



Acknowledgements

The Department of Education, Training and Employment would like to acknowledge all contributors to the BYOx research project including:

Noosa District State High School

Jindalee State School

Murrumba State Secondary College

Calamvale Community College

Benowa State High School

Dr Maureen O'Neill, University of Sunshine Coast



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Executive summary

Bring Your Own 'x' (BYOx) is a term used to describe a digital device ownership model where students and/or staff use their privately owned devices to access the departmental network and information systems in an educational setting.

The BYOx acronym used by the Queensland Department of Education, Training and Employment (DETE) refers to the teaching and learning environment in Queensland state schools where privately owned devices are utilised. The 'x' in BYOx represents more than a privately owned device, it also includes software, applications, connectivity or carriage service and appropriate behaviours. The BYO elements covered by the 'x' will increase in number and complexity over time as BYO programs in Queensland state schools mature and technology evolves.

This report is not an endorsement of BYOx; it portrays a snapshot of the major elements of BYOx that Queensland state schools should address if such a program is to be considered for a school community.

There is no one size fits all approach for BYOx. This report highlights a number of school based business models, associated support materials, potential issues, planning considerations, recommendations and conclusions required to implement BYOx programs.

The department manages extensive information technology infrastructure and provides policies and procedures relating to appropriate use of the network. Schools currently implementing a BYOx program do so with full knowledge and acceptance of the associated risks and responsibilities. Existing information and communications technologies (ICT) infrastructure, to better accommodate BYOx, is planned to be upgraded in Queensland state schools by the end of 2013.

This research identified five device selection models for implementing BYOx programs and provides advice on each so that, should a decision be made to progress with BYOx, school communities may identify a strategy most suited to their school context.

The research strategy encompassed specific techniques for collecting and analysing data. Case studies were conducted at five different state schools located in south-east Queensland. Data was collected separately at each of the schools by a nominated school-based researcher to ensure the integrity of the school-based process.

The report acknowledges that the research conducted has limitations, including:

- the focussed engagement of five state schools from a total of 1240;
- all five schools located in south-east Queensland;
- limited representation of special schools, small schools, rural and remote schools and outdoor and environmental education centres; and,
- the challenge of engaging key school staff to participate in a research project without detracting from their core business.

Data and feedback received from schools that engaged with this BYOx research project determined they:

- consider BYOx as a progression to a more flexible and evolved 1-to-1 program
- see BYOx as a response to expectations of contemporary learners and the wider community
- consider BYOx as a solution to address a shortfall in funding that currently limits a school's capacity to provide a 1-to-1 computer fleet without parent contribution
- require additional support materials and guidelines to assist with planning considerations for BYOx
- recognise departmental processes and frameworks allow BYOx to be integrated into existing school practices.

The department acknowledges critical areas of concern for schools considering BYOx include the need to:

- address potential equity issues
- identify strategies or forums to enrol the whole school community
- maintain compliance with departmental policies, procedures and guidelines
- ensure school wide pedagogical review informs decision making
- gauge staff readiness for BYOx
- plan the move from the safe, secure and filtered Managed Operating Environment (MOE) to an environment where the school principal may be required to implement local solutions
- source appropriate resources and support to manage the implementation of BYOx
- identify total costs of introducing BYOx.

Recommendations for the department:

- provide BYOx advice and support to schools
- provide schools with updated policies and procedures that incorporate BYOx
- provide schools with definitive information on approved procurement processes and potential BYOx centralised management options
- accept identified business requirements for BYOx to inform future planning of the department's infrastructure or services

- provide schools with a solution that allows privately owned devices to be used on the network by staff, students and community, which minimises the risk to network and information security or threats from malware viruses
- ensure access to quality professional learning appropriate to the school BYOx context.

Introduction

This report provides an overview of the five school case studies and consequent findings.

Results of the case studies and related discussion points follow.

