



Department for
 Digital, Culture,
 Media & Sport

Research and analysis

Connecting gigabit communities and rural schools: the gigabit journey

Published 14 October 2021

Contents

- [Executive summary](#)
- [Research background and aims](#)
- [Key research activities](#)
- [Methods](#)
- [Analysis](#)
- [Findings: pre-connection](#)
- [Case Studies](#)
- [Post-connection case studies](#)
- [Advice for schools upgrading](#)
- [Discussion](#)
- [Recommendations](#)
- [Appendix A - Building fast, reliable broadband for everyone in the UK](#)
- [Appendix B - Pilot study in rural educational contexts \(March 2020\)](#)

Executive summary

As part of the [Rural Gigabit Connectivity Scheme \(RGC\)](#), eligible rural primary schools described as ‘Hubs’ are equipped with physical broadband infrastructure to provide the school with a gigabit capable broadband connection.

This report presents research with rural primary schools in order to learn how people accessing public services are impacted by availability of high-speed internet. This research collects lived experiences of interactions and expectations of high-speed internet in rural primary schools to learn how connectivity and access influences behaviour and decision making in home and work environments. Particular focus is given to insights which suggest that the access to fibre internet has the potential to realise benefits in the areas of: productivity, public value, wellbeing and reducing the digital divide. Qualitative research insights were collected through a survey, interviews, and observations to inform understanding about the value of high-speed internet in rural communities. The findings are used in the context of infrastructure demand stimulation programmes to inform design and understand change. This research took place from March 2020 until January 2021. Schools on the Rural Gigabit Connectivity programme are due to be connected by the end of September 2021.

Key findings detailed in this report include:

- the continued disparity between those who are prepared for the ‘digital journey’ and others who wait until the connection is in place to experiment
- peer support is a key part of integration – Digital Champions or ‘tech savvy’ staff can support innovative use of technology across school
- strong links between public value and inclusion and access to improved internet capability
- evidence of the impacts of poor connectivity on staff well-being and satisfaction

The main benefits expected for rural schools seen in this research include:

- time-saving across the whole school including teachers, office staff and pupils
- confidence and creativity in the classroom - for planning and using technology
- improved pupil experience and opportunity
- staff satisfaction and reduced frustration due to lags and slow speeds

This study will be of interest to those working on projects and policy concerning rural community development, homes and housing, access to health and wellbeing, education and digital skills and inclusion.

Research background and aims

As part of the [Rural Gigabit Connectivity Scheme \(RGC\)](#), eligible rural public buildings described as ‘Hubs’ are equipped with physical broadband infrastructure to provide the school with a gigabit-capable^{[[footnote 1](#)]} broadband connection. ‘Connecting Gigabit Communities’ is a research package which sets out to establish impacts of high-speed internet in rural and hard to reach communities from the perspective of the users and stakeholders of schools, GP surgeries, libraries and other public buildings that are recipients of funding to install gigabit-capable broadband connections.

The aim of the study in this paper was to learn how rural schools are impacted by access to high-speed internet provided through RGC. This research seeks to understand:

- what digital connectivity really means for the [potential of technology in education \(ED Tech\)](#) in rural primary schools

- how broadband upgrade builds contribute improvements and opportunity for education
- words and ways to articulate digital use in order to engage and empower, rather than mystify, technology users in schools
- what the early benefits of gigabit-capable broadband are to children, teachers and school staff

This paper describes research by Building Digital UK which collects the lived experiences of interactions and expectations of internet use in rural schools to learn how connectivity and access influences the experience of school life - for teaching, learning and working. This research includes case study insights to learn about the impacts of the 'Hub Model' within the BDUK Rural Gigabit Connectivity Programme. The approach was to learn from the hubs themselves about the value of connectivity.

Key research activities

- Online survey completed by 261 schools on the Rural Connectivity Programme (pre-connection upgrade)
- Interviews with schools about pre-connection experiences with headteachers, teachers, office staff, parents, IT staff and pupils
- Dialogue with education stakeholders including the Department for Education (DfE), schools, trusts and the Education Foundation
- Supplier and local body dialogue on demand stimulation and local expectation
- A set of [research films](#) outlining experiences with connectivity in rural schools across Scotland, England and Wales were produced in collaboration with 81 Films (Dundee) and are used throughout this paper to illustrate various aspects of the study findings

Methods

The main focus for Connecting Gigabit Communities in the past year has been developing relationships and appropriate contexts to follow hub sites on their journey to connectivity. The original research plan had been to travel to rural sites to meet people impacted by the RGC programme, however COVID-19 and lockdown travel restrictions meant that getting in touch and engaging rural communities required an alternative approach.

To learn from rural schools a survey, a series of interviews and discussions took place to learn about the expected impacts of improved connectivity for rural schools at different stages of their connectivity journey (pre-connection, preparing to upgrade and post connection). The table below details research methods used

and participants engaged at each stage.

