The critical role of children and schools in internet adoption

By ***Rodrigo Belo***

Children are fast learners, and the speed at which they learn can have an impact on the broader adoption of new technology. In particular, the provision of broadband in schools can be an effective way to encourage household internet uptake in neighbouring areas.

That is one of the major conclusions I have come to as a result of a research project started during my PhD and soon to be published in a top management journal.

As I will shortly demonstrate, anecdotal evidence abounds of how the demands of children increase the spread of behaviour patterns. In the meantime, one non-technology example which I would cite in support of my thesis and which is borne out by a separate academic study is the way in which children of Hispanic parents born in the USA learn to speak English and by the very act of doing so increase the use of English in the home environment. Children who become acquainted with a new experience at school will transmit the benefits arising from that experience effectively.

Returning to the anecdotal, the human condition is such that parents mostly want their children to be happy. Therefore, when children ask for something (such as the latest Nintendo or PlayStation games console, participation in a school trip to Rome, driving lessons and cars, or help with buying a house), parents will mostly try to please them (within limits) even if that is costly for them.

It is worth noting that while the requests become financially more expensive and complex as children grow older, in their earlier years many are relatively inconsequential. They are often triggered by what children see their friends using or consuming at school or in other environments.

Every so often, children can contribute to a real change in their parents' life, even if only inadvertently, by showing them the advantages of using a new product or technology. This is fundamentally different from just getting a new product or technology for children: adults start using the technology for themselves, even if some of them struggle to deal with the internet, broadband and streaming, in the way their own parents struggled to cope with video records.

This happens because children are exposed to new products, ideas and technologies at school, and bring this knowledge home. The recycling of goods, materials and waste is another good example: children learn how to recycle at schools and then go home and teach their parents how to do it.

Boosting uptake

The evidence compiled during the research on broadband take up is of a more scientific nature. At its simplest, we found that providing broadband to schools meant that children took the demand for the technology home, thereby boosting the overall levels of adoption. The lessons that are to be learnt could apply to the spread of any idea or technology.

We used data from Portugal between 2006 and 2009 on household internet penetration and on how much schools use broadband. We observed a number of patterns from the

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data. Households with children are more likely to have internet access. Households close to schools that use the internet intensively are more likely to have the internet; and this is even more so for households with children. Finally, households close to other households with internet access are also more likely to have access to the internet themselves.

Observing these patterns from the data one might be tempted to draw a number of conclusions. One, children are a driver for having internet availability at home. Two, the very act of living close to schools that use the internet contributes to the number of households adopting the internet (even for households without children). Three, having children attending schools that use more internet leads to a higher likelihood of adopting the internet. And four, living close to other households with the internet increases the likelihood of having the internet at home.

However, other potential explanations exist for the observed patterns. One, wealthier (or more educated) households are more likely to have both internet access and children. Thus, it is not having children that causes adoption of the internet, but being wealthy that leads to both outcomes: having children and having the internet at home.

Two, wealthier households may be located close to wealthier schools which might have more resources to have a better internet connection. Thus, it is not the fact that school internet use leads to home internet adoption, but simply a sorting phenomenon.

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Three, again, children's regular use of the internet at school may just be a symptom of wealth. It can even be the other way around: children get acquainted with the internet at home and then apply those skills at school, leading the schools to register higher internet use. Four, again, this can simply be a function of the tendency for wealthier households to cluster together.

In our study we rule out each of these alternative explanations and find that providing broadband to schools can in fact be an effective way to foster household internet adoption in neighbouring areas. On the one hand, the infrastructure put into place to meet the needs of schools can also serve households nearby. On the other hand, students get acquainted with the internet at school and signal its usefulness to parents at home who, consequently, can be more likely to adopt it.

In simple terms, we find that broadband use at school leads to higher levels of internet penetration in neighbouring households. It is possible to argue that broadband use in schools was responsible for a year-over-year increase of 3.5 percentage points on internet penetration in households with children. Across our data set this effect accounts for about 17 per cent of the increase in home internet adoption.

We also found evidence of regional spillovers in internet adoption across households. These were roughly responsible for an increase of 2.1 percentage points in internet penetration or 38 per cent of the total increase in household internet penetration between 2006 and 2009. These results show that wiring schools with broadband is an effective policy to lower the barriers for internet adoption at home and as such contributes to accelerating the pace of broadband diffusion.

Children are exposed to broadband at school and transmit knowledge about how to benefit from it to parents at home. As a result, the propensity of parents to follow the example of their children and adopt the internet at home might increase. In our study, we propose that the parents' productivity of using the internet at home is a function of the knowledge transmitted by children as well as of the knowledge transmitted by neighbouring households that have already adopted the internet.

The point I made in my introduction is therefore worth repeating. Children are fast learners, and the speed at which they learn can have an impact on the broader adoption of new technology. ■

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This article draws its inspiration from Rodrigo Belo's PhD thesis, and the paper *Spillovers from Wiring Schools with Broadband: The Critical Role of Children*, written by Rodrigo Belo, Pedro Ferreira, and Rahul Telang, and published online in the journal *Management Science*, April 2016. http://dx.doi.org/10.1287/mnsc.2015.2324

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