Environmental Sustainability in Digital Learning

Wednesday 24th November 2021 | 15:00 – 17:00

Summary Paper

Context

At COP26 in November 2021, the Education Secretary Nadhim Zahawi set out a vision for the education sector to build back greener from the pandemic, with a focus on empowering young people to tackle climate change and ensuring the development of the necessary skills to take this action. Key proposals included delivering climate change education through a model primary science curriculum; the development of a National Education Nature Park across schools' grounds; the creation of a Climate Leaders Award to support young people to develop sustainability skills and the testing of new innovative Energy Pods to help schools to become net-zero.

In the same month, the Department for Education published their [Sustainability & Climate Change: A draft strategy for the education & children's services systems](). The strategy set out the department's plans for a whole-system approach to ensuring the education sector takes critical steps towards tackling climate change and follows on from the creation of a Sustainability and Climate Change Unit in Spring 2021.

The strategy outlines the aim for the United Kingdom to become the world-leading education sector in sustainability and climate change by 2030. This will be achieved through four key strategic aims:

1. **Education and skills**: ensuring young people are prepared for the impacts of climate change through learning and practical experience
2. **Net zero**: reducing emissions from education buildings, meeting legislative targets and providing opportunities for young people to engage with net zero plans

3. **Resilience**: adapting education buildings and infrastructure to mitigate against the possible effects of climate change
4. **Environment:** improving biodiversity in education settings to create a better environment for future generations

It is undeniable that the education sector will be crucial to meet the government's target of reducing emissions by 78% by 2035 and reaching net zero by 2050.

In the last twenty months, the education sector has faced immense challenges. With schools experiencing several closures amid a national lockdown, the majority of learning was forced online, marking one of the biggest changes to education delivery in recent years. The response of schools to the pandemic has been remarkable and school staff must be praised for their work supporting pupils in a very challenging context.

Throughout the course of the pandemic, the Education Policy Institute (EPI) has run a series of events exploring the lessons of the digital shift to learning, particularly considering the role of digital learning in education recovery and embedding digital learning beyond Covid-19. Our next programme of work in this area will focus on building sustainability in digital learning and in schools more widely.

In November 2021, we held a private roundtable which brought together policymakers, school leaders, academics and education unions to discuss how we can build sustainability in digital learning offers and support the sector in its aims to become net zero.

What follows is a summary of the discussion that occurred during the event, which we have shared with all attendees and on the EPI website.

One-to-one devices

The term one-to-one technology (1-to-1) describes an educational situation where every student has their own mobile computing device, be it a tablet, laptop or computer, to use for learning. Though the rollout of 1-to-1 was happening before the onset of the Covid-19 pandemic in 2020, the pandemic expedited the process as schools had to adapt to online learning. Speakers noted that sustainability must be a crucial part of the expansion of digital learning: "it is a time for educators to be brave. As we emerge from the pandemic, what could be better than helping to preserve the planet? And how do we ensure we are turbo-boosting the use of technology to help young people to thrive in a sustainable way?"

The 1-to-1 rollout has had many benefits for sustainability, beyond the evident advantage of providing digital access for young people. These include a reduction in photocopying, printing, the use of physical books and a reduction in staff travel through collaborating online. It has also led to considering other uses of digital technology that can help achieve net zero status, for example the use of cloud-based infrastructure. This reduces

the need for physical devices and lessening carbon storage. It has also had unexpected financial savings (discussed further in the 'financial implications' section). Speakers recognised that there have been a lot of benefits of the 1-to-1 rollout, however it must be brought together in a cohesive strategy through sharing best practice.

Speakers also discussed several difficulties that arose around 1-to-1 technologies. Firstly, while devices can be carbon saving, if used improperly then the saving is lost; this could be through being left on when not in use, or if outdated technology is not replaced. Thus, teaching users how to operate devices properly is critical. Secondly, some speakers felt that more thought needs to be given to the longevity of devices. The current turnover of around 2.5 years was felt to be too short, raising both financial and logistical problems for schools, as well as lessening the devices' environmental benefits. More work needs to be done to consider how best to recycle and repurpose technology to ensure it is sustainable.

