ARTS COUNCIL ENGLAND

Shared Intelligence

Making the Most of WiFi

National learning and case studies

A report to Arts Council England by Shared Intelligence

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Photos: p11, p14 Ben Lee; p17 Rotherham Libraries; p21 Norfolk Library and Information Service.

1 Background to the project

1.1 In 2015 Arts Council England and DCMS committed £2.6m to a national WiFi in Libraries programme so that by 2016 "free, good quality" WiFi would be available in all of England's public libraries; a goal which has now been 99% achieved. This followed a direct recommendation from William Sieghart's *Independent Library Report for England*.

1.2 *Making the Most of WiFi* was designed as a short exploratory project in which five library services were selected who already provide full public access to WiFi to test the boundaries of what can be achieved and enabled by the availability of free public WiFi. Each library service was expected to deliver a series of innovative new activities between January and March 2016. The learning from *Making the Most of WiFi* is intended to help the wider libraries sector, and to inform the longer term evaluation of the impact and benefit of the WiFi in Libraries Project.

1.3 Each library services selected to take part was expected to monitor and evaluate their activities. In addition this piece of work produced by Shared Intelligence was commissioned to look across all five projects to draw out overall learning and to produce five independent case studies, each of which was based on a site visit.

1.4 This short report provides the background to *Making the Most of WiFi*, discusses learning points and themes drawn from across the five projects and then provides conclusions and recommendations which we hope will benefit the wider public library sector. The case studies are at the end of this report. These highlight specific aspects of each project which we felt were useful to draw out, and taken together, show a range of ways WiFi can bring significant community impact. What we also believe these show is that while the default may be simply to turn the WiFi on and to leave it to visitors to use it, it is in the interests of libraries to take an active and instrumental approach.

Why WiFi?

1.5 In barely 15 years WiFi has gone from being an exciting and rare new technology, to something we take for granted. Within the staggering overall rise in internet traffic (fivefold increase in the past five years) one of the biggest trends has been the rise of mobile devices as the primary means by which we access the internet. In fact during this year, 2016, the volume of internet traffic from mobile and wireless devices will overtake that of wired devices[1].

1.6 Over the same 15 years web browsers have ceased to be applications which could only be run on a full-scale laptop or desktop. After PDAs first became web-enabled, web-enabled Blackberrys and other early smartphones began to appear, followed of course by tablet computers. At first these cost several hundred pounds or more. But now, you can buy a brand new web-enabled smartphone, contract-free, for under £30; tablet computers from second-hand electrical stores can be bought for the same or less.

1.7 In other words, mobile and handheld wireless devices capable of accessing the internet are now almost universally affordable. The cost of internet data on the other hand varies greatly depending on how and where you use it. There are a few other examples of goods or services which can be free when you are in a shop, and then expensive as soon as you walk around the corner. But with internet data this is exactly what happens as you walk out of range of free WiFi at your local library or coffee shop, and move onto your mobile network's data service (especially if you are on Pay As You Go terms). If you then get on a train you may find it costs as much as £10 for just a few hours' access to the on-board WiFi. This has made many people (especially those with lower incomes) very alert to the cost of data, and to methods for keeping costs down.

1.8 The driving forces behind the explosion in our use of WiFi are multiple; **convenience** – no cables to plug in or carry and easy switching from hotspot to hotspot; the **proliferation of affordable handheld** devices; and, **price sensitivity** to the difference in cost of internet data depending on where we are.

[1] From Cisco's long term tracking of networking trends

1.9 In parallel with the growth of WiFi has come the growth in our appetite for, and reliance upon, data-hungry services. For many people internet streaming is now the primary method of consuming music and TV. Communication services like Facetime, WhatsApp, and Skype are similarly replacing traditional dialled-number voice calls. Many types of data (our personal photos, and typed documents) which we would previously have stored on our computers, phones or tablets, are now stored in the cloud – meaning that accessing them requires connectivity and a data allowance. Many businesses and public services have shifted customer contact and queries online, and often they require the user to have a continuous stable connection for the time it takes to fill in a form, enter payment details or chat with an adviser.

1.10 What is more, we are increasingly likely to access these apps using our personal phones and tablet devices rather than via a desktop computer. All this has led to declining demand for public access computers in libraries, hotel lobbies or internet cafés (where they still exist) and increased demand for fast high-bandwidth free WiFi. On top of this, many apps like Facetime cannot easily be accessed on a public computer[2].

1.11 So 15 years ago, going online usually meant using a full scale computer or laptop – to access our emails, browse websites or make video calls. Now, many of us are accessing the internet through our own personal devices (phones or tablets) more than via a laptop or desktop. Not only that but because of the way data varies in cost, we take care over data limits, and we are conscious of when we use data-hungry applications. It means the sign which reads 'Free WiFi' in reality means 'free video calls', 'free access to your emails', 'free TV streaming', 'free checking your social media', or simply 'your digital life, for free'.

1.12 But often free WiFi is only free up to a point. Cafes and coffee shops expect or require the purchase of a drink or meal. Shops and shopping centres make no such requirement, but then do not have anywhere to sit for more than a few minutes – some providers of free WiFi set time limits. Some public-owned spaces offer free WiFi, as do a small number of high streets in towns and villages who want to build a name for supporting the digital economy. But in many parts of the country, the one (mostly) reliable place where you can connect to WiFi for free is the local public library[3].

[2] Although WhatsApp now has a PC/Web access feature, it can only be used if you have a mobile phone registered with a WhatsApp account - you must have your phone with you to use WhatsApp Web

[3] Rotherham Libraries told us there are no chain coffee shops in their town centre which means there are only a handful of commercial businesses offering free WiFi to the public

2 Overall learning and themes

'Connect your own device' is the obvious starting point

2.1 Our five *Making the Most of WiFi* case studies show that the most obvious use of library WiFi is to enable visitors to access the internet using their own devices. There are countless ways in which this is a useful and valuable service to provide. It enables people to study, it means out and about workers can catch up on emails between meetings, it enables people of all ages and backgrounds to browse the web or social media in the same way library visitors for decades have come in to browse the newspapers. Simply enabling libraries to be used in these ways is useful and does add value.

But our case studies also show how this is only the start

2.2 Libraries can take a more instrumental approach – guiding visitors towards experiencing more imaginative and impactful benefits as a result of connecting their own devices to WiFi. In the same way they can also target particular types of visitors.

2.3 Our Rotherham case study explains how they encouraged members of their reading groups to bring in their tablets and eReaders and to download their group books as eBooks rather than using physical book sets. Rotherham's aim was not just about promoting eBooks. They know the demographic of their reading groups (women over 65) including many people who lack digital confidence. So using a familiar activity – reading – was an obvious route to building the digital confidence of these users more generally. Rotherham also saw WiFi as an opportunity to enhance the offer for their visually impaired reading groups, by encouraging them to try e-audiobooks instead of tapes and CDs.

2.4 Similarly Cambridgeshire's 'Tea and Tablets' groups were set up to create social settings where people in their 70s and 80s can bring in their own devices in order to help each other become more confident in their digital skills. Then there was the Norfolk Digifest which tried out dozens of ways to use WiFi to enhance other activities. Their genealogy event was designed around participants bringing their own devices to create a richer learning experience as they re-traced the steps of a heritage librarian on their own laptops and tablets – with the aim of enabling them to feel confident enough to navigate the same online resources on their own.

Taking WiFi beyond the 'connect your own device' offer

2.5 The Manchester and Suffolk examples show libraries can go much further with WiFi than simply a 'connect your own device' offer. Suffolk's new service for schools shows how WiFi can be the backbone and selling point for a schools offer which contributes directly to the new computing curriculum. WiFi is the most important resource for their in-library lessons which involve assembling a Raspberry Pi computer then using it to learn basic computer coding. Rather than simply being attracted by a message of 'free WiFi for your own device' Suffolk's teachers are attracted to their offer because their own schools lack both WiFi infrastructure and human skills to lead a lesson like the one delivered by Suffolk.