Table 1. Methods

Connectivity Stage	Pre Connection (March 2020)	Preparing for Upgrade (Sept 2020)	Post Connection (March 2021)
Theme Explored	Pre-Connection baseline insights	Expectations, Experiences, Ambitions	Actual use
Methods	<p>Online survey via GOV.UK Notify:</p> <ul style="list-style-type: none"> • Connectivity and use • Teaching • Barriers to Use • Connection Preparation <p>Interviews:</p> <ul style="list-style-type: none"> • experiences of poor connectivity and its impacts 	<p>Interviews and conversations – Semi-structured interviews captured on audio and film:</p> <ul style="list-style-type: none"> • insights on the varied conditions for schools and their communities. • observations on the spectrum within the rural schools landscape. • the possibility to learn about the counter-narrative of barriers, changes and outcomes for improved connectivity. 	<p>Post Connection study 2021:</p> <ul style="list-style-type: none"> • follow up survey • site visits • workshops • interviews
Participants	<p>Survey:</p> <p>261 RGC Schools (sent to 474). 55% response rate.</p> <p>Respondents: headteachers, support staff, IT lead</p> <p>Schools due for an upgrade to gigabit-capable in 2021</p> <p>Interviews:</p> <p>4 schools with poor connectivity (<30MPS) on baseline needs and pain-points:</p> <p>Stracathro Primary and Edzell Primary, Angus (No wifi)</p> <p>Rookhope Primary, County Durham</p> <p>Crosthwaite Primary, Cumbria</p>	<p>Headteachers, teachers, office staff, parents, IT staff and pupils</p>	<p>RGC connected schools:</p> <p>Headteacher and parents</p> <p>Llanychllwydog Primary, Pembrokeshire: 'Last school in Wales'</p> <p>Gigabit-capable connection > 6 months</p> <p>Wonersh & Shamley Green, Surrey</p> <p>Gigabit-capable connection for < 6 months</p>

Data collected

- Survey responses
- Interview transcripts
- Observations

Analysis

Survey

Thematic analysis was used to review the survey responses. The responses were coded and grouped according to common themes found related to pre-connection experiences of connectivity in schools on the Rural Gigabit Connectivity programme.

Interviews

Deductive analysis was used to review interview transcripts using the BDUK benefits framework to identify typical themes, inductive reasoning applied to data and themes to identify novel topics and new knowledge gaps and connections. Key benefits observed in rural schools are Productivity and Efficiency, Public Value and Reducing the Digital Divide.

Table 2. Examples of benefits observed in the schools study which aligned with the BDUK Benefits Framework [\[footnote 2\]](#)

Productivity and efficiency (public sector and local economy)	Public value	Reducing the digital divide
<ul style="list-style-type: none">• Work from home flexibility• Employment• Digital skills• Staff training, using new platforms, engaging network through digital means• Other skills (learnt online)• Access and use of public services (including digitisation of services)	<ul style="list-style-type: none">• Quality of life and wellbeing• Access to services and democratic participation• Consumer savings• Increased leisure time• Online entertainment	<ul style="list-style-type: none">• Not being left behind• Confidence using digital products• 'Digital life skills'• Increased skills for staff

Findings: pre-connection

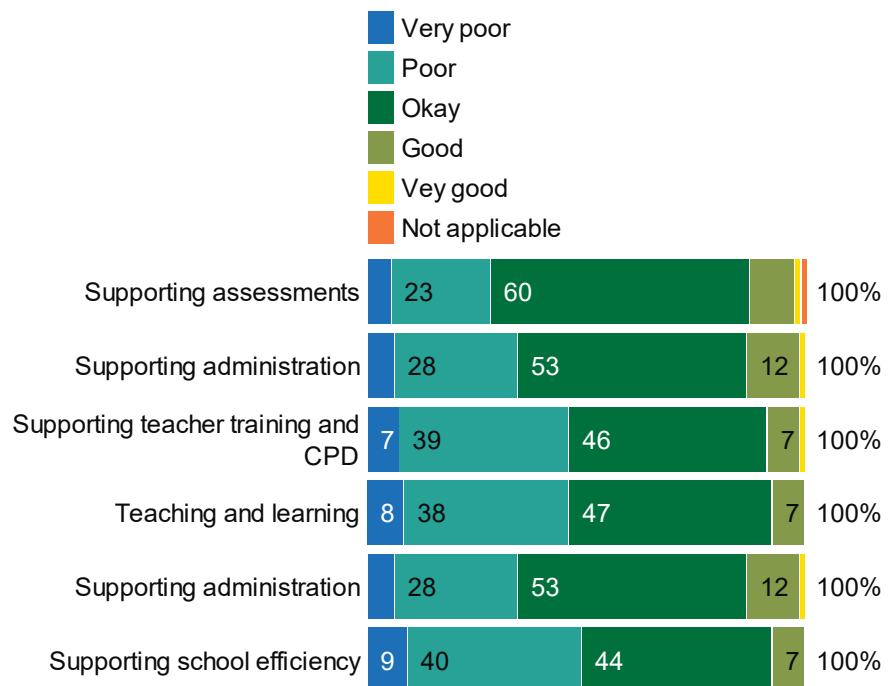
Survey findings

What are schools' current experiences with internet connectivity?

Schools were most positive about their current internet connections sufficiency to support assessments (60% 'okay') and administration (53% 'okay').

However, schools said that their current internet connection was poor or very poor in supporting efficiency (49%), teacher training and CPD (46%), teaching and learning (46%). See survey results below:

[Change to table and accessible view](#)



What do schools currently use the internet for?

Schools reported that they currently use the internet mainly for:

- Teaching purposes (for example teaching the whole class, Google Classroom and pupil access to online learning portals)
- Support from external agencies (for example, social services and health)

services)

- Communicating with staff, other schools, parents, carers and the school community

What online tools do schools use to communicate with parents?

To communicate with parents, schools said that they tend to use video-conferencing tools (such as Microsoft Teams), general schools communication platforms (such as Class Dojo) or online payment systems for parents (such as Parent Pay and Schoolmoney) .

What impact does poor connectivity have on the schools' teaching staff?

Schools highlighted several key areas where the poor connectivity would affect teaching staff. This included: wellbeing (poor morale and 'constant frustration'), efficiency (disruption) and workload (additional workload and having to make contingency plans).