Beyond the technical issues, speakers also discussed issues of access: "access to 1-to-1 is a social justice issue, not a technical issue. For too long, IT has been seen as a geeky issue rather than a fundamental issue of access." Firstly, there's the possibility of unexpected financial risks to families and children in precarious fiscal situations. It may add a huge financial burden if their electricity is metered, or they may not have internet at home. One speaker's Multi-Academy Trust encompassed some of the richest as well as some of the poorest families in the county: "you can see first-hand the differential difference the pandemic has had on children. We tried hard to get devices to all children, but connectivity was tough. If you live on an estate where BT refuses to send engineers because they don't feel safe, the issue of connectivity is very difficult to solve."

This highlights the necessity of collaborating with local government and other public and private sector organisations on the 1-to-1 rollout to ensure that all children have access. Secondly, speakers discussed the importance of offering provision for children with special education needs or disabilities (SEND) to ensure no child is left behind or isolated without the support they need. One speaker mentioned that educational apps and other provisions exist but are not widely known. More must be done to ensure both the information and the technology is widely available and easy to access.

Financial implications

In the move to sustainable digital learning, financial implications will be an important consideration for schools.

In particular, there are concerns around the cost of moving to one-to-one devices. There were a variety of approaches amongst speakers to meeting these costs within their schools. One speaker had implemented a parental contribution scheme in their school, which invited parents to contribute where viable, rather than making it mandatory. They emphasised the need for the school to know their parents and pupils and for those pupils where parental contribution was not viable, the school covered the cost of one-to-one devices. They

emphasised how taking this approach encouraged more to contribute than through enforcing a mandatory contribution.

Alternatively, another speaker discussed how their school's approach was to consider how to offset the costs of one-to-one devices. They reduced the number of school desktops by 75% and the number of shared laptops by 95% and calculated that the move to more energy efficient devices would result in further efficiency savings, including in areas they had not expected.

A vast reduction in printing and photocopying was shared amongst school leaders, with one leader of a MAT trust noting that there had been a decrease of 35% in printing across the trust since December, estimating savings of approximately £2.5 million a year in printing alone. Other savings have resulted from a reduction in the purchase of books, staff travel and virtual CPD opportunities.

There was a shared feeling that one-to-one devices were crucial to support pupils through the pandemic, but also that they were central in supporting young people for the future, both in terms of developing digital skills and improving sustainability.

One speaker voiced concern, however, around the unseen financial implications for families and children with fiscal risks at home. The access issues outlined above may result in some families having to pay substantially more than others to access digital learning. One MAT leader raised the question of pooling resources, with trusts able to make the decision to take resources from wealthier areas to serve poorer areas if there aren't enough resources for impoverished schools.

There also may be further hidden financial risks for schools, particularly around how often equipment would need to be repurposed or renewed, and one speaker noted that they were encouraged to see efforts by technology companies to improve longevity of products but that these efforts needed to go even further still.

Becoming net zero

One aspect that will be key for schools in the push to become net zero is that of school estates. 65% per cent of schools in England are more than 80 years old and are therefore outdated in terms of energy-efficiency technologies and design. Many school buildings have a poor energy rating and are responsible for a significant amount of carbon.

The Department for Education will soon be launching the next contracts to build schools that are fully net zero, including sustainable design and implementation. This includes building sustainable IT into the school, such as a cloud-based solution, which reduces embodied carbon.

One speaker spoke of the work in Scotland to embed sustainability in school estates and buildings. Schools will be assessed on two sets of standards – condition and suitability of

equipment. There is currently a huge programme of work for new schools to be used as exemplar projects for the rest of the sector in Scotland.