2.6 Manchester's experiments with LibraryBox show how the idea of WiFi as internet access can be subverted. Instead of providing a route for the public to access the internet – the 'captive WiFi portal' of LibraryBox was used by Manchester to lure tech-savvy users towards specific library content which they hoped would intrigue. It seems it did just that – 196 people downloaded the mystery content in just two weeks. Another Manchester experiment, their 'Edithon' for LGBT articles on Wikipedia was not simply about accessing internet content using WiFi, but **taking control of and re-shaping online content.**

Older library users are an obvious demographic but there are others

2.7 Many of the activities in our case studies are targeted at people in their late 60s, 70s and 80s. The reasons are obvious – many in this age-group want to get online, but need help to do so. The Cambridgeshire example provides some good examples; people feeling they have lost touch with technology since retiring; or being given a tablet computer which sits in a box unused.

2.8 However, while people over 70 often are a sensible starting point, the case studies also show how libraries can use WiFi proactively to add value for people of all ages – as opposed to leaving younger visitors to simply use it as they choose.

2.9 For example one of Norfolk's Digifest sessions was to help parents become more confident about teaching and guiding their children's use of the internet – a need which has been well-documented nationally. Similarly their genealogy sessions were not about raising digital confidence. Many of the hobbyists taking part were perfectly happy using technology, and their learning needs were around higher level skills for digital historical research.

2.10 Manchester's LibraryBox seemed to be at the other end of the digital confidence and age spectrum altogether. The hundred or so people who discovered it and downloaded content not only had the necessary technical skills, but we suspect they also had a less deferential attitude. Anecdotal evidence is that it was not just the tech-savvy, but younger visitors who found their way to this unadvertised service.

Programming new activities within resource-constrained teams

2.11 Four of the five *Making the Most of WiFi* case studies were relatively self-contained experiments. They were planned by small central teams, sometimes led by a single specialist librarian, and sometimes assisted by bought-in support. As experiments they were intended to try out new things and test boundaries – but the assumption was they would start at a manageable scale.

2.12 What Norfolk did though with Digifest however, was on a truly service-wide scale. Even though Norfolk's events and activities ranged in size – some as few as half a dozen people, the sheer scale of 102 events in six weeks was more than most library services could have run centrally.

2.13 What seems to have made this possible is Norfolk's distributed model of management, and the culture they have of empowering frontline community librarians with a framework of very specific expectations and criteria which are closely adhered to. Their systematic process for documenting and approving proposals for activities, and their use of a handbook of common outcomes measures and 'evaluative statements' seem to have been essential for retaining programme coherence and remaining focused on the original aims. This seems to be a key lesson for other library services – i.e. that WiFi can be used to create new offers on a mass scale but it is very unlikely that library services will be able to manage it all centrally unless they adopt a similar distributed model. This might be relevant far beyond the issue of WiFi and the digital offer, and more generally across all aspects of public library leadership.

Some aims and purposes may have more traction with budget holders

2.14 Library services set themselves a variety of aims and purposes for their *Making the Most of WiFi* activities. At the experimental stage it was obvious they would pursue a wide range of aims but as these activities mature we can imagine that some aims and purposes will have more traction – especially with budget holders. For example many activities were aimed at issues which are at the top of almost all councils' lists of priorities:

- building digital confidence and resilience in isolated and/or low income communities
- supporting independence and preventing loneliness among vulnerable/older adults
- using culture to add-value to cityscapes and Smart Cities
- assisting schools with computing and STEM curriculum
- supporting parents around the online safety of children

2.15 Linked to this we can envisage library services (especially those where significant effort has been made to upgrade or expand WiFi provision) being asked how they are using WiFi to support local strategic goals. There is some benefit in simply enabling the public to access free WiFi, and there will be countless occasions where people who cannot afford broadband at home or on their mobile contract use library WiFi to search for jobs, pursue studies, learn about a health condition. But we suspect many library services will find that good outcomes like these will need to be accompanied by a stronger more precise narrative (backed up by outcomes data) about how library WiFi is also being used deliberately, and instrumentally to achieve specific goals like those mentioned above.

The WiFi signal on its own is not what creates impact

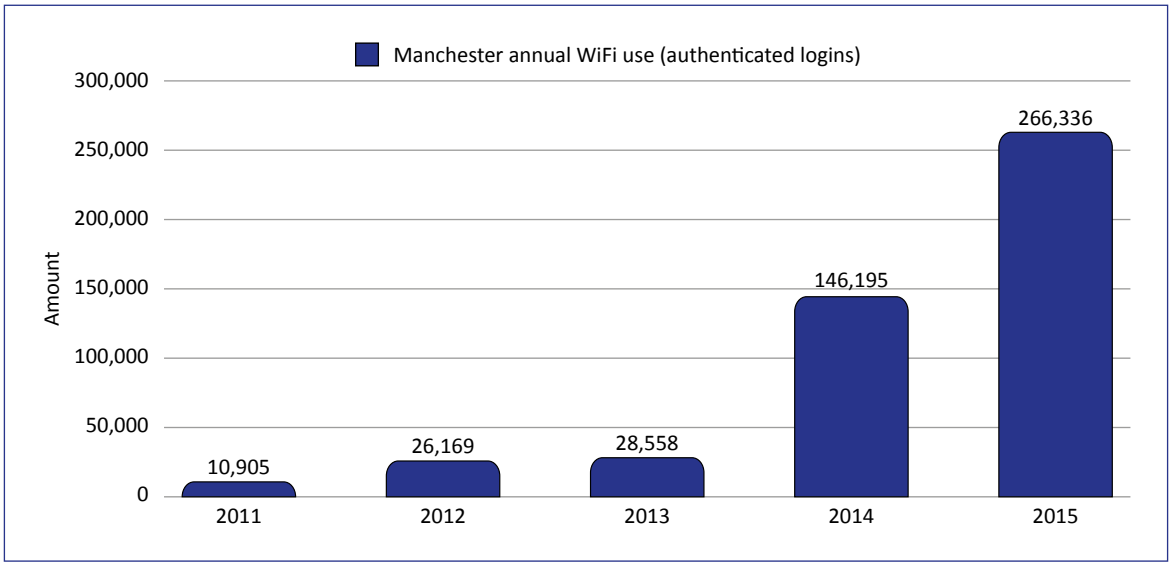
2.16 Similarly, we envisage some library services being pressed by their budget holders to explain whether providing WiFi in libraries differs from providing it in a shopping centre. These five case studies provide excellent examples of how the actual WiFi signal in itself, is most often not the main driver of impact. They show instead how it is almost always the human input of library staff or partners – as facilitators, teachers, explainers and navigators – and sometimes other library users helping each other, which really made the most of WiFi.