What are the barriers to using the internet more effectively in schools?

- **Internet connectivity:** 94% of respondents said that reliability, speed and accessibility of internet connectivity was a main barrier
- **Funding:** 74% of respondents said that a lack of funding was a main barrier
- **Lack of devices:** 59% of respondents said that lack of devices/hardware was a main barrier
- **Hardware/software:** 50% of respondents said that quality or availability of hardware and/or software was a main barrier

With 94% of respondents identifying internet connectivity itself as a significant barrier to using the internet effectively, it is clear that upgraded connection has the potential to facilitate notable impact. In addition, key aspects that schools underlined as barriers to using the internet more effectively were lack of access to fast internet speeds, staff availability and capability and staff motivation (having a poor expectation of the technology and being concerned about falling behind). For example, one school highlighted that 'staff have become disenfranchised from using technology after continual broadband failures' and another said, 'because of very poor connectivity in the past teachers are at an experience disadvantage compared to colleagues who have had good connectivity for longer.'

“ I think if they've [pupils] got the potential, but then we can't give them the

technology to use it whether that's at home or at school, then they're not going to be as good as they can be, which is our job to maximise their potential."

– Headteacher, Womersley and Shamley Green, Surrey

How do schools think that increased connectivity might impact their working patterns?

Schools emphasised that they would be able to work more efficiently and productively with an improved internet connection, for example through a reduction in paperwork and printing, schools are: 'aiming to reduce the amount of printed materials sent home and be able to more seamlessly blend the physical and virtual provision.'

They are also expecting to have more efficient systems and processes. 'Even just waiting for my computer to connect to Gmail is painful and then, thereafter, opening each individual email so as to read them takes an age each time. We are desperate for the connection to happen'/'Staff are trying to work smarter but are often hindered by the internet access.'

In addition to this, schools highlighted that embracing a more digital way of working and learning. 'We will be able to hold proper video conferencing and class assemblies without the presenter freezing in mid-word.' Being able to communicate better with staff, pupils, parents and other schools would all be impacts of increased connectivity on their working patterns.

Other key areas that were emphasised by schools were a reduction in travel (and/or travel expenses). Staff are looking forward to 'being able to access all platforms without needing to go home', and that the whole school would be able to use the internet at the same time. As an outcome of these anticipated benefits, schools highlighted that it may lead to an improvement in mental health and wellbeing for staff and pupils.

How do schools plan to use the new, gigabit-capable connections?

When outlining how they planned to use the new, faster internet connection schools emphasised that it would increase productivity. For example, it would be more efficient and allow a greater capacity for online learning 'all schools could be working at the same time, rather than a class at once, due to the internet issues' and would create time-savings. It would impact day-to-day delivery of teaching and administration, using technology reliably in lessons and lesson planning, cost savings and communication, both internal and external. This also includes supporting systems such as door entry and connected fire alarms. Further, responses also underlined that COVID-19 contingency planning would be

improved by a new, faster connection as it would support blended learning (mix of home and class learning during COVID lockdown) and home-working for staff.

Schools also highlighted that the gigabit connection would enable innovation in delivery of teaching and day to day running of the school. For example, one school said that it would 'encourage teachers to be more creative with their lessons by using innovative online learning. More will be achieved if websites and online learning can be accessed quickly by children.' Another said it would 'bring our lessons into the 21st Century'. Schools also emphasised that they wanted to maximise the use of the hardware available to them, migrate to cloud-based services and use online tools more flexibly with a new, faster internet connection (for example, to support independent learning in the classroom).

More generally, schools' responses suggested that the school experience would be improved by accessing a gigabit-capable connection. For staff this includes improving wellbeing, sense of professionalism and satisfaction at work and reduced frustration. For pupils this includes being able to access a variety of state-of-the-art online tools and use technology to alleviate barriers to learning.

Finally, 'collaboration and community' were also prominent themes, in that the schools wanted to use a faster internet connection for external partnerships (for example, other schools and local businesses, communicating with parents, governors, and the wider community through enabling 'guest WiFi' for visitors).

What do schools hope to achieve with gigabit-capable connections?

- Access to regular resources as well as state-of-the-art technology
- Remote learning and independent learning
- Networks and communication
- Efficiency for teaching and admin — speed, productivity and planning
- Trust, reliability
- Cloud services, network, space, storage
- Online training and virtual meetings, including supporting development with other schools
- '...brings our lessons into the 21st Century'

What is needed to see the benefits of gigabit-capable technology?

- Access to technology
- Support

- Access to information
- Mindset
- Skills

What is it like for rural schools with poor connectivity?

Teaching staff complaining to Head — ‘We planned XYZ but no one could use it.’

‘We need to know if our infrastructure can support our remote learning plans.’

Reliability — Staff and pupils experience frustration when connection cuts out.

It’s no good for pupils’ research topics, accessing websites, ‘doing it yourself’.

Case Studies

Interviews and discussions took place to learn about the expected impacts of improved connectivity for rural schools. The methodology focused on capturing the lived experiences of those impacted by the RGC programme using face to face and virtual interviews. Interviews took place over video call between October 2020 and February 2021.

Case Study 1: Rookhope Primary School, County Durham

Participants: Headteacher and It Teacher, Rookhope Primary, County Durham,

Benefit Areas: Productivity and efficiency, flexibility, time saving

Rookhope Primary School is in rural County Durham. The area is known for the High Force Waterfall and other historic sites, there is lots of holiday accommodation and tourism offerings. We spoke to the headteacher and class teacher over video call to find out what they are most hoping to achieve with their new connection. Sarah is the headteacher across 3 schools which are part of a federation in the area and Laura is a class teacher, computing lead, protection officer “and various other bits and pieces”. In this cluster of schools, lessons are split across sites to cover provision and pupils regularly chat with classmates at the other sites– even prior to COVID.