In order to meet aims of net zero by 2030, schools need to look at their environmental impact at every level. Contracts and supply chains are often a missed aspect of this; one MAT leader spoke of the trust's efforts to put sustainability at the core of supply chains, such as through embedding a 75% recycling threshold in waste removal contracts.

Effective use of data will also be key. There is a need for standardised data; all schools need to be measuring the same thing and using the same baseline. One MAT leader suggested that this should be owned by the Department for Education, as schools often lack the expertise and capacity to carry out the research.

Some schools have started reporting environmental implications in their annual report but one MAT leader outlined how they have also started considering what they can learn from what other businesses are doing, such as the Chamber of Commerce. Pupils should also be supported to understand this data for themselves; for example, there are apps that can be used by children to understand their individual carbon footprint. Data can also be utilised to educate children on the environment in other ways, such as using the data received when rolling out solar panels to teach about the impact of solar panels in the curriculum.

Curriculum

By the age of seven, research shows that children have developed a relatively stable sense of purpose, which begs the question, one speaker asked, why do we wait until long after this age to start having discussions about sustainability? They suggested other countries have made greater progress than England in embedding sustainability within the curriculum, including within the UK. Scotland has been strong on the sustainability curriculum for a long time, documented in the *Teaching Scotland's Future* report (2011) and *Learning for Sustainability* report (2012), and is now working towards Vision 2030+, guided by the UN's Sustainable Development Goals, to promote a cross-curricular vision of environmental learning. Italy is also at the forefront of environmental education. Starting in September 2020, it is now mandatory that every student from 6-19 receives 33 hours of education on climate change a year, focusing on topics such as ocean pollution, sustainable living and renewable resources.

However, England is starting to catch up; the Secretary of State for Education recently announced a raft of new environmental education measures, brought together in a draft *Sustainability and Climate Change Strategy*, which will be published in April 2022 after consultation with educators, young people and environmentalists. One speaker noted that this consultation will facilitate an environmental curriculum that is collaborative and co-constructed, ensuring that sustainability is omnipresent and woven into every aspect rather

than simply taught in science and geography classes. Another speaker highlighted the new range of courses becoming available outside of the school curriculum, for example the Carbon Literacy Project, which offers courses for organisations and individuals on climate change, carbon footprints and how they can do their bit to help. The speaker highlighted that everyone that completes the course must write a personal action plan.

The idea of meaningful assessment sits well within another key aspect of the sustainable curriculum: how it is delivered. Speakers recognised that technology is key in curriculum delivery. It offers opportunities to analyse real world climate data and explore the natural world through their devices, for example through using tablets to carry out experiments in biodiversity areas. One speaker mentioned how the rollout of one-to-one devices in their school was linked very closely to the curriculum; a key theme was 'sustainable world' paired with the use of technology to facilitate it. Yet, another speaker offered a note of caution: while iPads and other devices open up a rich world of knowledge, children must also be encouraged to go outside and appreciate the natural world without the intermediary of a screen.

Finally, speakers felt that an embedded sustainable curriculum will have positive implications beyond the classroom. Through children and young people, schools and other education organisations have the opportunity to access parents and the wider community. Through this network messages of sustainability can spread, promoting environmental engagement and action across the community. Across time the sustainable curriculum will allow young people to develop the skills they need to flourish in a future green economy and take the lessons learned in the classroom to promote sustainability throughout their careers.

Pupil engagement

An important element that arose from the discussion was pupil engagement. It was acknowledged that every young person has a right to an environmental education. Young people are "way ahead of us" and it is vital that student voices are included in the conversation.

Speakers noted that often pupils are the driving force behind green initiatives in schools, with one speaker highlighting the wide variety of schemes implemented in their school: eco clubs, forest schools, tree planting, walk to school initiatives, vegetarian and vegan options for school meals and clothing exchanges. Another mentioned the election of eco-ambassadors at school who champion sustainability and the creation of a student senate summit, highlighting the power of young people's voices in the conversation on environmental sustainability and the future of our planet. This power will soon be celebrated through the launch of the Climate Leaders award, announced by the Education Secretary at COP26, which will "will help children and young people develop their skills and

knowledge in biodiversity and sustainability, and celebrate and recognise their work in protecting the local environment."