Results include:

- Device selection models for a Bring Your Own x program – outlines the five device selection models that were assessed for suitability by the five case study schools with associated key components. Examples of each model are provided, as well as a table outlining the advantages and disadvantages.
- Four Steps to Implementing BYOx – outlines the origin of the four steps and elaborates on the elements the five case study schools identified as key considerations.

Points for discussion include:

- Why implement a Bring Your Own x program? – provides a snapshot of 1-to-1 laptop programs, considerations for and against privately owned devices and implementing BYOx in the school context.
- Considering curriculum and pedagogy – identifies the need to map school curriculum and pedagogy in alignment with BYOx in the school context.
- The contemporary classroom – outlines contemporary teachers and learners in relation to assessing school readiness for BYOx. A number of links to digital resources are provided to assist schools with decision making.
- Leadership and change management – highlights the need for school leaders to introduce BYOx programs within existing departmental frameworks to support staff to deliver sustainable and effective 1-to-1 programs.
- Infrastructure and resourcing considerations – provides information on the business requirements identified by a wide range of schools to implement BYOx. Additional resourcing requirements identified through the same processes were also reported.

The report concludes with recommendations for consideration by the department and conclusions drawn.

Research methodology

Case studies

The BYOx research project involved case studies from five different schools. Research indicates that the drawing of meaning and meaningful real-life experiences is best determined from using a case study (Yin, 1984). The five schools that participated in this research project were:

- Noosa District State High School
- Jindalee State School
- Murrumba State Secondary College
- Calamvale Community College
- Benowa State High School

There was a limitation that the schools participating in the research project were clustered in south-east Queensland. However, the range of selected schools included:

- primary school to P-12 college
- single site school settings to multi campuses
- well established school (1963) to newly established school (2012)
- one Flying Start school
- three Independent Public Schools
- existing international student program
- existing 1-to-1 laptop programs

School-based researchers

The five schools were provided with funds for a school-based researcher to carry out in-depth research within the school community, coordinate the research evaluation process and to ensure the integrity of the school-based process.

All five school principals and nominated school-based researchers attended an initial two day workshop where they were provided with research articles and information about the BYOx research project.

School-based researchers evaluated supplied materials that included:

- a range of BYOx literature
- BYOx device selection models
- a guide for implementing BYOx
- documentation on school and community consultation and engagement
- documentation for curriculum and pedagogical mapping
- documentation to assist with technical considerations
- documentation to assist with decision making – social justice/equity and policy

Each school case study reported on different aspects of BYOx:

- Noosa District State High School – ‘Four steps to implementing BYOx’ process
- Jindalee State School – community consultation and engagement
- Murrumba Secondary College – technical considerations
- Calamvale Community College – BYOx device selection models in a P-12 school
- Benowa State High School – curriculum and pedagogy review

Research partner

As part of this research project, Dr Maureen O’Neill from the University of the Sunshine Coast was engaged as a research partner to:

- assist with the facilitation of effective research practices
- provide advice and guidance to the school-based researchers
- ensure the BYOx research products were developed utilising sound research methodologies.

School case studies

Noosa District State High School

Noosa District State High School is a co-educational secondary school comprised of a Year 8-9 campus in Pomona and a Year 8-12 campus in Cooroy in the Sunshine Coast hinterland. It is an Independent Public School with approximately 1300 students.

Planning for BYOx – a school view

During Noosa's community consultation process educational decisions were made using the paradigm of Learning communities which focusses on the site based actions of the school. It helps consider the interactions of individuals within the group and plan for these interactions (Sevigny, Provost 2006).

Maintaining a learning journal that documents key decisions was seen as very beneficial to implementing BYOx. Useful focus areas suggested by the school:

- reading points – literature review
- decisions
- barriers/ solutions
- technical decisions including software review

Step 1: Investigation

Feedback from the school aligned with the project team's view that thorough reading prior to planning for BYOx is essential. Their reference group believed material provided by the department was overly centered on existing successful case studies that did not challenge departmental models. However, some of the literature outlined solutions that the system could not currently deliver.

