ed tech appears to be able to make an important difference – and investors would consequently be wise to pay attention. ■

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