Opportunity Spaces

Community Engagement in the Planning, Use and Governance of Shared School Facilities

Working Paper #2:

Schools as Community Hubs: Mobile Learning

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1. **Key Points**

The concept of schools as community hubs encompasses the use of shared school resources outside or alongside the formal hours of schooling. School-based digital resources – such as Wi-Fi and learning content – could provide an excellent springboard for schools to engage with a larger proportion of families and/or community members. Shared digital school resources discussed in this working paper include the use of bring your own device (BYOD) and Wi-Fi network access to educational content and apps, and the provision of Wi-Fi connected shared-use spaces comparable to cybercafés or Wi-Fi-enabled public libraries. An agile, ‘platform-agnostic’ approach to shared-use digital resources can:

- Support evidence-based investment in school-based digital literacy.
- Deliver wider partnerships between local government, schools and local stakeholders.
- Demonstrate more efficient use of school assets to engage local stakeholders, as well as offer opportunity for limited revenue generation.

A number of interesting examples are beginning to emerge which substantiate these claims. For example the DEECD-funded ‘iPads for Learning’ project extended learning beyond the classroom, improved parental engagement and strengthened home-school links. This project emphasised that mobile learning projects – as with most educational initiatives – require quality teaching and support to be successful, not just innovative systems (DEECD, 2012c).

Educational policy-makers and school principals are advised to embrace the opportunities provided by rapid deployment of low-/no-cost educational apps and resources. This can be achieved through more light-weight policy directives and processes in which departments serve to recommend and curate online/mobile resources, rather than operate as a gatekeeper to them.
2. **MOBILE LEARNING AND SHARED SCHOOLS**

The term ‘mobile learning’ can refer to a range of learning methods or systems delivered via a handset, smartphone, tablet, laptop or bespoke device. As smartphones become more affordable and feature increasing screen size and resolution, mobile learning can converge with online learning to further facilitate ‘anytime, anywhere’ learning products and services. Content and apps designed for ubiquitous delivery must appeal to pupils in order to provoke productive engagement, but they must also be pedagogically sound and form part of a blended learning strategy that integrates with classroom curricula. These challenges are significant since mentors and teachers need to have sufficient access, expertise and time to monitor pupil participation, while pupils need opportunities for independent discovery. Within the context of the Opportunity Spaces project, mobile learning may also provide a springboard for schools to engage a larger proportion of families and/or community members around shared resources, both physical and digital\(^a\).

Australia’s national broadband project was initially proposed in 2003 when broadband was synonymous with wired services and dialup was still predominant (ABS, 2013). The current National Broadband Network (NBN) proposal was initiated by Telstra in 2007 when wireless internet service accounted for only 9.2% of online access (ABS, 2007). Ultranet was proposed in 2006 and the DER was launched in 2008, the same year the iPhone was released in Australia. Therefore much of the debate surrounding the national broadband project occurred before wireless was a significant technology. Throughout the initial 2003 proposal, wireless broadband barely existed. Consequently the project was conceived within a paradigm which does not fully recognise the impact of wireless broadband. The capabilities of smartphones and their attendant 3G / 4G services – in conjunction with Wi-Fi – create both urban and regional opportunities for mobile learning that might be better exploited by more current policy. As a result this report focuses on the opportunities that mobile learning presents and the barriers it may encounter.

\(^a\) e.g. Astute Labs’ ‘School App Kit’ for communication with pupils and parents: [http://schoolapppk.it.appspot.com/start](http://schoolapppk.it.appspot.com/start)
Opportunities, barriers

At time of writing it is estimated that 65% of Australians have a smartphone (Wilcox, 2013) and this proportion is increasing rapidly. Many young people are seldom away from their mobile devices (Vodafone, 2012) which account for an increasing proportion of internet access. A Harvard Business Review survey (2013) indicates that 46% of mobile usage time is spent on entertainment such as gossip and games, 19% socialising, 4% for discovery and 1% for self-expression. Therefore – in ideal circumstances – mobile content and devices can provide an opportunity for people to engage with each other and with shared resources, potentially occupying some of the discretionary ‘me time’ that makes up the biggest proportion of mobile device interaction. However it is also acknowledged that any such content must compete with a wide range of entertainment and social networking apps.