“ I chose to work rurally because I like the small school ethos, I like how close-knit the community is. There are so many better opportunities for the children like outdoor learning and just the opportunities that they have.”

– Sarah, headteacher

At Rookhope, COVID restrictions meant that everything had to be shifted to Microsoft Teams and Laura has been experimenting with how to use it, both for teaching and to chat with parents. For example, being able to host

an online meeting directly with the parents using their children's account to hear how parents felt about schools reopening. Many rural schools including Rookhope have a service level agreement with local council for IT support. Laura who is very confident and competent with technology has found that while they don't often need this IT support when they do it has been possible to do things remotely using Laura's specialism - her degree was in computing but recognises that is not the same for all schools.

The main issues with the current connection include:

Efficiency: Travelling across the 3 schools sites, especially in snowy, bad weather can take its toll so the internet connection is really vital to daily teaching. A key issue with Rookhope's current connection is the way it can cut out in the middle of something, for example, a class assembly where all the school sites are logged on. "If you can't hear very clearly what's been said at the other end, then you don't really know why we're celebrating an achievement or whatever cause you've missed it".

Frustration: The teachers often experience frustration when the connection is not stable, for example being "booted off" in the middle of teaching. Sarah also spoke about having to make sure everything else in the school was disconnected when taking part in an interview for career progression.

Changes Rookhope expect to see:

Time-saving: The new connection will provide a reliable connection to confidently use digital platforms like teams meaning that lessons can be delivered across sites and assemblies, staff briefings and parents evenings can all be held online.

" If we were having a staff meeting, where we needed all the staff together from all schools, we would choose the site, and then everybody would travel there. And that became tricky. So particularly in the winter, because the roads are quite dangerous and a lot of people have got quite a way to travel home to wherever they live. So some schools are easier to access than others. It just saves us a huge amount of time to be able to do it by teams, even things like teacher briefings that I would have to drive for a good hour to get to the briefing from here.

For us, as teachers, it means we're not flying around the day or trying to get to places for meetings and things like that we can just meet by Teams, which is saving a lot of time."

Digital Life Skills: Enabling remote rural communities to access

opportunities using virtual platforms means that issues such as expensive travel and meeting people from different places can be tackled using the skills and tools made available to the school pupils. As well as using the internet for their own research projects pupils have been able to develop confidence online and are becoming very independent through the familiarity of logging onto Teams and communicating with other people.

“ I think they're [parents] finding that actually, there are a lot of jobs you could do from home if they had access to decent broadband. And perhaps if we did have that good broadband it would attract more families, and people to come and live out here on a full-time basis.”

– Sarah

Rookhope has received funding through the Rural Gigabit Connectivity Fund for their full-fibre broadband build. BDUK will revisit Rookhope once their connection is in place to find out what impacts it brings.

Case Study 2: Crosthwaite Primary School, Cumbria

Participants: Headteacher, governor, office and teaching staff and pupils at Crosthwaite Primary, Cumbria.

Benefit Areas: Productivity, wellbeing, public value

Crosthwaite is a primary school in rural Cumbria which is both a Google Reference school (status is awarded to schools that are using Google for Education tools in creative, innovative or exemplary ways) and a farm school - we met some pupils, headteacher, office staff, a governor and some llamas over video call in December 2020.

“ You can see some really amazing things without even having to go anywhere. Like you can see some really cool things online. That you don't have to actually go and see them because they are just there. You can find anything out!”

– Norah, 10

Since Crosthwaite is very advanced technically (staff are encouraged to experiment), their digital journey and the move to full-fibre is about adding value to what is already there. Example activities which Crosthwaite have been exploring include virtual school exchanges in Norway, Liverpool and Indonesia. However, the focus here is not on the technology but on using technology as an 'enabler', rather than lessons and the experience being 'technology-led' by using the infrastructure to facilitate learning for example in their on-site farm and learning about other people and places. '

" I think for us, [the technology] at the primary level will enable the children to have a much better, more dynamic understanding of the world. So you're using the technology to broaden visibility, a small rural school, is a protected environment, you don't get a lot of the issues that you're getting in a city type environment, or you might get in Norway, for example. So the more the children can see those environments without having to get out of their classroom is actually one of the tremendous benefits of using the tech, but you need the tech not to fall over and not to be difficult."

– **Stuart Wren, governor**

Broadband and being online are usually concerned with the ICT curriculum but Crosthwaite is using connectivity to enable learning across lots of disciplines. For example, there used to be a PE teacher who came in to teach a dance class but due to COVID this has moved online and the children who are in school can follow along on a big screen. 'The technology can bring in role models- your favourite pop group or people you can identify with.'

The main issues with Crosthwaite's current connection include:

The current connection is not reliable and struggles when the whole class tries to get online at once.

" So sometimes we're in an ICT lesson, and we're trying to code with Scratch Genius and we couldn't go on because sometimes when everybody's using the same, the same website or programme, **it just crashes and the internet speed goes like right down or we can't use it!"

– **Norah, 10**

" It's about 30 [mps] On a good day. **So once there are 25-30 kids on, they're all sharing that bandwidth and the speed drops right down."

How does the fibre upgrade influence future plans?