Forums utilised by the school for the discussion of BYOx included parent information sessions in 2005, 2006 and again as part of laptop rollout sessions during 2011 to 2013. Through school conducted surveys, parents indicated the desire for BYOx; however some groups indicated strong support for the current co-contribution model. The requirement to discuss insurance issues and social justice was identified. It was felt this needed to be addressed in some depth at these forums as these issues require management within the school.

A process to map the utilisation of ICTs in pedagogy and the curriculum was seen as useful to help align vision with reality. The mathematics, English, science and social studies departments thoroughly mapped their current curriculum and teaching practices and identified areas to improve use of technology to engage students. The process also aligned with existing work within The Art and Science of Teaching (ASOT).

Step 2: Initiation

Noosa District State High School indicated the implementation plan and essential policies section needed to be developed together and run concurrently. It was thought that one needs to inform the other to minimise risk to delivering a successful BYOx program. Engaging with the implementation plan and considering the essential policies informed the BYOx vision.

Documented processes responding to issues involving the use or misuse of technology at a school level need to be uniform and consistent. Noosa District State High School see a developmental requirement to enhance teacher's knowledge and acceptance of technology in teaching and learning contexts. It is anticipated this will assist with more uniform and consistent responses to inappropriate student behaviour involving technology, similar to current whole school approaches to support students. There is a proposal to develop linkage and model restorative practice within a technology setting.

A Responsible Use Policy (RUP) is preferred over an Acceptable Use Policy (AUP) as it reflects a more educative approach. There are a number of similarities between RUP and restorative practice – using similar language will help illustrate the links for staff between the two. Work is continuing to promote restorative practice across a range of classroom settings.

Addressing social justice through school policies is seen as an important management issue at the school. Three main areas are of concern are:

- insurance coverage and liability for damage or theft of devices
- equity – access to and/or different types of devices
- cost of supporting an equity or rental fleet and determination of the standard of the supplied device

Step 3: Implementation

Surveys indicated parents were willing to provide a device however many parents were apprehensive about device protection and security. Protection of the device was the main parental concern, not students accessing inappropriate material. The school currently has lockers available and this helps allay some physical security concerns. Insurance and finance are additional identified areas of parental concern.

Printing was predicted as a potential issue for BYOx. The school is currently evaluating printer hubs as a way of reducing the number of printers and integrating with the delivery of a BYOx solution.

Step 4: Integration

School staff reported that reviewing and reforming the BYOx work which had been completed should precede launching into a trial, rather than be the final step of the BYOx process. They also believed an annual review needs to be conducted, as policies and technologies change rapidly.

When reviewing the success of BYOx schools should include a core sample group of the original survey or focus groups and enrol additional members in the process. This will assist with keeping ideas fresh. Groups may need to be capped as large group meetings become unwieldy. The review process was viewed as good practice to undertake, with the caveat that any particular model may not allow for site based decisions to be owned by the community. It was felt the review needed to link back to the communication strategy, with any changes clearly communicated to the wider school community.

BYOx device selection model/s

BYOx device selection Models 4 and 5 were identified as allowing for the development and implementation of the program going forward.

Messages to share

1. Planning and implementing BYOx is a nonlinear process, with a number of activities that can be undertaken in parallel. The reality of the process sees you shift focus between steps when completing tasks to plan for and implement a BYOx program.
2. A review of curriculum and pedagogy provides data to inform planning processes. Initial data from the review indicates school readiness; it also informs the change management process and the ongoing integration of BYOx in a school.
3. The areas requiring consideration prior to the introduction of a BYOx program creates a surprisingly complex, time consuming and involved process. The range of considerations within the four steps must be attended to in light of individual school contexts if BYOx programs are to be successful and sustainable.

Jindalee State School

Built in 1966, Jindalee State School is a primary school located in the western Centenary area of Brisbane. The school has approximately 900 students from preparatory through to Year 7.