Although many game / entertainment apps are free at point of download, the relatively high demand for skilled and experienced mobile learning developers can mean that robust learning apps are comparatively expensive to produce and buy. But even as the numbers of educational app designers multiplies and development costs reduce, the diversity of mobile platforms can present a further barrier to educational policy-makers looking for universally-accessible cross-platform solutions. At present mobile devices and apps by Apple Inc. are preferred within some educational environments but that preference is not reflected in the wider community where Android devices account for almost 80% of new devices sold (CNET Australia, 2013). Apple asserts tight control over release of apps for iPhone / iPad devices which can push smaller software developers towards the Android platform.

While the battle for device and content supremacy wages in some classrooms, others have remained a comparative online desert. Desktop computers supplied to schools in NSW under the DER could only go online via a proxy server operated by NSW Department of Education and Training. This facilitated very strict filtering of permitted sites: if a site was not known to the administrators, it was blocked (Tung, 2008). The effectiveness of this kind of top-down filtering system is increasingly questionable in an environment where pupils might have unrestricted access via personal mobile devices.
3. **PHYSICAL AND MOBILE SHARED USE**

Shared-use schools have significant potential to utilise mobile/social media in order to provide communities with both a physical and virtual presence. The planning of mobile learning resources should not be separated from consideration of physical spaces. Nor should it be focused entirely on teachers and pupils – a study of school-centred community hubs the NSW Blue Mountains region found that parents /caretakers valued the opportunity to interact within shared-use school spaces (Singh & Woodrow, 2010).

While many schools received new libraries or multi-purpose halls under the Building the Education Revolution (BER) program, requests for alternate resources (including digital) from some principals were not supported by BER’s funding guidelines (Facchinetti, 2010). Furthermore a number of school principals are unlikely to have the in-house skills and resources required to design and implement effective shared resource programs including consideration of the social, technological and economic factors which shape such programs. For example the rollout of student laptops in NSW under the Digital Education Revolution program was not adequately supported with assistance to connect them, leading to delayed implementation at some schools (Facchinetti, 2010). Much of the support required by school principals in planning shared resources is likely to come from the immediate community, but this is one area in which education departments could provide best practice guidelines. Nevertheless multiple physical spaces in schools are made available for community use and have potential to be repurposed as digitally-enabled spaces via Wi-Fi or other networking systems including classrooms, halls, workshops and libraries.

**Wi-Fi and BYOD**

As with many previous new technology roll-outs, some commentators have suggested that Wi-Fi is an essential learning tool (e.g. Lalonde, 2013) which will revolutionise the classroom environment (e.g. Whitby, 2013). From a pragmatic viewpoint the ‘desktop revolution’ in schools has required substantial ongoing funding commitments to computer labs, software licenses, wired networks and skilled staff training and retention. The school wireless revolution differs in a number of important ways:
- The physical addition of Wi-Fi hardware to current sites can be easier, quicker and cheaper than ‘wiring’ a building.
- The increasing affordability of personal mobile devices (i.e. smartphones and tablets) can allow schools to deploy a bring-your-own-device (BYOD) policy rather than providing wired desktop hardware for pupils.
- As part of BYOD, low-/no-cost content and apps can be integrated into learning activities which can be conducted in school and/or at home, rather than relying solely on desktop software packages only available at school.

It should be emphasised that there are multiple network challenges around implementing and maintaining wireless communication for multiple types of personal device, which in turn requires the availability of trained IT support staff (although third-party solutions exist specifically designed for Victorian DEECD schools[^2]). The key question for planners is where and when digital resources will be available and to what extent schools will control – and/or take responsibility for – these resources. Rather than mandate strategy in this regard, NSW Department of Education & Communities guidelines stress that BYOD is an optional strategy which remains at the discretion of individual schools in consultation with the community[^3]. Despite such technical challenges, such is the attractiveness of the wireless revolution that increasing numbers of schools have committed to providing reliable on-site Wi-Fi access network for pupils and staff, with varying degrees of mobile hardware provision. Sudbury Primary School in outer London is rolling out a substantial on-site Wi-Fi network alongside the provision of 180 mobile devices shared among pupils (Atkinson, 2014). A new US$98 million campus at El Capitan High School in central California features wireless access points in every classroom: new pupils have the option of bringing their own device or being issued a tablet by the school. This hardware and network initiative enables the delivery of compulsory online assessment (Wong, 2014).