Savings: Taking part in the RGC programme means that Crosthwaite has been able to make a saving which they hope to use to develop a role for a dedicated technology teacher – rare for small, rural schools but, as Stuart shared, ‘there’s no point in having the tech if you haven’t got somebody to teach you how to use it.’

The upgraded broadband connection creates incentive to invest in existing technology. This means that all the devices and systems which use the connection also have to be upgraded. This is worth it, as you want technology to work at its best and it supports future-proofing the school for use of new and novel technologies. The new connection confirms the need to invest and upgrade other technologies and devices at school – Crosthwaite Primary current lease their pupils Chromebooks but are going to buy them outright through a scheme from the [London Grid for Learning](#).

A ‘decent enough connection’ in the first place has enabled experimentation at Crosthwaite, a new connection will allow experiments to move into implementation. With new technologies emerging for use in the classroom there will be a need for the capability to be able to run them effectively. A particular example that Crosthwaite may look to enhance includes environments for children with learning difficulties and how technology can play a part in this.

Post-connection case studies

Case Study 3: Llanychllwydog School, Pembrokeshire

Participants: Head teacher and parents, Llanychllwydog School, Pembrokeshire. [Connected since July 2019.](#)

Benefit Areas: Productivity, closing the digital divide, public value, future life skills.

Llanychllwydog is a very remote school in an ancient glaciated valley. The local area is known for its green open space and ancient traditions – for example, celebrating the new year on January 13th according to the old Gregorian Calendar.

The main industries in the area are agriculture and tourism. Broadband has a huge role to play for the community, whether that's online admin for farming, advertising and websites for tourism and holiday bookings and all the local events which moved online due to COVID (for example, the harvest festival). Sara and Gemma, parents and governors of Llanychllwydog, spoke to BDUK over a video call and shared photos of the local area and the outdoor school.

“ My boys used to come home and say they got halfway through something and they weren't able to complete it because the internet cut out. So yeah, slightly frustrating for them when they were trying to do things online. But I haven't heard that for a long time.”

– Sara

Sara and Gemma acknowledged that connectivity would enable vital future life skills for example safety online but stressed the importance of access to the outdoors at the rural school.

Case Study 4. Wonersh and Shamley Green, Surrey

Participants: Deputy Head at Wonersh and Shamley Green, Surrey, IT consultant and volunteer with broadband for the Surrey Hills

Benefit Areas: Productivity and efficiency, wellbeing of staff

Wonersh and Shamley Green is a rural primary school in Surrey that was connected in March 2020 as part of the Rural Gigabit Connectivity Programme.

The unreliable connection meant that teaching was frustrating and often teachers would choose not to use technology in case it cut out.

Unreliable connection disrupts planning for class activities

“ So it’s been available. It’s just been unreliable, slow, and especially difficult when you’ve got the whole class trying to use computers at once. We’ve got the computers here, but the amount of times I’ve had 30 children on them, and they constantly are dropping off. And it’s really annoying being in a classroom where you’ve got 20 hands up, it’s not working, I can’t get on. So you can’t actually teach because it’s just not working.”

– **Class teacher**

While we are beginning to be more aware of the various tools available to make the classroom experience more engaging, a key finding from conversation with staff at Wonersh and Shamley Green was around staff

satisfaction. As more possibilities for using technology become available in the classroom, it's essential that the internet can support them. In the example below, the teacher had got used to spending up to 3 hours after work on a Friday uploading video content created by pupils. With the new connection, staff can look forward to their weekends and generally more positive experiences at school.

“ The skills that we've seen developing in the children over the lockdown means that actually, we will probably be using devices more readily in classrooms, and from now on, even more so than we did before. And some of the tasks and activities that I know our teachers will naturally now set in classrooms will require greater use of the Internet, and especially uploading and downloading photos and videos on a regular basis. So there'll be handing in work, rather than written in their books, there'll be recording one another, and taking photos of things that they've done, and handing them in. And, you know, that broadband speed is a massive stumbling block when you've got 30 children handing in a video at the end of the lesson, and they're ready to pack their bags and go home. They [the pupils] are tech savvy here, but in the world they are growing up in they're going to get jobs, and it's going to rely on the computers and all their skills that we need to build at this age. And I think if they've got the potential, but then we can't give them the technology to use it whether that's at home or at school, then they're not going to be as good as they can be, which is our job to maximise their potential.”

– **Headteacher**

“ We actually made a conscious decision not to do live lessons based on the fact that not all could connect reliably to the Wi Fi and engage in the lessons. So even when I do my zoom calls, there's still three or four that are not, then that's their only socialisation during this lockdown, so yeah, absolutely, if the area has the good internet, then at this point, they'll be able to fully access”

– **Class teacher**

The team at Wonersh and Shamley Green shared that their experience during lockdown had been challenging not only due to their own connection but due to general connectivity in the local area.