Measuring the volume of data used over WiFi

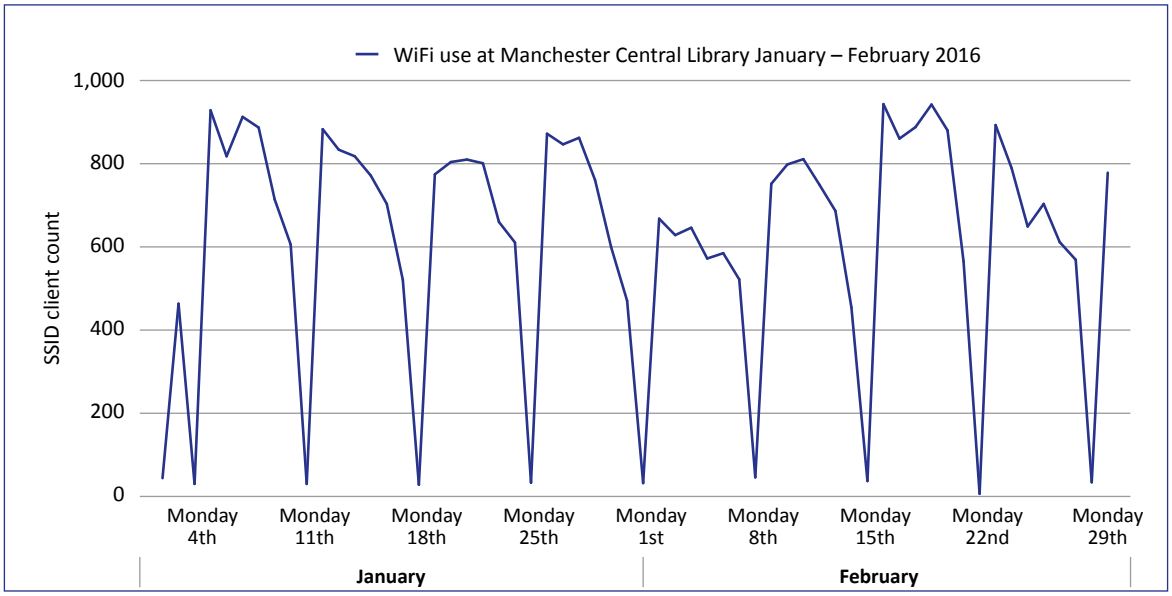
2.17 We were hoping to gather data on the amount of data used over WiFi across each library service from January to March 2016 when most *Making the Most of WiFi* activities took place, and then compare that to levels experienced before the projects took place. However, despite the efforts of the lead staff in each service it was only Manchester and Rotherham who were able to provide data in a format we could analyse. The main barriers to accessing WiFi data use stemmed from the fact that the library staff leading each project did not themselves have direct access to the administrative data from their library's WiFi systems. Generally they had to request this data from a central digital team – and our understanding is that those colleagues either saw this request as low priority, or actively resisted the request. One service has multiple WiFi providers which made it even more difficult to access and aggregate data for all their branches. Nonetheless we do have a detailed picture for Manchester and for Rotherham covering the *Making the Most of WiFi* period, as well as comparative data for previous periods. This shows that WiFi use in Manchester libraries grew exponentially over the past five years – whereas Rotherham's usage grew significantly during the project period.

2.18 We also have data from Aldeburgh Library in Suffolk which although limited in scope, seems to indicate that WiFi use **doubled** on the days when *Making the Most of WiFi* activities took place.

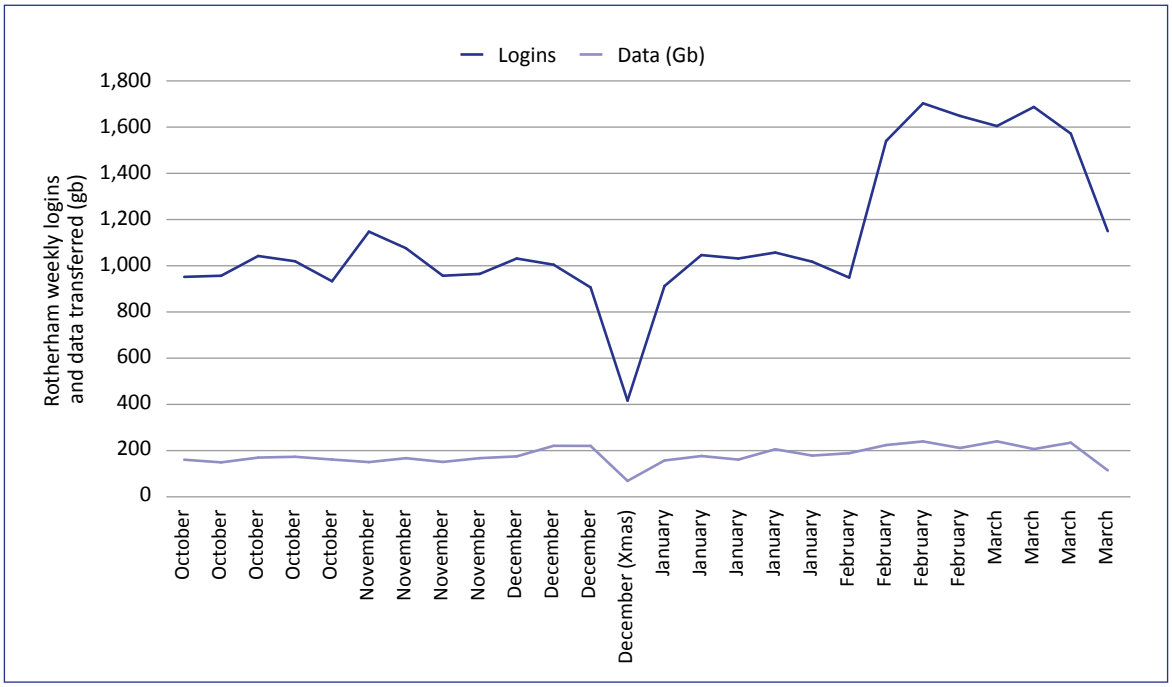
2.19 Manchester were able to provide data showing the long term trend in use of their WiFi. In 2011 (prior to WiFi roll-out and prior to the major refurbishment of Central Library) there were 10,905 annual WiFi logins across the seven libraries with WiFi at the time – equivalent to 30 logins per day across the entire service. By 2015 with Central Library having reopened and WiFi in all twenty libraries, the total had risen to 266,336 annual logins – equivalent to 730 per day, most of which are at Central Library.



2.20 For the period of January – February 2016, when Manchester was running *Making the Most of WiFi*, we have daily WiFi login data for Central Library. This indicates there was no significant increase due to the *Making the Most of WiFi* activities. However, this is not surprising as Manchester's activities were experimental in nature. Nor were they designed to boost mass WiFi engagement, which is already high at Central Library (around 600-900 logins each day). We can however see that in the half-term week of 15 February, WiFi use was higher than preceding weeks.



2.21 In Rotherham, the *Making the Most of WiFi* project was aimed at large-scale promotion of WiFi (alongside targeted engagement of reading groups), and this clearly paid off. Their WiFi network data shows for January to March 2016, and for the three months previous to that, shows the library service increased their average daily logins from around 140 (or 980 per week) just before the project began to 216 daily logins (or 1,512 per week) by March – an 85% increase in just three months. The amounts of data transferred over WiFi also rose but by a smaller amount.



2.22 We also had access to Rotherham's data for the same period in 2015 which shows the number of daily logins by March 2016 had increased nearly six times compared to March 2015.

3 Conclusions and recommendations

Conclusions

3.1 The five library services who took part in *Making the Most of WiFi* show five different approaches to using WiFi to increase impact and achieve broader goals. Manchester experimented by hiding local history resources within a captive WiFi network with the intention that people might discover and explore them. It worked and this opens up further possibilities for broadening the engagement and reach of heritage and culture. Rotherham used the familiar activity of reading to tempt people with less digital confidence into trying eBooks using their WiFi. Through a similar logic they are also now supporting visually impaired readers. Norfolk have shown how empowering frontline staff through a distributed management model can deliver large programmes of new activity yet retain quality, coherence, and focus. Cambridgeshire's Tea and Tablets shows that with support, people in their 80s and even 90s become confident users of handheld devices and teach each other – and that these devices can enhance wellbeing and independence. Finally Suffolk's computing lessons for KS2 pupils reveals the challenge faced by some schools in meeting the new computing curriculum and the vital support libraries can provide through digital resources and staff skills.

3.2 These are our main conclusions having explored these five examples.

3.3 Firstly, the forces driving demand for good quality free WiFi are incredibly strong and relate to some of the biggest changes taking place in technology, the economy, and society. That demand is here for the coming decade at least. With 99% of public libraries now providing WiFi, libraries are playing a significant role in meeting that demand.

3.4 Secondly, while people in their late 60s, 70s and 80s are an obvious starting point for targeted activities and assisted access, the five case studies show that there are many more target groups for whom library WiFi can make a difference – not least primary-aged children, visually impaired users, and those who are tech-savvy but unengaged in culture.

3.5 Thirdly, it might feel as if library leaders face a choice. One option is simply to meet the demand for free WiFi by switching on the router and providing login instructions just as any coffee shop, hotel lobby or shopping centre might. While the other option is for a library service to **use WiFi proactively and instrumentally**; to achieve their own service goals and the goals and priorities of their funders, partners, and communities (which is what these five examples show). The first option is simpler, the second requires planning, training, and might mean another activity has to stop to free up staff time to do this. Our conclusion however is that in reality **most** library services probably do not have a choice. In our view most libraries will find they **must** use WiFi proactively to achieve their own goals and those of their funders and host authorities. If they do not, if they simply turn the WiFi on and leave it running it will become ever more difficult to explain how they are adding value over and above coffee shops, and shopping centres.