The school has had an established eLearning and 1-to-1 laptop program from Year 4 upwards since 2009. Digital learning experiences commence in prep.

The ICT leadership team believes a BYOx future is important to ensure Jindalee State School's overall vision can be realised.

Jindalee State School vision: Creating a clever future today.

Jindalee State School declaration: Through innovation, creativity and a futures orientation, we are the community of tomorrow.

Jindalee State School eLearning vision: Jindalee State School will be a leader in incorporating eLearning strategies to engage and empower all learners (teachers and students), preparing them to contribute confidently, effectively and innovatively within global communities.

Community consultation and engagement

The school has undertaken regular targeted information sessions on BYOx across the school community. A number of the outcomes from these community engagement sessions are now shaping BYOx at Jindalee State School and represent excellent learnings for any school considering BYOx.

Key amongst the learnings is the need to establish a clear understanding and alignment between the school leadership team and the broader school community on:

- Knowledge and understanding of BYOx. Misconceptions and differences of understanding at all levels of the school community pointed to the need for ongoing community engagement. It was noted that:
 - Parent's knowledge of BYOx is varied. Many parents view BYOx as an opportunity to have free choice in their child's preferred device use at school, however this was not the case at the school. A key challenge was to ensure parents can make an informed decision when required and, at the very least, support school decisions as this agenda progresses.
 - Current student's knowledge of BYOx is based on the existing Jindalee 1-to-1 laptop program. Students have a fairly good idea of the BYOx concept.
 - Staff knowledge of a BYOx is now quite high due to the staff BYOx information provided to date. Because of the complexity of BYOx and various levels of engagement by staff there remains some misconceptions about the details of a BYOx Program, including security, safety of the device, expected engagement with ICT in the classroom etc.

- The extensive consultation and engagement process has allowed the school to ensure a well informed and supportive school community with the capacity for a successful BYOx program.
 - The majority of parents (estimated to be more than 80 per cent) at Jindalee State School have the capacity to support a BYOx program.
 - ICT is normalised throughout the school in 75 per cent of classrooms. The remaining teachers use ICT intermittently.
 - Professional development for staff has been identified as key to the success of a BYOx program. Staff skills, knowledge and understanding are identified as essential ingredients to a successful BYOx program.
 - A curriculum review is essential to identify why a BYOx program is beneficial. The outcome of the curriculum review will shape the BYOx program for the school.
 - A pedagogy review is beneficial in terms of assessing how the school as a whole will approach BYOx. It also helps to identify expectations, and ensure consistency.
 - Currently students at the school have access to a range of devices including iPads, iPods, laptops, and tablets at home.
- Jindalee State School noted that the regular targeted information sessions were critical to ensure that parent, student and staff questions are answered in a timely manner; appropriate parameters for the BYOx program are clearly communicated; ensuring a high level of engagement with the program.
- The school recognises that not all parents can and will fund the technology for their child and has developed, in consultation with the school community, an equity plan to ensure no student will be without access to an appropriate level of technology. The initiatives include:
 - access to school owned devices whilst at school
 - school organised payment plan
 - parents and citizens rental scheme
 - having blended arrangements of 1-to-1, 2-to-1, and 3-to-1 with the pedagogy mapped accordingly.
- Jindalee State School has also identified the value of engaging with businesses and other education providers within their local community.
 - There may be an opportunity to utilise some local businesses, particularly parent owned businesses, in terms of the provision of training for staff. However, the school does have some concerns about the capacity of local suppliers to provide the necessary ongoing technical and warranty support required for student owned devices.

- Currently a number of other local schools are trialling and considering BYOx. There is an opportunity to collaborate on lessons learnt from each school setting.
- As Jindalee progresses a BYOx program to meet parental expectations and support contemporary learning, it is essential that the local secondary school engage with such innovations or risk alienating students and disengaging parents.