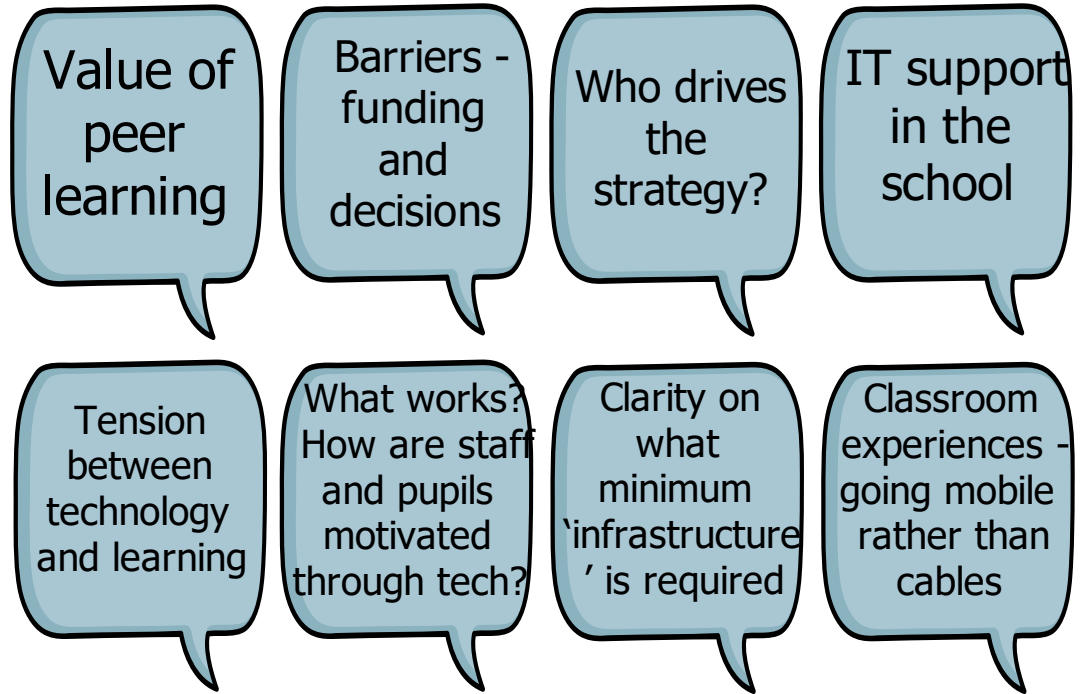
Advice for schools upgrading

IT needs: reaching benefits with Gigabit

As part of the Connecting Gigabit Communities engagement activities, a workshop took place at the 2022 “Ed Tech Summit” (an event for educators and institutions) to explore the IT needs and perspectives on strategy, to ensure that the technology is up to date and the tools in line with the schools’ digital strategy.

This workshop was facilitated by Marion Lean, Giles Hill, Digital Learning Lead and IT and Pete Bradburn, Communication Director from Aspire Trust, which is part of the DfE’s Ed Tech Demonstrator Programme.

Insights from Fibre to Remote Learning workshop at Ed Tech Summit, Nov 2020



Broadband needs to be in the background.

Ed tech - challenge the sales hype – “they may provide a product that they’ve shown you working, but did it really work when you took it into the classroom with 30 children?”

The choice between technology or staff. “If we’re going to spend on infrastructure, we have to have to make some very difficult decisions.”

Involving the teachers and techies – conviction for where you want your technology to go, and efficiency in terms of how you know the success you want to achieve, and are empowered to say that to these people who you’re going to be reliant upon to deliver that.

Track how everything is working.

Infographic - Moving IT to the cloud

As an outcome of the workshop, [this infographic was created by Pete Bradburn, Director of IT and Communications at Aspire Trust to support other schools on their journey from broadband upgrade to seeing impacts.](#)

Discussion

Overall feedback from schools on the RGC programme shows that most current internet connections enable low level use of technology, both in the office, and in the classroom. The poor connection can be unreliable, cutting out and disrupting lessons or putting teachers off planning using technology altogether. Insights into a) the activities schools hope to be able to deliver b) expected time and cost savings to the schools and c) staff wellbeing and pupil experience present a generally positive view of the expectations of broadband upgrade. While the RGC programme supports the infrastructure build, the next steps for reaching benefits with gigabit-capable broadband are also revealed through this research.

Key elements for benefits realisation in rural schools

Technology

Both the physical broadband and the internal hardware - this includes wifi and laptops or tablets.

Support

Peer support, such as colleagues, to encourage best practice for digital and to try new tools. Financial support to upgrade hardware and software, and for training.

Mindset

Confidence and motivation to use technology in the classroom - both for teachers and parents supporting pupils and interacting with the school. During an interview one teacher shared that they were part of a whatsapp group with teachers from the next nearest school so that they could ask questions when things went wrong with their tech.

Access to information

Learning about aspects of digital connectivity at school such as safety online and critical thinking help with building confidence around using the internet and realising the benefits that improved internet connection and technology have to offer. This includes teachers' and pupils' engagement with events such as "Safer Internet Day" and schools being able to properly identify both hardware and software that is appropriate to the needs of their users.

Skills

General skills for using online platforms have improved due to the necessity for delivering remote learning, however, continued learning - both through formal and informal means - will enable the technology in place to be used effectively.

Programmes such as the DfE [EdTech Demonstrator Programme](#) can support school-to-school communication about how to make the most of technology, however few rural schools are involved in such programmes.

The learnings from Connecting Gigabit Communities so far enable insights about the benefits of gigabit-capable broadband, which help to generate understandings for the potential impact of the RGC programme. Listening to beneficiaries' experiences have enabled dialogue between BDUK and DfE to improve delivery of future programmes and to generate new processes to support rural schools. Findings from this research have also helped BDUK to develop research approaches to learn from other rural public buildings such as GP surgeries and inform the design of future programmes to support rural communities to access and benefit from gigabit.