3.6 It is also our view that this would be a huge lost opportunity because what these five examples show is that in just an eight-week period, and sometimes in just a few branches, five public libraries have used WiFi with more imagination, and greater social impact than most coffee shops or shopping centres are ever likely to.

Recommendations

Measuring social impact

3.7 *Making the Most of WiFi* shows the importance of going beyond the **provision** of public WiFi, to **exploiting WiFi proactively** to enhance libraries' social impact. We encourage libraries to focus on proactive and instrumental uses of public WiFi geared to social outcomes which are priorities for their host authorities and wider public service partners.

3.8 Norfolk's system of using a common set of evaluative statements as a way to focus on outcomes, seems a particularly valuable model which could be adopted by other library services, or used in conjunction with further Government investment in library WiFi. Norfolk's approach could also be relevant to wider work which Arts Council are involved with (with SCL and the Taskforce), to improve the CIPFA library statistics.

Supporting schools on computing – national offer?

3.9 Suffolk's new offer on the computing curriculum under *Making the Most of WiFi* seems to have struck a chord with teachers and schools in the county especially for KS2 within smaller primary schools. The session differed from traditional 'library visits' by schools in that these structured lessons were recognised by teachers as meeting specific learning goals for the new computing curriculum. We suggest that this model in particular could be explored as the basis of a new element of the SCL Universal Offer for Learning or for Digital.

Gathering WiFi use data and generating useful insight

3.10 Manchester's and Rotherham's data on WiFi use helps us see how much insight could be gained if all library services in England were able to obtain their WiFi data as a tool for planning and improvement. Daily and weekly patterns can provide clues to ways in which WiFi is being used, which in turn can help library services fine tune their offer, or identify unmet needs. If we had comparable data for all five services we are sure we would have been able to glean useful and actionable information about wider patterns of use, and make broader inferences about how these projects achieved impact.

3.11 We also had data from Rotherham on the volumes of WiFi data sent and received by public users each day, and the length of time users were connected for. We would have liked more but even so it revealed useful patterns which could be acted upon – especially to understand different types of users from those who jump on for a few moments to those who stay logged on for several hours.

3.12 We strongly suggest that this issue of access to usage data be raised nationally at a strategic level via SOCITM (or some similar route), and also that any future funding for WiFi provides library staff with some leverage over their digital colleagues to obtain the data – e.g. making it a condition of grant.

Build on the Manchester discovery model

3.13 The Manchester discovery model using LibraryBox should be of interest to others involved in making Heritage and Culture more relevant, especially given the reach of public libraries is much greater and more diverse than for most heritage attractions and cultural activities.

Connecting Rotherham's visual impairment project nationally

3.14 Rotherham's project to use WiFi as a means of enabling people with visual impairment to have a better experience of reading for pleasure through e-audio could be a route to wider digital enablement. This project might benefit from being connected at the national level to work with NGOs such as RNIB, publishers or specialists in adaptive technologies (like Humanware).

Helping digitally savvy over-70s to become digital mentors

3.15 Based on Cambridgeshire's Tea and Tablets model it appears there could be potential on a national scale to develop a wider programme to support people in old age to become digital mentors to their peers focused on using digital technology. Pockets of similar activity exist around the country, but this could be aggregated for greater impact working with stakeholders such as AgeUK and Tinder. It could also become part of the Digital Offer.

Sharing these examples using the innovation network

3.16 All of these examples contain actionable learning points which other library services are likely to find useful. We would recommend that Arts Council, working with SCL and the Taskforce seek opportunities to share these findings in a way which enables live discussion and group learning – either at physical gatherings or via the SCL's new innovation network which we are also supporting.

4 Case Study: Suffolk Libraries

Supporting the new computing curriculum at Key Stage 2

"This morning we're going to build a computer"

– Suffolk Libraries Literacy Ambassador

4.1 In the past two years the new computing curriculum has completely changed how most children learn about digital technology at school. The old curriculum was known as "ICT" and had been introduced in 1999.

4.2 It was designed with good intentions by educators who believed that "increased capability in the use of ICT promotes initiative and independent learning, with pupils being able to make informed judgements about when and where to use ICT to best effect, and to consider its implications for home and work both now and in the future."

4.3 The focus was on teaching children how to be informed and responsible **users** and consumers of technology. But unlike most other subjects (like biology or geography) the curriculum did not focus much on providing an understanding of **how digital technology works**. Over time ICT lessons were often reduced to a series of routine computer-based tasks using MS Excel, PowerPoint, Word, and web browsers. This helped children prepare for further education and a future job, but taught them little or nothing about how information technology works or the reasons why it is shaping every aspect of our society and individual lives.

4.4 The new computing curriculum aims to turn the old approach on its head – inspiring children to become active creators of technology rather than passive users and consumers. It has been introduced in stages over the past two academic years and aims to teach children "how to code, and how to create their own programs; not just how to work a computer, but how a computer works and how to make it work for you".

4.5 While most schools have welcomed it, it has also been a huge challenge.

4.6 Going back further to the mid-1980s before the UK's first national curriculum, it was commonplace for schools to have ICT teachers who were technology experts. They confidently programmed computers like the BBC B and could connect a room full of first generation PCs like the RM Nimbus – to create a local area network. They could open computers up, attach new components – and so the very earliest

ICT lessons often focused on building, connecting-up and programming computers. However, it is now widely accepted that in the decades which followed many of those teachers retired and their pioneering skills were not replaced. Instead, ICT lessons fell into an uninspiring pattern of lessons in using Microsoft Office. Often the children being taught were more confident and adept with keyboards and mice than the adults teaching them – teachers whose specialisms were things other than ICT. Worse still, some pupils who were gifted in dismantling and reassembling technology or hacking and adapting software, had no-one to encourage or inspire them while at school.

4.7 It was the recognition that ICT teaching had got 'stuck', which led to the curriculum overhaul now being rolled out. This is the national context to Suffolk Libraries' discovery in the past year that many schools in the county, especially smaller primaries, are struggling to deliver the new computing curriculum and are in great need of help – which Suffolk libraries are able to provide.

"We don't have the hardware to support all aspects of the new curriculum… So much of the software is online or in the cloud e.g. to teach Scratch – so you have to be online. If we have 4 computers online [on our school network] it grinds to a halt!"

– Year 5 & 6 form tutor

4.8 For example, schools are finding they need hardware which can be explored and reassembled rather than their hermetically-sealed desktop and laptop PCs. They can be hampered by their own in-school IT networks which make it hard to attach new devices without each device having first been configured by their corporate IT departments. They need skillsets and knowledge which they lack and have not yet had time to recruit or develop among existing staff.

4.9 For some Suffolk schools, what they need most of all is fast reliable broadband and WiFi; broadband because most of today's teaching resources for computing are hosted online, rather than being applications installed from CDs which can be used offline; WiFi because most educational content is designed to be used by pupils working in groups, around normal classroom tables, sometimes moving around as they work – which is simply not possible with cable-connected desktop PCs.

"Our IT is so behind, broadband especially"

– Teaching assistant

4.10 So having seen the need, in late 2015, the IT Officer and Literacy Ambassador from Suffolk Libraries applied to join Arts Council England's national project *Making the Most of WiFi.* On being accepted they began designing and piloting a computing workshop specifically aimed at helping primary schools meet computing curriculum learning goals for years 5 and 6 (i.e. 9 to 11 years olds in the last two years of junior school).

4.11 Years 5 and 6 are the end of KS2, and at this stage of school the new computing curriculum emphasises learning goals around using logical reasoning to instruct machines, and being able to cause machines to achieve specific goals.