Yet, while the dynamism and resourcefulness of students was admired, one speaker highlighted that education leaders should not have to rely on young people to "tug on their sleeves" and show them the way: "we need to be leading on this". They mentioned that while speaking to pupils before the pandemic, they found lower interest and awareness in the student population in the North – a demographic difference that invites further investigation. However, the pandemic, in concurrence with COP26, has made people feel more vulnerable. A study published in September 2021 of 10,000 16-25r-olds across 10 countries found that almost 60% felt 'very worried' or 'extremely worried' about climate change. Schools have an important role to play in acting as examples of sustainable practice to children and young people which can really help with the problem of eco-anxiety.

Thus, mixed conclusions arose from the discussion on pupil engagement. Young people were celebrated for their efforts, yet further action needs to be taken by leaders in the education sector and systemic change was highlighted as not easily achievable, when so many other pressing concerns weigh on the education agenda.

Continuing Professional Development and Teacher Training

Digital learning can be approached from two angles: practice and content, respectively the effective use of digital technologies to facilitate teaching and the teaching of digital literacy to ensure young people gain they skills they need to flourish in an increasingly technological world. To enable effective digital learning, teachers must feel comfortable working with and communicating these technologies and techniques themselves. This question of continuing professional development (CPD) and teacher training arose both in relation to digital learning and sustainability. One speaker mentioned a conversation with an Ofsted inspector in which, while discussing digital learning, they were labelled a "technical evangelist". They felt this culture of side-lining technology must change: "you cannot be a leader of a school without being interested in digital technologies."

The cultural shift in attitudes towards technology has been facilitated by the Covid-19 pandemic as all educators have had to adapt to online learning. However, more work can be done to promote this shift and ensure teachers feel comfortable in a digital environment. One speaker noted that this must come down to providing more CPD and resources for teachers, to ensure teachers are supported in this shift rather than it being another burden added to an already heavy workload. The conversation led to the question of what levers the government and other education sector stakeholders should be using to help with the culture shift. One speaker suggested a solution of greater system generosity, where school leaders share strategies that have been effective in their places of work. Another mentioned how in their journey towards one-to-one, they ensured a whole range of CPD sat alongside

the roll-out so that teacher training began from the start of the initiative, rather than being added on as an afterthought.

Similarly, speakers felt more support for teachers was needed in relation to environmental education. Currently, a new series of climate CPD resources is being developed for primary and secondary school teachers, but speakers felt more could be done, for example embedding sustainability into Further Education and teacher training courses. As with the curriculum, sustainability (and indeed digital learning) should be themes present at the start of a teacher's career and carry on throughout, interwoven in all aspects, rather than afterthoughts to ensure teachers are fully equipped and supported to teach in today's world.

Conclusion

There was a definite consensus at this roundtable that schools had a responsibility to support young people to thrive and take action against climate change - "it is the time for educators to be brave as we emerge from the pandemic"- and technology can be an enabler of this strategy.

For sustainability to be properly embedded into schools, it needs to be omnipresent and woven into everything. Schools need to be supported to build sustainability into school improvement plans; having a set plan and strategy is the only way to achieve this. Sustainability needs to be at the heart of plans to reconfigure old school estates and build new net-zero schools; climate education needs to be at the heart of the curriculum to ensure young people are developing the skills needed to thrive in a changing world. Teachers, too, need to be supported to use digital technologies in a sustainable way and deliver high quality environmental education.

One speaker summarised the debate with the David Attenborough quote: "Never before have we had such awareness of what we're doing to the planet and never before have we had the skills to do something about it."