Recommendations

- To support onward impacts of connectivity in and beyond the school BDUK can harness the understanding of elements of benefits realisation with fibre in school (Technology, Support, Mindset, Access to Information, Skills) to establish routes for facilitating maximise potential for use of gigabit.
- Sharing perspectives of how to make the most of full-fibre from IT staff - see [infographic](#)
- Insights into the IT needs (beyond the connection itself) suggest that there is a need for an additional support package for rural schools regarding internal infrastructure– the technology needs to work (e.g internal wifi, laptops).
- Endorsing Peer Learning policies, for example the [Ed Tech Demonstrator Programme](#).
- Supplier Engagement - Suppliers need to show people that fibre is there, and help to demonstrate the benefits that it can bring, for example [BT Barefoot](#), B4RN Computer Club.
- BDUK need to engage and communicate with local residents and businesses via the public building for example with a letter to school-parents with the option to 'try before you buy' and activities to see the benefit of broadband upgrade.
- Use public sector Hub sites with gigabit-capable internet connections to host information and learning opportunities.

- Additional funding and support at Hub site: for schools, there is an observed need for additional funding for and information about technology upgrade for the hub (internal wifi and computers). DfE is supporting this need for RGC and LFFN schools through the [Connect The Classroom fund](#). This model may be applicable to other public buildings.
- Provide resources as part of the product - not just the connection (for example, information of available support, such as [online learning centres](#) or current BDUK 'Getting to Know Gigabit' research activity for schools package)
- Partner with digital skills projects, for example the [Age UK Tablet Scheme](#) (Kendal), or facilitate the use of Hubs as digital skills learning centres
- Understand what works locally to encourage take-up of new services (for example, practical access to resources such as editable leaflet downloads and posters).
- Initiate a process for suppliers to engage residents and businesses (for example, [BT Barefoot](#)) for different audiences.
- Create a map, which is available for consumers, to see where internet connection types are.
- Initiate a relationship with local bodies to identify people to work with in the community and learning from Digital Champions in and external to hub.
- Engage local community and third sector interventions to support digital inclusion (for example, identifying community groups and existing interventions which are already in place to learn about needs and inform design of future take up activities).
- Identify in advance how the benefits will be realised for each public sector site that BDUK are supporting to achieve gigabit-capable connections.
- Future research in this area would benefit from an understanding of how schools engage with research and with government departments to support joined-up communication and data collection activities with school schedules and capacity.

Connect the Classroom:

The Connect the Classroom pilot programme supports schools in upgrading their WiFi networking to ensure that outdated systems do not prevent them from realising the benefits of technology and the use of cloud-based services.

The programme is working with schools that have already been involved in the Rural Gigabit Connectivity (RGC) programme and so are predominantly rural primary schools. These schools were chosen to ensure that the investment in fast broadband to their school building was carried through into a high-quality experience in the classroom.

There will be at least 500 schools included in this programme which runs until March 2022.

The amount of funding schools receive is based on the condition of the networks in their school. The programme will bring them all up to a good modern connectivity standard that will work well for them for many years.

Department for Education, 2021

Research Limitations

- **Recruitment** - The participants in this study were recruited using existing channels through the DfE who facilitated the funding programme with schools. DfE have logged various reasons why schools did not participate in the programme itself and this has also impacted the post-programme engagement. Direct emails were sent (typically to a generic school office email address), follow up calls made but many schools did not respond, were either too busy or sceptical about the research (did not recognise “BDUK”/“DCMS”). DfE facilitated our direct introductions, but this still resulted in limited access to schools due to restraints on staff during lockdown.
- **Sample** - In the sample who took part, all participants were very generous with their time and saw the value in supporting the programme for improving rural connectivity. The schools that took part have a particular interest in the topic of connectivity and were able to understand the wider benefits of the research. Future research in this area would benefit from an understanding of how schools engage with research and with government departments. For the County Durham and Scottish sites, the local council facilitated an introduction with schools which helped as this created a sense of trust. However, since RGC schools are facilitated through the DfE, the local council was not always best placed to make introductions. **Accessing local communities beyond the school** - A key objective had been to access the wider, local community through the Hub, to investigate how connectivity enables residents and businesses to access benefits associated with high-speed internet. Travel restrictions imposed due to COVID-19 meant that the research took a virtual

approach, resulting in limited access to the broader community beyond the immediate school context. The next phase of research will take a site-specific approach to enable deeper investigation into the local area.

- **Observations of place** - Virtual methods have left little room for organic observations of place and limited opportunity for chance encounters and the possibility to be inclusive of those who were not immediately available during video tours of the school or willing to take part in formal interviews.

Next steps for connecting gigabit communities research

Schools on the RGC programme are due to be connected by July 2021. Post connection interviews will be taking place from March 2021 - these are planned as virtual, however, when COVID restrictions change it is expected that there will be face to face interviews and site visits.

This research was undertaken by Dr Marion Lean and Georgie Johnstone, BDUK Benefits Realisation and Evaluation (Demand Side).

Contact: marion.lean@dcms.gov.uk

Appendix A - Building fast, reliable broadband for everyone in the UK

Appendix B - Pilot study in rural educational contexts (March 2020)

This pilot study was carried out with comparative subjects in rural education contexts.

What it means to 'benefit' in this climate:

- How people feel the impact of COVID-19 lockdown in an education context
- How broadband plays a role in supporting education and home life during COVID-19 lockdown
- How COVID-19 lockdown is reinforcing the need for high speed connectivity
- What can be learned from current campaigns to connect isolated groups in response to concerns about increased digital divide and loneliness due to COVID-19 lockdown

Participants

- Primary school teacher - rural Scotland
- Rural parent with primary school-aged children, Cumbria
- Bursar at rural school which supports flexi-schooling,
- Rural headteacher, Lancashire
- Learning support teacher, Aberdeenshire
- Supply teacher in rural primary schools, Scotland
- Professor at University of Highlands and Islands
- Orkney Doctoral Researcher at University of Highlands and Islands, Orkney
- E-learning expert (Tablet Academy), Teacher and Senior Leadership team- inner city secondary school, London

Key Themes:

Productivity supported through online services and tools to support opportunities, training, keeping routines, supporting home-schooling, using intranet and online learning platforms, school groups using G-suite and Teams, access to unusual subjects, keeping in touch with pupils and parents.