4.12 The Suffolk Libraries workshop consists of a 90 minute lesson, held in a library using library equipment and WiFi. Pupils visit the library as a class and work in groups of three or four. Teachers from the school take part in the lesson but the teaching is led by Suffolk libraries staff. The lesson begins with the children being set a task of assembling a simple computer for which Suffolk use the educational kits made by Kano. The task involves attaching the processor (a Rasberry Pi), power supply, keyboard, speaker, and WiFi adapator, then attaching a screen and finally connecting to the internet via WiFi. With the computers assembled, powered-up and online, the second part of the lesson is spent following further instructions to create or adapt simple games using Scratch – a programming environment designed for children. At this point the children can collaborate with each other over the internet in their game-making or game-play, and potentially with pupils from other schools.

4.13 The lesson style requires the children to self-organise and follow written instructions and diagrams as a team, to complete the task. The library staff leading the lessons know exactly how to assemble the kits and create a game. Yet they guide the children by asking questions which encourage them to problem-solve in their groups such as "do the instructions say it has to be done in a particular order?" rather than simply correcting mistakes. Usually they will only give detailed instructions if a group has got badly stuck or where they suspect a fault beyond the children's control (e.g. a broken connector or blown fuse).

"Now the WiFi… oh hang on, I know where that is…"

– Year 5 pupil

4.14 The final stage of the lesson involves watching a demonstration of a 3D printer at which point the library staff explain how the 3D printer – although seemingly complex – is still just following similar coding instructions to the ones they have been giving to the computers they have just made. For groups who finish ahead of time there is a small reward; the chance to play with a programmable "BB8" robot (from the latest Star Wars film). This serves as an incentive to stay focused and work towards completing the task. For those who finish first it keeps them occupied until the others catch up and stimulates more problem solving questions like "how does the robot stay balanced, and can we make it go around the table legs?".

4.15 The total cost of setting up the new service was a few hundred pounds – most of which was spent on the Kano kits (£120 per kit), which can be dismantled and rebuilt many times. Four kits were purchased (although the staff hope to buy more), sufficient for a lesson with 12-16 pupils at a time. The programmable BB8 robot was bought specifically for the lessons and costs a similar amount to one Kano kit. Suffolk Libraries also purchased 4 (budget spec) monitor screens which are small enough to be portable. Suffolk Libraries already had a 3D printer (a Cube 3, made by 3D Systems) which the IT Officer has taught herself to use, and the lessons provide a structured way to tour it to different branches and expose younger library users to it.

4.16 Between January and March 2016 Suffolk Libraries held computing workshops in 7 libraries attended by 82 children from years 5 and 6. They also held a number of other less structured sessions focused on Minecraft which reached around 150 more children. They are now in discussion with schools and other stakeholders about scaling the service up to run more workshops with schools and in more locations. Seeing the library service support schools and children in this way has also inspired the Suffolk Libraries network of Friends Groups who are integral to the governance of Suffolk Libraries. Some Friends Groups are now looking at how they can support the new service by helping out directly or by fundraising for more equipment.

"Computing is one of the big three or four challenges for our school – because it is such a big change and we don't have the knowledge we need"

– Teaching assistant

"It's alive"

– Year 5 pupil

5 Case study: Cambridgeshire Libraries

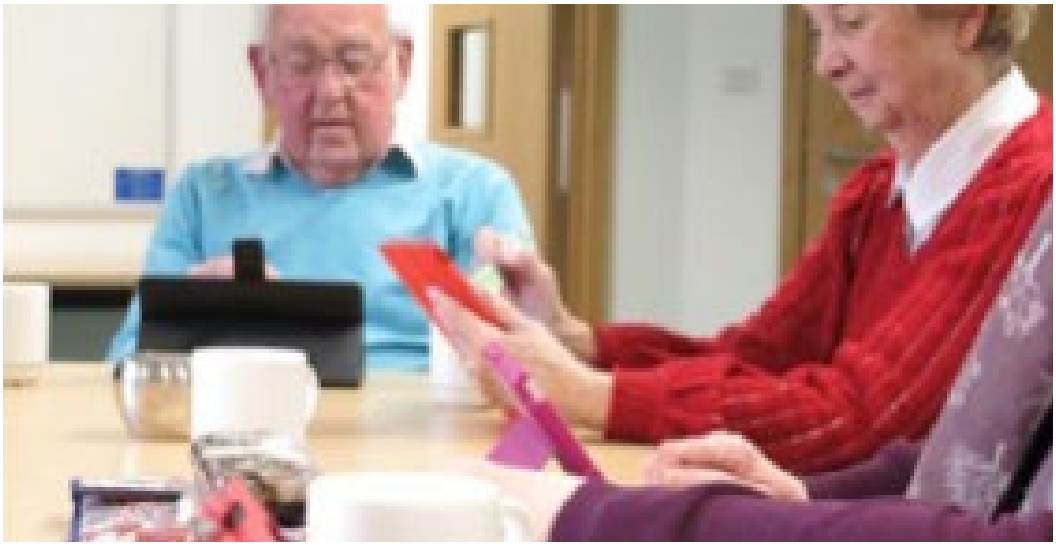
Tea and Tablets

"I had this tablet bought for me back in November because my grandchildren want to communicate on Facebook – they don't want to ring do they! They took me to a shop and let me choose. But I didn't know how to send photos via Facebook."

"I used computers for work when I was a teacher – but things have moved on in the 20 odd years."

"The course turned out to be great fun – this technology has gone from being a bogeyman."

– Members of the Tea and Tablets group



5.1 One of the benefits of having fast reliable public WiFi is that it enables Cambridgeshire Libraries to run activities which involve people using their own digital devices – such as tablet computers – in the library.

5.2 Cambridgeshire's short courses on the basics of using a tablet computer have proved very popular especially with people in their 70s and 80s. What many of those who have completed a course want afterwards are opportunities to continue meeting socially with other older tablet users. They want to share tips and experiences, and to get a bit of technical advice as they discover and try-out new features and apps.

5.3 The courses help people in different ways. Some have attended a course because they were given a tablet computer but lack the skills or confidence to use it.

5.4 I got my tablet for Xmas but it stayed in the box until Valentines day. I was totally intimidated. It's so fast – I was worried that if you make one wrong move you lose everything you've done. The library assistant helped me realise you just can't break it. I went home with a real sense of achievement. Now I'm using it for emails, reading books, Skyping, taking photos, web-browsing – I'm totally addicted.

5.5 The course has also enabled learners to try different devices before choosing which one to buy:

I hadn't bought a tablet yet so borrowed one of the library ones. So I turned up to the course – borrowed one of theirs. It helped me narrow down which I was going to buy.

5.6 And for others, what they appreciated most was the inclusive and non-judgemental atmosphere compared to lifelong learning courses at the local college:

I have been to college courses on an introduction to computing but they talked down to us and some people were good at it so they got all the attention.

5.7 Those who have taken part in a structured course are then able to join one of the monthly Tea and Tablet groups.

5.8 Tea and Tablets is targeted at people in their late 60s, 70s and 80s. They offer a chance to meet up regularly to swap tips and discoveries about using a tablet, and to get help when they need it. It's a simple and replicable idea – all it needs is reliable WiFi, a table to sit around and someone on hand who knows their way around IOS, Android, and Windows tablet computers.

At 83 I didn't expect to get into this. Now Brenda's invited me to the next session to help out!

5.9 Up until now the groups have been supported by library staff, but Cambridgeshire Libraries hope they can become self-led, supported by the most confident participants, with the library still providing the meeting space, WiFi, and tea.

5.10 The tea is important, because Tea and Tablets is of course only partly about digital literacy. It is also about physical social contact and meeting new friends.

5.11 While the benefits of being digitally confident and connected in old age are well recognised, it is wrong to think that being able to shop online or use social media is the basis of well-being in old age. Managing our lives digitally helps maintain independence – but it does little for loneliness and lack of physical contact which is one of the fastest growing problems of old age. In some ways the rise of digital contact over physical contact (from video-calls with relatives to telehealth and telecare technologies) could make physical isolation worse.

5.12 We also know that while many older people use the internet to stay in touch with relatives and existing friends, they do not use the internet to make new friends. Research by the UK think tank DEMOS recently found that while 59% of people over 75 use the internet for keeping in touch with family, only 14% of that age group used the internet for socialising. The report concludes that "improving computer confidence and literacy may well be an important element of cementing older people's *existing* social networks – but not a means of replacing traditional 'human interaction'".