Previously many education departments have restricted digital content to on-site access only. A number of resources remain accessible to teachers only – for example the Australian Government’s Scootle Community[^4] initiative allows teacher-only access to

[^2]: http://vimeo.com/85479139
[^4]: http://www.esa.edu.au/projects/scootle
resources from the National Digital Learning Resources Network. However the mobile paradigm forces a reconsideration of restricted access policies. In the USA, the state of Georgia has chosen to share its existing digital resources with the wider community through an online home-schooling system (“Georgia Virtual Learning”) that piggybacks existing formal online curriculum materials. Education Queensland’s ‘Learning Place’ eLearning environment provides a variety of routes for schools to engage parents online as well as pupils (DETE, 2013). In Victoria and elsewhere the use of existing social networks as a teaching tool is now becoming more established, having overcome the “stigma” associated with cyberbullying (Barclay, 2013b)

A range of tried and tested examples suggest how a Wi-Fi-enabled shared-use space could be implemented by a school. The cybercafé model provides a wired or wireless connection that is free within a small area such as a coffee shop or restaurant. Some schools would likely have halls and libraries with space that could be equipped with public-access Wi-Fi and co-located with basic catering or childcare facilities, hence providing a revenue generation opportunity. Such a facility could add further intangible value to pupils, staff, parents and/or the local community by encouraging engagement with the kind of educational content and services discussed above. Another successful model is free Wi-Fi provision by public libraries, which was originally resisted by much of the Australian sector as an inappropriate distraction from core business. Yet the 2006 redesign of the State Library of Queensland featured Wi-Fi access and lounge areas for BYOD visitors. The now-widespread popularity of such features is evidenced by their use at municipal and state libraries (e.g. State Library of Victoria). Comparable shared-use access could be introduced by school libraries funded by BER – indeed some formally designated school-community libraries already provide such access. Additional sponsorship could be sought from telecoms providers by consortia of schools on the understanding that their Wi-Fi services assist with data offload – an approach already being used by some local councils. Additional cost-effective options could include Wi-Fi access to designated pupils at existing shared-use libraries such as the Hume Global Learning Centre, Broadmeadows (Victoria).

5 http://www.georgiavirtuallearning.org/Parents.aspx
4. NETWORKS AND CONTENT: EXAMPLES

The previous section discusses how Wi-Fi networks and affordable personal mobile devices can support smaller-scale initiatives to engage schools, pupils, parents and the community through and mobile learning. It is likely that schools in urban or peri-urban communities will be one of multiple locations in which Wi-Fi might be available; hence the role of the school in the local ‘information ecology’ may be subsidiary. In contrast a Wi-Fi-equipped school in a regional and rural area may be one of few sites to provide access, therefore its potential contribution to the local community could be significant.

This section provides an overview of two major government-supported network initiatives that impact schools: the National Broadband Network (NBN) and the Digital Education Revolution (DER). Both projects were conceived at a time when mobile communication was far less prevalent and this raises questions about the appropriateness of their underpinning strategies. The NSW DER initiative includes a range of content projects which can facilitate engagement in learning by pupils and parents away from the classroom. The Ultranet initiative in Victoria exemplifies some of the issues surrounding top-down implementation of centralised, restricted access networks. The Victorian Auditor-General’s Office 2012 report criticised the ‘technological determinism’ surrounding some major government ICT projects. VAGO’s findings highlight a growing realisation that access to online resources does not automatically deliver engagement (Watkins, 2010) – a lesson that has relevance for both Ultranet and NBN.