Future plans - reconsidering the model for higher education as online/module based rather than place-based.

Public Value enabled by access to resources and communication technologies.

Access to information for example the news, developing critical awareness (e.g. misinformation, connecting with other communities online via projects)

Wellbeing supported by access, online support, communication and skills. Managing mental and physical health. Keeping in touch. Keeping active, family connections. Being able to understand more about kids homework tasks.

Reducing the digital divide through access learning to skills and support. Developing skills (out of necessity), reaching out for support creates protocols/processes (for example, access to school IT support for peripatetic teachers).

COVID and connectivity at school

Challenges

- **Access** – Third sector interventions (e.g Good Things Foundation)
- **Acknowledgement of importance of continued learning and development for teachers**, with emphasis on ICT skills
- **Potential for using online tools** in the physical classroom and for homework
- **Possibility of using digital platforms for additional support** when children return to school
- **Opportunities for flexi-schooling models**
- **Space to speculate and innovate new models of learning** (for example, distance-learning modules in higher education, rather than place-based)
- In the context of RGC schools, in order to reach 100%, empty buildings (including schools) also need to be connected.
- **Social distancing could provide value in opening currently closed school buildings**. However, this is also attractive for **community asset transfer opportunities**

Opportunities

- **Digital literacy** (cross product, access, motivation to train, fear of online/digital, mistrust eg misinformation)
- **Teacher training** – many not taught ICT skills
- **Relying on ‘what we are used to’**, instead of developing/innovating/using traditional means
- ‘All the “other” skills, additional support, mindfulness’
- **Peer-to-peer communications and learning**
- **Self-directed learning** – not for everyone
- **Embodied knowledge and learning** (eg. musical instrument, holding a pencil). ‘Relationships and the physicality of teaching is missing.’ Parents now looking after children/can’t work normal hours
- **Accountability** – (parents, teachers, kids eg no-one to mark the homework or check how it’s being done, relying on parents to home-school)
- **Access** to connections and devices

Learnings from COVID-19 lockdown connectivity experiences

- Sight on where and how those without access to internet are living and the implications (for example, closing digital divide which can be used to develop material for demand stimulation)
- Learnings from government and third sector collaborative models to provide connectivity and the associated support to reach benefits
- Potential to consider how perceived benefits of broadband are manifest in ‘extreme’ circumstances (for example increased numbers of family members requiring access to internet simultaneously due to work and educational requirements)
- Potential changes to benefits of connectivity in short and longer term due to home working and schooling
- Insights that can inform understandings of longer term benefits of high speed connectivity to impact productivity and future plans**

- ‘COVID-caveat’ – how has COVID-19 provided incentives for improving connectivity in the home due to greater needs which materialised due to home working

Learnings from the pilot study were taken into consideration for framing interviews with RGC programme beneficiaries. Apart from two face-to-face interviews in Angus, due to the lockdown restrictions the research activities took place using Google Meet or other platforms. Home-schooling and the need for teachers to adapt to new ways of working were at first positioned as an issue for those who were initially less willing to engage with the platforms available. However, as people became accustomed to the ‘new normal’ teachers, children and parents became more confident with using and then experimenting with different programmes and tools. One rural parent in Angus commented that when the schools were back in Autumn 2020 the children were actually more disadvantaged due to a lack of WiFi in the school meaning the activities which had been facilitated at home (using residential broadband) were now not available at school.

“ We’d had Google Classroom through the whole of lockdown. And then when they came back in here, because it was all on the teachers’ Chromebook, they lost that facility. So it was ironic that they were back in this classroom but then they couldn’t get all of the interaction and facilities that we could have had at home from the teacher in the classroom. So it was a strange backwards degradation. [The pupils] came back to school and suddenly couldn’t get the schooling that they had. So it [schooling] was enhanced during lockdown because the teacher was using her home facilities. And when she came back in here she wasn’t able to use them.”

– Parent, Stracathro Primary, Angus

For more information or to access the full pre connection survey results, please contact Marion Lean: marion.lean@dcms.gov.uk

1. Gigabit broadband is an internet connection that provides a speed of one gigabit or 1,000 megabits per second (Mbps). ↵
2. Additional benefits include stimulating the market (e.g. private sector investments, addressing market failure, increasing competition and innovation and Reducing Environmental Impact (e.g. use of more efficient technology and infrastructure) ↵

Coronavirus (COVID-19)

[Coronavirus \(COVID-19\): guidance and support](#)

Services and information

[Benefits](#)

[Births, deaths, marriages and care](#)

[Business and self-employed](#)

[Childcare and parenting](#)

[Citizenship and living in the UK](#)

[Crime, justice and the law](#)

[Disabled people](#)

[Driving and transport](#)

[Education and learning](#)

[Employing people](#)

[Environment and countryside](#)

[Housing and local services](#)

[Money and tax](#)

[Passports, travel and living abroad](#)

[Visas and immigration](#)

[Working, jobs and pensions](#)

Brexit

[Check what you need to do](#)

Departments and policy

[How government works](#)

[Departments](#)

[Worldwide](#)

[Services](#)

[Guidance and regulation](#)

[News and communications](#)

[Research and statistics](#)

[Policy papers and consultations](#)

[Transparency and freedom of information releases](#)