5.13 This may be stating the obvious but the popularity of Tea and Tablets among people in their 70s and 80s does not stem just from the desire to live more of their lives online – perhaps the opposite. Tea and Tablets is popular because it provides a chance to socialise in person.

5.14 What does Cambridgeshire Libraries' experience tell us?

5.15 Firstly it is a reminder that the relationship between people over 70 and digital technology is far from straightforward.

5.16 Someone who retired 20 years ago is likely to have used a computer for work, in fact they may have used a system far less intuitive and requiring more technical knowledge than those around us today. But since retiring they may have used technology much less frequently. They may be using a desktop PC bought ten or more years ago, perhaps without fast broadband. So while computers may not be alien to them, they may feel they have been left behind and things have changed beyond recognition from what they are used to and confident with.

5.17 It is also common to hear of people being bought a tablet computer by their children or grandchildren – so for them the problem is not about access to the technology, but a lack of skills and knowledge (and again confidence) to use it.

5.18 As people get further beyond 70, the lightweight format of tablet computers with fast start-up times and intuitive controls, can become a cornerstone of independence for those who have already mastered it. Being able to do shopping and banking from home, to make cheap video calls, being able to stay connected through social media – these might be enjoyable conveniences for a sprightly 70-year-old but they can soon become be a lifeline for a frail 80-year-old and a real protection against isolation.

5.19 Then there is the sheer speed of change. On the one hand today's 60-year-olds (flicking between emails at work, checking apps on the train, watching catch-up TV at home) will become tomorrow's 70-year-olds. But the computing power of a £199 device continues to double every two years which means that no sooner have we mastered touchscreens, gesture controls, and 3D glasses, then new technologies will take their place. The risk of older people feeling out of touch and worrying that technology is moving on without them, seems set to continue – and Cambridgeshire Libraries want to be there with Tea and Tablets for them.

6 Case study: Rotherham Libraries

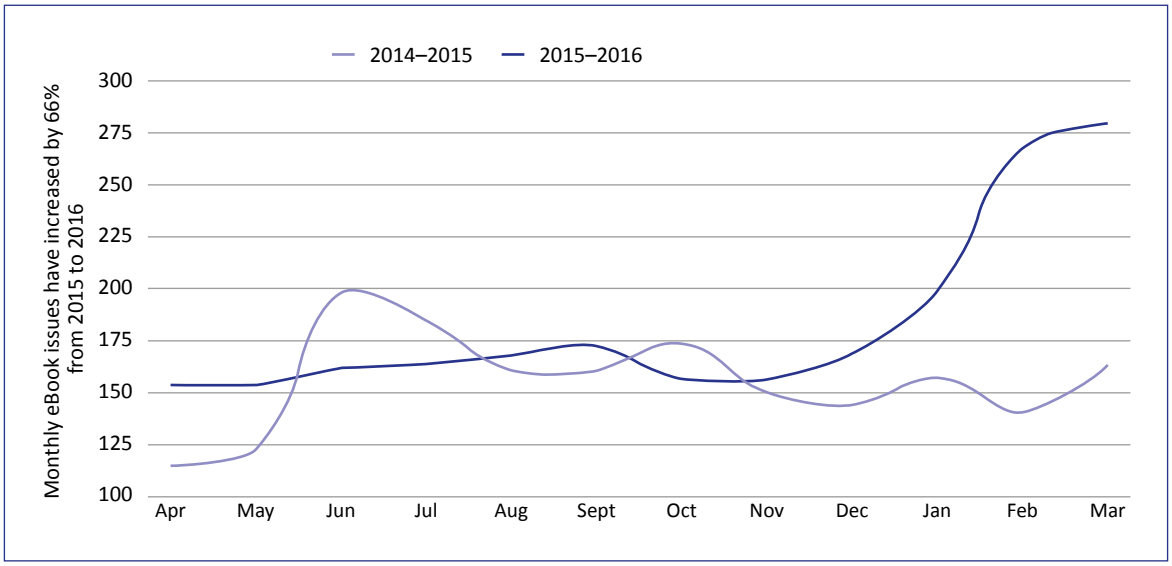
Reading groups go digital

6.1 Rotherham Libraries support forty five reading groups. They provide the groups with sets of books they choose to read, and a modest amount of staff time. The groups are an assorted bunch, meeting in libraries or other venues. Some groups have staff on hand to lead them, many are entirely user led. Two groups are specifically for visually impaired library users.

6.2 They also support reading groups for visually impaired (VIP) readers, and these are top of the library service's priority list for engagement and support. The library service believe there is a great deal WiFi and assistive technology could do to enhance reading and learning for VIP readers. Getting across the benefits of technology however is often the challenge for people who are used to using CDs and audio cassettes.

6.3 Rotherham's *Making the Most of WiFi* project therefore included a planned effort over eight weeks to migrate as many of their reading groups as possible from hard-copy books to eBooks. They did this by ensuring the required number of titles in eBook format were available on the catalogue for each reading group, and by having staff support each reading group and showing individual readers how to locate and download eBooks from the library catalogue.

6.4 In the same period Rotherham also devoted significant effort into raising awareness among all their users, about borrowing eBooks and eMagazines. As a result, at a service-wide level they saw a steep increase in eBook checkouts between January to March this year, and higher levels overall compared to the previous 12 months.



6.5 One notable fact about Rotherham is that there are no chain coffee shops in the town centre. This means that besides McDonalds and a few pubs, Rotherham's libraries are the only places where many residents can access the internet for free. We also discovered that after the central library Library@Riverside closes at 7pm, the WiFi is not turned off until 8pm. During this hour staff regularly see people standing outside the library on their devices making use of the WiFi.

6.6 Rotherham libraries believe many users can be introduced to digital technology via something they already enjoy doing. For their reading groups, eBooks and eAudiobooks seemed an obvious route for encouraging people to try new technology. WiFi is the perfect enabling technology in this context, as one of the main barriers to starting to use eBooks is explaining how to get a book onto an eReader or tablet for the first time. This in turn usually requires library staff to show users how to do it on the user's own device – which is only possible if they can connect the device to WiFi.

6.7 Once people are using technology for something they enjoy – the library service hope those users can be introduced to other ways technology can enhance their lives – e.g. online shopping, emails, and staying in touch with friends and family.

6.8 The same principle applies to the VIP reading groups except the potential advantages are greater if VIP users become more digitally confident. However, there are other barriers too for the VIP reading groups. The main one is low attendance at the VIP reading groups which are held at the central library. Poor access to transportation or other unique issues which affects its membership often means attendance is low. Rotherham Libraries hopes that by engaging charities such as Action for the Blind and the Rotherham Digital Inclusion Network, attendance might be increased.

6.9 Rotherham's reading groups typically still use book-sets of ten, purchased specifically by the library service for reading groups. As well as standard hardbacks, there are also large print books, as well as audio books for VIP users (or anyone else who prefers audio). For eBooks however, the situation has been more difficult and required negotiation with the suppliers. In fact Rotherham Libraries' suppliers can still not provide eBook licenses as ten-book sets and the service has had to purchase them individually (i.e. 10 individual licenses). The library service have also purchased their own WiFi enabled devices for loan to reading group members who do not have their own device.

6.10 For this case study we also spoke to some of the reading group members. We found that while print books are still popular, many of the library's users are already using WiFi enabled devices for reading and are accessing eBooks via the Rotherham Libraries online catalogue. However, most reading groups still have a mix of users reading printed books and others using eBooks – so the project came as the perfect tipping point moment.

"We haven't, as yet, read a book in the reading group on an eReader or tablet but the next book we read might be on one. We've been extolling the virtues of eReaders to our group – the convenience"

– Reading Group Member

6.11 If there is a typical Rotherham Libraries reading group member then they are retired and female. Although the perception has been that this demographic are less confident with digital technology – we found that both staff and women readers challenge that. Rather than lacking confidence, the barrier may be more about lacking opportunities to try and learn – which is what the *Making the Most of WiFi* project has provided.