**National Broadband Network**

As in prior comparable projects, much of the rhetoric around Australia’s NBN confused the ability of the network infrastructure to allow access to online education and training with what are sometimes perceived as inherently innovative teaching methods. For example an interactive online drama course provided by the Bell Shakespeare Company out of the Sydney Opera House to high school pupils in Willunga was described as providing “Australian students [with] the learning tools they need for success in today’s digital world” (Barclay, 2013b). Yet while the drama class would likely be a rich educational experience facilitated by high-speed internet, it is unlikely that any of the pupils increased their digital literacy significantly during this class.
The NBN project remains politicised, as the method of implementation represented a key point of difference in the 2013 Federal election. Based on a Liberal/National Party pre-election policy document (2013), NBN will now be achieved as a phased project that relies on existing copper-wire infrastructure to deliver broadband into most existing premises. However the document forecasts “download data rates of between 25 and 100 megabits per second for the whole nation by 2016” (DETE, 2013, p. 7). It also states that schools may be among preferred sites where the roll-out of fibre is retained (DETE, 2013, p. 6). According to an NBN draft internal report the proposed target date of 2016 is unlikely and the plan will require remediation of some existing copper wire network (cited in Philipson, 2013). The politicisation of the NBN infrastructure roll-out may hide the reality that this is an ambitious and expensive project which through its very nature will continue to meet unexpected delays. In response, a strategic approach to short- to medium-term educational policy would be to plan ICT-enabled projects around existing infrastructure, whether wired, wireless or offline: Gosford City Council (NSW) has become a licensed telecoms carrier and is developing its own cloud computing strategy to work alongside NBN services (Braue, 2014).

NBN Co. has started trials in communities surrounding Armidale, Ballarat, Geraldton, Toowoomba and Tamworth. These pilot sites – along with 40 other locations – will host ‘Digital Hubs’, a component of the ‘Digital Communities’ program designed to provide basic computer and internet training to the community. Hubs will be “operated by eligible service providers who will provide training through a mixture of group sessions and one-on-one tutorials” and hub staff will provide “training and assistance” (DBCDE, 2011). There is inconsistent information on government websites about the level of funding to be provided for the project.

The Federal Government provided further funding of $27 million for 12 pilot programs under the NBN-enabled Education and Skills Services Program. This program aims to foster the use of new technologies “to offer better access to education and training opportunities” (Barclay, 2013b). Funding was allocated to 13 organisations for a range of educational projects that include virtual classrooms, teleconferencing, remote learning and similar distributed-participant models. The project was intended to deliver:

- High-definition, internet-protocol television, video-on-demand and three-dimensional trade skilling packages.
• Open access courseware combining University and TAFE content, free to the user from any NBN footprint.
• Open learning and support services for teaching professionals.
• Cloud technology, enabling software licensing to the server to ensure individuals do not pay licence fees.
• Enhanced community access services for 30 regional community technology centres in NSW.

Whilst video conferencing, remote lessons etc. have been available for at least a decade, they have been expensive and unattractive due to broadband limitations. All of these services were expected to leverage the NBN’s ubiquitous and reliable high-speed broadband to deliver engaging and timely content. One education example is a partnership between NSW TAFE, New England Institute and University of New England. This was funded through the National Partnership Agreement under the Digital Regions Initiative – an arrangement that indicates the complexity of funding for such initiatives, with no single body having complete responsibility. A comparable program was developed by the Canberra CIT and Fire & Rescue NSW, demonstrating how such resources can be exploited. The program delivers e-learning resources to 6,000 rural fire-fighters throughout NSW via live video feed (NBN Co, 2012). This avoids the cost and disruption that would be involved in providing face-to-face sessions. If programs under the NBN-enabled Education and Skills Services Program are successful, it is reasonable to expect they might operate on a similar model.