A project plan has been developed that clearly outlines an engagement and communication strategy to ensure parents are given an opportunity to contribute their thoughts on the BYOx program. Information will be provided in paper-based form, on the school website and on parent information nights. Staff have the opportunity to contribute at an ICT committee meeting and at BYOx staff meetings.

Other strategies include:

- discussions with other schools in the region
- staff, parent and student surveys
- parent ICT workshops
- technical support
- sharing BYOx research and project planning with parents and staff via meetings, newsletters, etc.

Overall the BYOx project communication process needs to be open, transparent and consultative to ensure the complexities of implementation and ongoing management are identified and addressed as the project evolves.

Messages to share

1. An open, transparent and consultative communication process needs to be established to ensure the BYOx project has a greater chance of success. Communications need to utilise a multitude of strategies including print, web and face-to-face opportunities. The school community also needs to be given an opportunity to contribute their thoughts on the BYOx program.
2. The school needs to address the equity considerations to ensure there will be school owned devices for students to use where parents are unable to afford participation in a BYOx program.
3. Professional development and a strong coaching and mentoring program will need to be in place for the effective use of devices in teaching and learning.

Murrumba State Secondary College

Murrumba State Secondary College opened in January 2012. It is located in the Murrumba Downs and was the first Flying Start School in Queensland. The school has approximately 575 students.

During consultation, before the opening of the college, the community indicated a desire to have control and ownership over students' devices. BYOx provides the school community with a 1-to-1 model that is flexible, cost effective and future proofed.

Technical considerations

Murrumba State Secondary College undertook an assessment of the technical requirements to allow for the introduction of a BYOx program to align with current pedagogical frameworks. Currently, the school operates a limited BYOx program where students participating in the Engineering Excellence Program (EEP) are able to bring their own device. The considerations identified are as a result of the learning achieved through the BYOx associated with the EEP; understanding and experience with the 1-to-1 computer to student program; curriculum and pedagogy requirements; and alignment with the college vision.

Software licensing is considered to be a key consideration in the provision of a standardised learning platform. Currently the college manages this process by utilising a virtualised desktop environment to ensure all connected devices deliver the same software and learning experience. However, there is also an understanding that a virtualised solution is unlikely to be supported by the strategies being adopted by the department. The college has identified needs including:

- standardised software applications provisioned via the cloud to ensure a consistent experience across a range of devices, for example Microsoft Office 365
- clarification of the educational software licences for use on students' personal devices
- solutions to address the compatibility issues associated with Internet Explorer 10 in Windows 8.

Security and access are areas that need to be carefully considered. Some of the issues that the college has identified include:

- virus and malware management to ensure that a personally owned device has a current antivirus installed before being allowed to connect to the school network is essential
- students need to be able to connect to their BYOx device to the school network
- Murrumba State Secondary College is fortunate to have full wireless coverage across the entire campus and a 10Mbps Wide Area Network (WAN) connection – delivering BYOx without this would be challenging.

From a device management and support perspective the college has identified that in a BYOx environment:

- The role of school supplied technical support, whilst still necessary, will change to more of a customer service type role as the key device relationship agreement will exist with the BYOx supplier rather than the college.
- The college is managing the educative process of ensuring students bring their devices to school fully charged by having only limited access to charging stations during lunchtimes.
- The college is focused on providing minimum device specifications, including information on battery life and device durability. At this stage a restrictive model is not being considered by the college.

Messages to share

1. Ensure your BYOx technology aligns with pedagogical framework and vision of the school. There is also need to consider the device capabilities and whether minimum specifications need to be established.
2. Software requirements and licencing issues need to be addressed. This is a challenge at this time as many educational software companies are yet to define their BYOx agreements.
3. Extensive wireless network coverage is essential to ensure BYOx access to connected learning resources is essential. Aligned with this is the need to focus on the WAN bandwidth capacity to ensure effective delivery of the learning content.