6.12 Bel who attends a reading group in Wickersley is a confident user of technology and has embraced reading on WiFi enabled devices. It is not just the convenience of being able to carry her Kindle around that she appreciates – although dispensing with heavy hardbacks is a major attraction. Instead she focused on the pleasure she takes in sharing her knowledge about her Kindle and the things people can do with them with her reading group.

"Something which happened the other day is that someone in my reading group had forgotten her glasses and I was able to show her how to increase the size of the font on her eReader, so she didn't need her glasses. This is the type of exercise that helps people get past that word TECHNOLOGY and see the function, the tool"

– Bel, Reading Group Member

6.13 Rotherham libraries have for a long time run courses and clinics to help users improve their basic IT skills. But it seems the *Making the Most of WiFi* project by not focusing on IT skills *per se* may have been a more accessible way of encouraging some people to develop their digital confidence. That is because the traditional courses typically attract those with an interest in improving their skills. If people don't already have an interest in improving their IT skills then it is unlikely they would attend a course. The same goes for people who are intimidated by the very idea of new technology.

6.14 The other issue which WiFi solves is that participants on the traditional courses have to use the library desktop computers instead of the actual devices they use at home – this is an issue the staff have become well aware of.

"Before we were showing people how to use our own (library) computers, which meant they then had to go home and remember how to do what we had showed them. Now [with WiFi], a lot of people are bringing in their laptops"

– Staff Member, Wickersley Library

"It makes the world of difference to be able to show people how to do it – rather than doing it for them."

– Staff Member, Riverside Library

6.15 As well as IT courses and clinics which are still important for those who attend, WiFi has encouraged more flexible access to learning for people who don't attend classes or clinics. If there is something straightforward a library visitor cannot do on their own device, then library staff are on hand to quickly guide and demonstrate (e.g. download Facebook on their phone, find the settings function on their iPad). If the problem is more technical or time consuming then staff can refer the library user to an IT clinic.

"A local artist – he's been coming for quite some years – goes to the IT clinic and he brings his laptop and sits with a volunteer. He is being shown now how to promote his art online. This is something which has happened because of the WiFi"

– Gemma, Wickersley Library

6.16 This is still a work in progress for Rotherham Libraries and the staff are keen to continue the work beyond the two months of funding from *Making the most of WiFi*. Improving confidence and changing attitudes among VIP users was bound to be a long term challenge and this remains a longer term goal – the partnership with the two community partners will also take time to have an impact. The temporary fix for manually ordering sets of eBooks also needs resolving with Rotherham's book suppliers and it will take time to encourage all forty five reading groups to try eBooks.

6.17 But what Rotherham have learned is proving invaluable. Their central hypothesis that using something people enjoy as a route to build digital confidence – does work. The fact that WiFi means they can explain issues on a user's own device while it is attached to the internet is also much better. They have also seen that in the social setting of a reading group a great deal of informal or incidental learning takes places often between group members. The focus of staff effort is changing from doing things for their users – to carefully creating a supportive environment where users are encouraged to learn things for themselves and from each other.

7 Case study: Norfolk Libraries

A county-wide "Digifest" and a distributed management model

7.1 Norfolk Library and Information Service wanted to make the most of WiFi with a programme of activities across their entire county network. They called it a "Digifest" which was to be a month of events and activities showing how fast reliable public WiFi in libraries opens up a new world of useful, inspiring and life-enhancing services.

7.2 Digifest was mostly aimed at users who bring their own digital device to the library. Some activities showcased valuable subscription services which Norfolk Libraries' offer free to library members and which can be accessed over WiFi. People who do not have a digital device of their own, could also take part thanks to tablet computers purchased using Arts Council England funding.

7.3 Over a six week period in January and February 2016, Norfolk's Digifest attracted 557 people to 102 events and activities in thirty-nine library locations across the county (out of their forty-seven branches overall). This was the largest engagement of all five library services who took part in *Making the Most of WiFi*.

7.4 For Norfolk Libraries, delivering activities on the scale of Digifest was feasible because of their distributed model of management. Across all their daily operations Norfolk Libraries give responsibility to frontline community librarians (who oversee clusters of branches) and empower them to develop services in ways they feel will inspire and be relevant their own specific communities. This enables Norfolk Libraries to create a constantly evolving offer throughout the county but without requiring significant centralised service development effort. Norfolk Libraries would not have the resources to do that kind of central planning, nor do they believe it would make the most of staff skills and talents.

7.5 When it comes to the library service developing its digital offer the distributed model becomes even more important because it encourages staff to develop their digital skills and become more confident. Norfolk Libraries' assistant head of service firmly believes that *"in order for staff to embrace digital technology, they have to do it for themselves – and there is an expectation of digital competence which we see as an essential part of our professional skills."*

7.6 But it also brings the challenge of ensuring individually planned activities across a large county network combine to create strategic impact, and deliver a fair and coherent service with equally high standards. The way they do this is by setting county-wide expectations and criteria for all library activities. Every part of the public learning offer by Norfolk Libraries is documented in detailed 'schemes of work' which set out the rationale for any particular service element or activity. These also document how those leading an activity will judge its success, and capture descriptions of how it is delivered (so it can be delivered again by others). This type of distributed model means individual branches have significant freedom about how they deliver their services, but it also ensures that all their combined efforts contribute towards shared county-wide outcomes and standards.

7.7 For the *Making the Most of WiFi*, community librarians could propose any activity so long as they met three criteria:

- They had to make use of the corporately funded library WiFi.
- They had to be library-based and build the digital skills of those who took part.
- They had to contribute to the strategic aims not just of the library service, but of Norfolk County Council as a whole – around education, jobs, and supporting vulnerable people.

7.8 The community librarians were also asked to explain how success would be measured. This included selecting evaluative statements from Norfolk Libraries evaluation handbook which they felt would provide good measures of what they were hoping to achieve. For example, one evaluative statement from the handbook which was chosen for many of the Digifest activities was Evaluative Statement LG6.

"I learned more about accessing websites using the library's wifi".

7.9 Some proposals did not get agreed – and staff understood that activities had to be more than just innovative and WiFi related (for instance one interesting proposal was around digital outreach, but it did make use of in-library WiFi so it was not agreed as part of this particular programme).

7.10 This approach meant Digifest was a varied and imaginative programme, often tailored to specific needs in different parts of the county, or for specific segments of the community. Yet at the same time all the activities were library-based, they all built digital skills, and they all made use of library WiFi and contributed to the County Council's strategic objectives.

7.11 One of the most popular Digifest events was the "Next Steps Genealogy on WiFi" session. The session was designed around people bringing their own devices and re-tracing the research methods of a heritage specialist. It was aimed at those with a little knowledge of genealogy research and local

history resources such as Births and Deaths, and the Census. The session introduced less obvious resources such as Parish Maps and Poor Law records. The two hour session structured around a real case study which had been prepared by Norfolk Libraries' local heritage librarian. Participants followed the heritage librarian through these online resources using their own tablet and laptop computers – made possible of course by the library WiFi. The learning goals were to understand how to access the library WiFi, to improve genealogy skills, to learn about a wider range of local history resources and to be inspired to find out more about family history.

"One lady had children in Australia and wanted to tell them about their family. Once person's father had been a prisoner of war in WW1… There was buzz at the end when people realised they had gained the confidence to do it themselves…. They had found out via our posters, our social media."

7.12 Several events during Digifest were planned with Norfolk's district council partners. One library branch set up an information stand in their library offering information on energy saving, healthy housing, and grants for home improvements. Alongside learning sessions in the library using tablets, this was tied to the launch of a new District Council support programme which uses WiFi to support older people in their homes by enabling their relatives to monitor things like heating and room temperatures over the internet.

7.13 Other libraries ran sessions to introduce users to Health and Wellbeing apps which are available on people's own phones and tablet computers. One event encouraged the public to explore and use Norfolk's eBook, audiobook and Zinio magazine offer – again using their own devices which they had brought to the library and connected to the WiFi.