Digital Education Revolution (DER)

DER was a universal program which targeted pupils in Australia in years 9-12 without access to a laptop to ensure they have digital training and are not ‘left behind’ in the ‘information age’. DER was a top-down initiative negotiated between Federal and state governments. NSW and Queensland determined computer selection at state level, while other states and territories allowed individual schools to select appropriate devices (including iPads in some cases) from an approved supplier list. The total cost of DER was reported as $2.4 billion, with $1.4 billion for hardware and a further $807 million earmarked for the costs of implementing the computers (Australian National Audit Office, viewed 2014).
Some commentators have suggested that DER has made a significant contribution to ICT access (e.g. Head, 2012). The final round of funding was allocated in May 2013, leaving schools with the challenge of providing devices for new pupils and to replace outdated devices. Following the 2013 national election it seems likely that future Federal funding will not be made available for digital devices. A policy document issued shortly before the election referred to “simple and sustainable funding” and makes no reference to digital projects or fostering digital skills among pupils (Liberal National Party, 2013). On this basis it seems most likely that any evolution of the Digital Education Revolution is more likely to be based on a BYOD model despite challenges of configuration, management and device affordability for low-income families (Wright, 2013).

**DER NSW**

The DER NSW program comprised four major projects funded through the National Secondary Schools Computer Fund:

- Rollout of laptop computers to each Year 9 cohort to achieve a 1:1 ratio.
- Installation of a wireless network in all learning spaces in NSW secondary and central schools.
- Provision of professional learning and curriculum support.
- Employment of school-based Technology Support Officers.

NSW Government used DER to provide a number of digital resources for pupils, parents and teachers to enhance education and improve digital literacy, accessed via the NSW DER Collection (Figure 1 below). Additional curriculum resources are also provided for years K-6 and 7-12 (DEC, 2011b). Examples resources include:

- **Digital Citizenship.** This interactive site assists primary and secondary pupils with appropriate use of social media. Guidelines are provided to parents on social media usage at home and support information for teachers. Funding is provided by the state government (DEC, 2011a). Some links are to external websites e.g. ‘Learn the Net’ is run by a private company out of San Francisco.
- **Laptop wraps.** An online resource that “‘wraps’ engaging technology around existing content” (DEC, 2012). This interactive site is available to all and aims to provide learning tools for English, mathematics, science, Human Society and
Its Environment, Technological and Applied Studies, physical education, languages and creative arts.

- **School A to Z.** Not only does NSW recommend apps, the education department has actually made an app which was named one of the best educational apps in 2011 by Apple Australia’s App Store Rewind⁶. ‘School A to Z’ has been used across Australia and in China, Indonesia, USA and UK.

- **Rainforest Heroes.** Made by NSW Curriculum and Learning Innovation Centre in collaboration with Taronga Zoo⁷, this app allows pupils to be ‘research assistants’ and record information about the animals in the zoo.

![Figure 1: NSW DER Collection resources portal.](http://lrrpublic.cli.det.nsw.edu.au/lrrSecure/Sites/Web/14159/)


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**DER VIC**

Broadly speaking, less publicly accessible educational content is available in Victoria compared to NSW since such content was intended for distribution by the now-defunct Ultranet (see next section). Victoria’s Department of Education and Early Childhood Development (DEECD) does offer more open access curriculum support via its Digital Learning Showcase (DEECD, 2012a) – see Figure 2 below. Victorian government schools are linked by the VicSmart broadband network supplied by Telstra. Launched in 2005, DEECD estimated a cost of $89.3 million for the VicSmart project (DEECD, 2012b). In 2011 the Victorian Education Minister suggested that the VicSmart fibre network could be shared with NBN Co. (Hopewell, 2012).

Victoria’s 2011 DEECD Innovation Showcase highlighted specialist science and mathematics education centres established at five high schools and on campus at La Trobe University (DEECD, 2011). These centres have more extensive and up-to-date facilities than are ordinarily found in schools. The facilities are open to all schools to visit and DEECD provided $2.7 million for ICT infrastructure to facilitate online learning outreach programs which aim to expand access, provide a broader range of learning materials for pupils and provide learning opportunities for teachers to improve their content knowledge.8

In terms of mobile learning, Victoria has trialled the iPads for Learning program by distributing more than 700 iPads preloaded with a selection of educational apps to pupils at ten sites, generating favourable feedback from some teachers (e.g. Barclay, 2013a). The aims of the iPads for Learning project included the extension of student learning beyond the classroom, improved parental engagement in learning and strengthened home-school links (DEECD, 2012b). Initiatives of this nature could be well-suited to mobile learning for shared school projects. This project was funded by DEECD which reported that the trial evaluation claimed to have “shown that all of these outcomes can be achieved through the effective use of iPads. But it is quality teaching and support that makes this possible, not just the device” (DEECD, 2012c, p. 1).

