

Education and the use of digital technology: Reimagining the school learning ecology

Zachary Kilhoffer [Centre for European Policy Studies – Zachary.Kilhoffer@ceps.eu]
based on report of Mark Brown, Gráinne Conole and Miroslav Beblavý

What factors influence effective practice in the innovative use of digital technologies for teaching, learning and assessment? Digital technologies have considerable potential for supporting an intentional combination of pedagogies for more learning-driven approaches. However, many questions remain; if new technology is the solution, what is the educational problem? While this question is not new, it reminds us that the digital society invites future-focussed debates about the fundamental purpose of school education in the 21st Century. Although speculative, part of the answer to this question requires policy-makers and educational leaders to forge close dialogical partnerships with teachers and local stakeholders. This can lead to policies better informed by the problems that schools face. National policies and European-wide plans are valuable, but they must also account for more middle out and ground up approaches, which are necessary to support local change and foster an innovation culture.

Digital technologies continue to change virtually all facets of life – the private sphere, at work, and in education. In spite of general consensus that digital skills are essential to successfully living, working, and engaging in lifelong learning, digital technologies are not ubiquitous in the classroom. Significant uncertainties remain about promoting digital literacy in the 21st century.

addition of digital technologies is not enough by itself, and policy-makers must work together with educators to define and foster successful practices.

Potential advantages to using technologies in the classroom include more experimental pedagogy and immediate feedback, freeing up time from administrative duties, up-to-date information, and more engaging and effective classroom experiences.

However, these can be offset by potential disadvantages including distraction, fewer social interactions, potential cheating, students having unequal access to resources, and more labour intensive lesson planning.

THEORETICAL LENS FOR DIGITAL LEARNING

A theoretical lens is useful to interpret and organise insights on the use of digital technologies and their impact on educational outcomes. To this end, the following six strands help explain the conceptual underpinnings of the topic, as well as the key principles and recommendations.

1. **Tension between rhetoric and reality** (e.g. in spite of the potential for digital learning, most learning still happens through traditional ways of teaching and learning, and discussion of digital learning does not always reflect real world challenges)
2. **Good teachers (still) matter most** (e.g. the introduction of digital learning is heavily dependent on the way teachers use and mediate technology in the classroom)

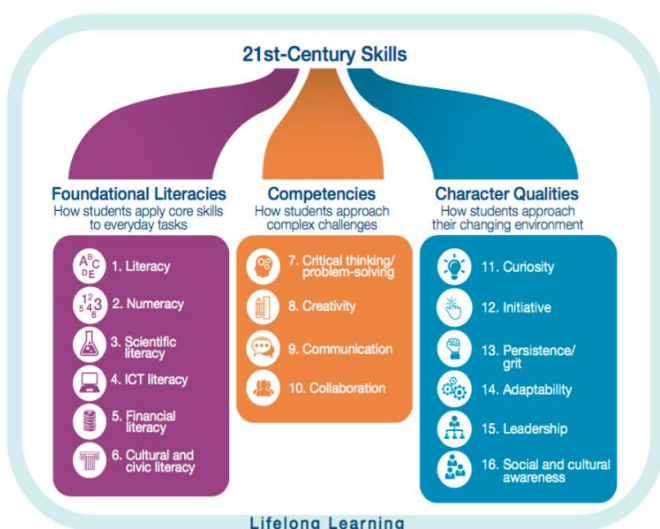


Figure 1: 21st-Century Skills (WEF, 2015)

Findings signal that positive learning outcomes rely on careful consideration of education policy and practice. Moreover, the relationship between the use of digital technologies in the classroom and improved learning outcomes is intermediated by many factors. Thus, the

3. **Digital technology is not a single, unchanging concept** (e.g. technology is dynamic, which makes keeping up with developments a challenge, and generalisations problematic)
4. **Competing and co-existing drivers for digital change** (e.g. there are different reasons to promote digital learning, and some compete with and crowd-out others)
5. **Institutional cultures and discipline traditions** (e.g. traditional school subjects and institutional cultures serve as barriers to new education models, particular in terms of learning assessment)
6. **Interaction of many co-variants** (e.g. direct causal relationships between pedagogy and technology intervention are difficult to draw)

TRANSLATING THEORY INTO POLICY

There is no single, generally applicable solution to transforming education through the use of digital technologies. Policy-makers need to be cognisant of the need for tailored and coherent solutions that make sense in their particular context.

Considering both first-order and second-order barriers is crucial. First-order barriers are extrinsic factors that are external to teachers (funding, infrastructure, lack of explicit policies or strategies). Second order barriers are intrinsic, such as teachers' mindsets, beliefs about teaching and learning, and ability and willingness to change. While first-order aspects like funding are often more straight-forward to address, research suggests that successful outcomes are more likely when including efforts to change teachers' mindsets.

With this in mind, we present the following key principles and recommendations.

KEY PRINCIPLES AND RECOMMENDATIONS

The digital learning ecology is complex and may be predisposed to enable teacher-centred practice, or learning-driven approaches. How technology works in practice depends on how teachers use it in their learning interventions, and how students respond. Digital technologies are not a single concept that confer the same

teaching and learning irrespective of type and educational context.

Recommendation: Research on digital technologies in schools must take greater account of the complexity of the learning ecology. There is a need for a deeper and more nuanced understanding of how different affordances of technology support pedagogical combinations known to enhance educational outcomes.

The mindsets of teachers mediate technology implementation - Digital technologies offer many opportunities, however, helping teachers fully embed digital technologies in the curriculum requires a combination of professional learning opportunities that support critical reflection and action rooted in classroom practice.

Recommendation: Professional learning opportunities must encourage teachers to critically reflect on their pre-existing mindsets and pedagogical beliefs in the context of their practice.

The impact of leadership and institutional cultures - Senior educational leaders need to understand how digital technologies can be used to augment a future-focussed vision for school education. More specifically, innovation in education through digital technologies is tough work and requires senior leaders to build institutional cultures that empower teachers to re-imagine the curriculum and challenge traditional models of assessment.

Recommendation: Institutional factors known to influence successful implementation of digital technologies should be the focus of targeted professional learning for educational leaders, and shared widely within their existing communities of practice.

Refocusing on education for the future - it is impossible to predict the future of education, but the question is how do we want digital technology to serve society and the education system *for* the future? The answer to this question strikes at the fundamental purpose of schools in the digital society and requires us to (re)envision the way in which public education can contribute to better futures for all.

Recommendation: Future policies designed to enable the effective use of digital technologies in school education need to shift the current discourse away from the language of education *in* change to focussing on education *for* change with a longer-term horizon.

For more details see: Mark Brown, Gráinne Conole and Miroslav Beblavy, *Education outcomes enhanced by the use of digital technology: Reimagining the school learning ecology*. EENEE Analytical Report No. 38, March 2019, (http://www.eenee.de/dms/EENEE/Analytical_Reports/EENEE_AR38.pdf)