7.14 Some activities were pitched as basic digital skills like a series of 'Keeping in Touch' sessions. These were designed for people with or without their own tablet device but who wanted to learn how to use email, Facetime and Facebook to keep in touch with friends and family.

7.15 A 'Digital literacy for Under 5s' session was pitched at parents and carers to help them gain the skills so that they in turn could support their children's digital literacy and use IT confidently with them.

7.16 The level of participation in Digifest is one measure of its success. But for every activity, data was also collected against the original success measures. For example the event to show people how to use to Norfolk's eBook, audiobook and Zinio offer had an objective of enabling users to access digital content independently. The team running the session had selected several evaluative statements to test this including "I feel more confident about using tablet" – and they found 100% of those who took part agreed with this statement. As well as providing evidence that the session had achieved its intended aims, this result could also be compared other activities where the same evaluative statement had been used – to see how it compared.

7.17 A significant (although financially small) benefit of the Arts Council funding mentioned by several community librarians was that Norfolk Libraries were able to offer tea and coffee at the sessions which added a greatly to the welcoming feel of the sessions – the library service call this an example of 'convivial practice'.

7.18 And finally, to provide qualitative evidence of outcomes across the whole of Digifest, staff recorded comments and observations about the impact on the public.

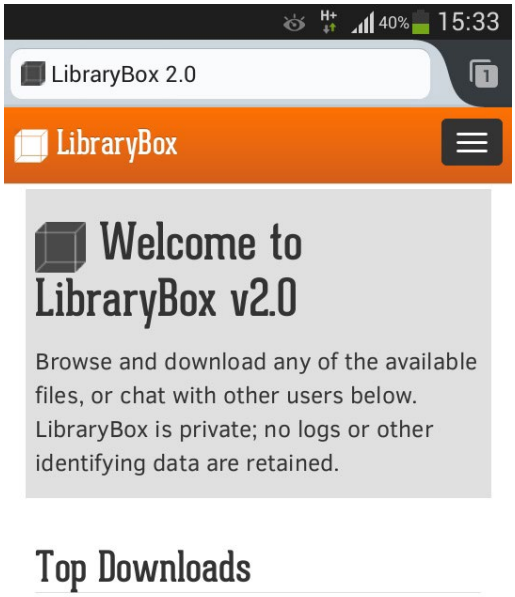
"A dyslexic adult who finds iPad easier to use than conventional IT because of their visual context was able to share some of his skills and gain new insights".

"We used the MiFi to load the Zinio app onto her iPad and register Mrs R with Zinio. She successfully downloaded two magazines and explained that she used to read a lot but had stopped when she had a long period of ill-health. She was now back using the library again and loved the thought of magazines and couldn't wait to read them".

8 Case study: Manchester Libraries

Using 'hidden' WiFi to encourage discovery and access

8.1 Imagine you are on the ground floor of Manchester Central Library. On one side is the brightly lit café, through a glass wall you can make out the dimply lit archive stacks, and all around are the cabinets and exhibits of the Archives+ public exhibition. As you scan on your phone for the library's public WiFi you notice another network with a strong signal called "Archives+ Surprise me" - intrigued, you hit 'Join Network' to see what happens.



8.2 It lets you on and when you launch your browser you are re-directed to a page with links to a short list of files with names like "Manchester Alphabet. PDF" and "First-hand account of the Somme.MP3". You can't seem to connect to other websites except this one – so you dig in deeper and try playing the MP3 audio file. It turns out to be an oral history recording of a Manchester-born survivor of the First World War.

8.3 What you have discovered is a LibraryBox. It is a 'captive WiFi portal' meaning you can connect to it by WiFi and access anything stored on it, but it has no onward connectivity to the internet. Each LibraryBox is slightly bigger than a deck of playing cards and Manchester Libraries have hidden three of them in different locations in and around Manchester Central Library.

8.4 LibraryBoxes are just one of several WiFi experiments undertaken by Manchester Libraries to discover new ways to add value for their communities, create more impact, and inspire through information, reading and knowledge. They have also run a large programme of 'Tablets on Tour' to raise confidence with touchscreen devices for the public and their own staff, held a Wikipedia 'Edithon' focused on Manchester's LGBT history, and experimented with using 3D virtual reality headsets to enable the public to explore rare archive items and experience life in a WW1 trench.

8.5 But in many ways the LibraryBox experiment is the most innovative and stretches our perceptions of a library – not least because this is about reaching people by deliberately hiding material in order for it to be discovered. Manchester got the idea from Newcastle Libraries' Carnegie Library Lab project, who in turn heard about it from LibraryBox in the US who invented it. The LibraryBox team sell boxes themselves and will mail them to the UK, but the project is open-source and they also supply free instructions on how to make your own – which is what Manchester have done at a cost of around £50 for the components to make each box.

8.6 LibraryBox was originally invented to enable "the sharing of digital information in areas where there is no internet access or where access is intermittent or restricted in some way". The idea is that "anywhere there is a lack of open internet access, LibraryBox can bridge the gap of information delivery". LibraryBoxes are now used in many ways and in many countries around the globe, but expanding access to free information remains central to their application.

8.7 In Manchester the idea has been to use LibraryBoxes to draw in new audiences. Installing them without any signage or explanation means they are a true 'discovery' for people who may have high level digital skills, but low awareness of what the library service can offer. Manchester are also experimenting with LibraryBoxes as a way to provide location-specific audio descriptions for visually impaired users.

8.8 The current three LibraryBoxes each have content for different purposes. One contains items from the archives in a range of formats (text, audio, video) to highlight the main themes of Central Library's Archives+ public exhibition which is installed around the ground floor of Central Library, another is designed for visually impaired users and contains audio descriptions of Archives+. The third contains First World War content and has been situated so that its range extends beyond the library out into St Peter's Square and to public seating surrounding the Manchester Cenotaph which is located a few yards from the steps of Central Library.

8.9 For two weeks in March Manchester Libraries had all three LibraryBoxes running and they monitored how many times the files in the three boxes were downloaded. Bearing in mind the project was unadvertised, and a known technical issue meant some IOS/Apple devices had trouble connecting, the results show exciting potential. In fourteen days, there were 196 downloads of the documents, and audio or video files. The most frequently downloaded was a video about the history of Manchester Central itself (downloaded 53 times in 2 weeks), followed by an eBook about Manchester's role in WW1 (downloaded 32 times). Compared to the amount of public use which archives items typically receive, this is impressive to say the least.

8.10 So what next? Encouraged by this experiment Manchester Libraries are now looking at how they can improve the LibraryBox experience and make it easier to use; a smarter-looking welcome page, more carefully curated and labelled content, and teaser campaigns using social media to drop hints that collections have been 'hidden' around the City.

8.11 In future, LibraryBoxes could be used as the basis of games and challenges – to find 'hidden' collections or to engage the curious and tech-savvy in the City's cultural gems. Educational games might play on the idea of seeking and searching (think of Geocaching and treasure hunts). LibraryBoxes could also serve-up digital archive materials to provide interpretation at the exact locations to which the materials relate (a digital interpretive board, crossed with a museum audio-guide – but on city scale).

8.12 Within libraries it has also proved a simple effective way to provide audio descriptions for visually impaired users in the exact locations where they are relevant; this being less about discovery and more about non-visual signage.

8.13 There is something too about the anonymity of connecting to a LibraryBox which could be developed. It is true that visitors can discreetly browse shelves of physical items without anyone knowing what they are looking at. But for some subjects like debt advice, mental health, or male cancers – perceived stigma can be so strong that it prevents even casual shelf-browsing.

8.14 And what about encouraging the public to respond to the materials they discover – whether it is archives, literature, audio or video? Could the excitement of discovery be channelled into the creation of new content which others then discover – tapping into similar trends to those which have led to the explosion of fan fiction and fan art, or indeed making, hacking, and mending?

8.15 There is something both creative and illicit about logging onto a WiFi network when you are not sure what it is, and something thrilling about discovering there are valuable things hidden inside – items from Manchester's unique collections. Tapping into these emotions through a captive portal could open up entirely new forms of sharing, lending and learning, and create new roles for public libraries.

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