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The Ultranet example highlights some of the issues involved in many large multi-stakeholder government ICT projects. Ultranet was conceived as online educational content management system for government schools in Victoria which would:

- Improve responsiveness to individual learning needs
- Provide better information to parents, the school system and government
- Improve the efficiency of the learning environment and school administration


Multiple aspects of Ultranet were substantially criticised by the Victorian Auditor-General’s Office (VAGO) including project rationale, tendering, procurement and user engagement. The Ultranet proved to be ‘clunky’ and therefore ineffective in engagement, with VAGO estimating that only 10% of pupils and 27% of teachers logged in to Ultranet on a monthly basis from July 2011 to May 2012 (Victorian Auditor-General's Office, 2012, p. 13). The VAGO report criticises DEECD’s change management strategy:

“DEECD did not adequately manage the change processes required to maximise the Ultranet’s acceptance and, therefore, the state’s return on
investment. Teachers and parents were not appropriately trained and supported to use the Ultranet. Ultimately, the Ultranet is only a technology tool, and cannot by itself deliver the benefits intended from it”.

After an estimated spend of $180 million, Ultranet was shut down in December 2013 (Figure 3 below).

Figure 3: Ultranet home page, displaying a final shutdown message
Source: https://ultranet.vic.edu.au
5. **CONCLUSION**

Current shared-use policy focuses on physical facilities with little discussion of whether and how school digital resources might be more widely used. This is evidenced by both BER and the Victorian Competition and Efficiency Commission’s 2009 inquiry. The *Opportunity Spaces* project argues that this is a significant policy gap which requires redressing in twenty-first century educational provision, particularly where compulsory years schooling is located within life-long learning.

This working paper has considered directions for mobile learning within a shared-use school environment. An agile approach to shared digital school resources acknowledges that strictly top-down design and provision of online/mobile learning content and services (e.g. the failed Ultranet project in Victoria) is increasingly irrelevant and inappropriate to an environment in which such content is available at low-/no-cost via personal mobile devices. This ease of availability and relative low cost of provision presages a future of increasingly rapid obsolescence for digital educational resources. In response this working paper supports projects such as the NSW DER Collection\(^9\) which serves as a portal to educational programs from both public and private providers.

The potential for ‘new’ media to revolutionise formal education has been a talking point for decades, encompassing radio, television, video, videoconferencing and many other new media of the day. Arguably it is the higher level of engagement made possible via online access to innovative content which has started to realise some of the more ‘heroic’ visions surrounding ICT-enabled education. However, such innovation is not an automatic outcome achieved by the inexorable process of technological determinism, but rather requires planning, design and maintenance by experienced stakeholder teams.

ACKNOWLEDGEMENTS

*Opportunity Spaces* is a three-year research project undertaken by RMIT University and University of Canberra. It examines community engagement in the planning, use and governance of shared school and community facilities. The project runs from 2012-2015 and is jointly funded by the Australian Research Council and the Victorian Department of Education and Early Childhood Development (DEECD).

The project has three phases: 1) a strategic review of relevant policies, programs and literature in the broad field of shared school facilities; 2) fieldwork at three Victorian sites where public school facilities are shared or co-located with local government and/or not-for-profit organisations, and 3) an evaluation and project write-up phase. See http://oppspaces.wordpress.com

This working paper is one of a series that together comprise the first phase of the project, focussing on policy and literature review and program evaluation. The series includes:

- *Community Use of Schools – A Policy Overview* (2013)
- *Schools as Community Hubs: Mobile Learning* (2014)
- *Schools as Community Hubs: Measurement of Effectiveness* (2015)
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