Calamvale Community College

Calamvale Community College opened in 2002. It is an Independent Public School and has more than 2000 students from Prep to Year 12. Students work in smaller, semi-autonomous sub-schools: lower junior (Prep to Year 2), upper Junior (Year 3-6), middle (Year 7-9) and senior (Year 10-12).

Calamvale Community College has run a 1-to-1 laptop program for a number of years. Computers are increasingly being used in Year 10-12 classes. Requests from students and families for students to bring their own devices commenced more than 12 months ago. Students have a desire to use devices they are familiar with and many families are prepared to provide a device for their child to work on, both at school and home.

Why are they considering BYOx?

Calamvale Community College has made additional investments in ICT infrastructure and resources. It established eLearning programs including a 1-to-1 Technology Scheme and Daily Loan program. As these programs evolve, it is seen as a natural progression for the college to transition to a BYOx program. The school will be guided in the process by a leadership philosophy of educationally and developmentally appropriate devices purchased with purpose.

A 1-to-1 program has been in place for three years, influenced by [Symphony of Teaching and Learning](#) and [Marzano](#). These whole school pedagogy coaching and feedback models were an advantage when determining readiness for BYOx.

The college has seen an increasing demand from students and families to bring their privately owned electronic devices, such as laptops, iPads, iPods, smartphones and mobile phones, to utilise as tools for learning in class. Small numbers of students, particularly in the middle and senior schools, currently use privately owned devices, some with their own unfiltered internet access. As educators, Calamvale Community College staff feel they have a responsibility and a unique opportunity to investigate the challenges and work on solutions to make BYOx a manageable option – ‘Am I creating a one year future or a 100 year future? What am I building?’

BYOx device selection model

The model to be implemented at the college changed over the duration of this research. Recognising that one size does not fit all, Calamvale Community College considered a differentiated BYOx device selection model to meet the educational and developmental needs of students in the various sub-schools. Student needs will continue to be central to the decision making and considerations as they continue to move to a BYOx environment.

Several suitable educationally appropriate devices were identified including laptops, tablets and iPads. The type of device utilised aligned to curriculum requirements and relevant student development.

Senior School: Year 10-12

Initial consideration for a BYOx program in this sub-school was a blend of BYOx and 1-to-1 models. In Year 10-12, a laptop used 1-to-1 was deemed appropriate both educationally and developmentally.

For students entering Year 10-12, a laptop of their choice, which met specific device specifications as a low end or high end device was deemed suitable. This represented a twist of Model 4.

Families of students in Year 11-12 who participated in the 1-to-1 Technologies Scheme had the option of continuing in the current program, with the current devices and financial commitment, or to participate in the Senior School BYOx program. These initial considerations were made prior to confirmation that the National Secondary School Computer Fund (NSSCF) program would discontinue.

An equity program support students unable to participate in a BYOx program. Students borrow and return a laptop on a daily basis, or utilise desktop computers in the computer lab. Students use any laptop or tablet that meet minimum size, software and capability specifications. At this stage, the school is not introducing iPads, however are keeping this in mind as a future option.

Middle School: Year 9-7

Initial consideration for a BYOx program in this sub-school recognised that Middle School teaching and learning environments are unique and must cater for different learning and social needs.

Calamvale Community College Middle School currently hosts two enrichment programs – the Academic Enrichment Program and an Athlete Development Program – which the school-based researcher identified as potential programs to trial a 1-to-1 learning environment. It was identified that BYOx would further assist students to achieve their academic goals in these programs.

A BYOx device selection option reflecting Model 5 was considered for this sub-school, with an equity program. Students used any device which could connect to the internet, however minimum size, software and capability specifications were required be met. These students bring devices including laptops and tablets.

Junior School: Upper Junior Year 5-6, Lower Junior Year 3-4, Year P-2

Initial consideration for a BYOx program in this sub-school recognised that from the youngest early childhood students to the oldest members of the Junior School, a purposeful decision to meet the educational and developmental needs needed to be considered.

Early in the planning process it was thought a school supported program could be introduced, consisting of kits of educationally and developmentally appropriate devices. This would allow for essential hands-on and practical learning experiences not to be overshadowed by gadgets in the

foundation years of learning. Whilst not BYOx, these considerations point to the fact that BYOx is one facet in the total school ICT planning process and cycle.

In Year 3-4, early consideration was given to Model 3 with a school selected choice of approved devices, meeting some specific capabilities, size, and weight and containing particular software. For example, eTablets – iPad, iPad mini or Android devices.

In Year 5-6, early consideration was also given to Model 3, with a school selected choice of approved devices, meeting some specific capabilities, size, weight and containing particular software was identified to be suitable.

A BYOx device selection option reflecting Model 5 was considered for this sub-school, with a supporting equity program. Students would use any device which could connect to the internet, however minimum size, software and capability specifications were required be met.

Messages to share

1. Scalability will be addressed through small scale trials planned for the Middle School in Semester 2, 2013 and Junior School in the near future. The strength of the college is the ability to match devices to the phase of learning, curriculum and pedagogy.
2. Principal leadership is critical to other implementation of BYOx. Working with heads of curriculum in each sub-school is integral to determine suitability to meet the educational and developmental needs of students. Heads of Curriculum in each sub school model and conference as instructional leaders of teachers to develop teacher pedagogy.
3. Whole school planning considerations, and the involvement of sub-school heads as experts in their phase, are required to influence ICT decisions to ensure the focus is on age appropriate pedagogy and not the device.

Benowa State High School

Benowa State High School is a co-educational secondary school founded in 1980. The school is located on the Gold Coast and has approximately 2000 students.

Benowa developed a clear vision for ICT in 2010 and, as the school moves to BYOx, this vision continues to be realised. Benowa is a 1-to-1 laptop school. In 2012, the school extended its NSSCF laptop opt-in take home program offer to all students in Year 9-12.

Curriculum and pedagogy review

A review of curriculum and pedagogy provides data to inform planning processes.

Student technology skills at the school are increasing. It is important that teachers gain skills and confidence with the use of ICTs through well targeted professional development on a regular basis in preparedness for ongoing pedagogical change. Discussion and sharing of ideas is a process that is ingrained in the culture of the school. It is designed around all subjects to gauge if change in classroom practices can be shown to lead to improved student outcomes.

Curriculum and pedagogy reviews

Heads of department (HODs) conducted the following curriculum and pedagogy reviews.

Curriculum review

For each subject, HODs populated a template listing the ICT requirements of each course of study offered, the current method of delivery and what alternatives, if any, there are to the current model.

Pedagogy review

For each subject HODs populated a template identifying how each subject is currently delivered both in and out of the classroom and how normalised the use of ICT is.

General findings:

- The use of technology in all subjects is on a daily basis.
- Teachers use OneNote as the preferred program to deliver their lesson plans. Activity sheets for easy student access, web links for research and links for blogs and discussion boards set up in Learning Place are imbedded in OneNote.
- The school has projectors in every classroom which has been the norm for many years.
- Students have access to Clickview, a program that delivers video on their own laptops.

Mathematics – junior maths Years 7-10, senior maths Years 11-12

Findings:

- There are many resources that have been created online.
- There is extensive use of calculators and Microsoft Excel.
- A partnership with Griffith University allows students to access excellent software programs.
- The integration of ICTs in the classroom is at the discretion of individual teachers and largely dependent on their level of confidence and expertise.
- It was identified that entering Maths equations accurately onto tablets is difficult in senior maths classes. Maths apps and programs available online will be investigated.
- At present, leading maths staff are on track with how they are delivering their pedagogy in the classroom.

English – junior English, senior English

Findings:

- Students are very familiar with using PowerPoint for multimodal assessment. They can record voice overs or present in person.
- The English department's use of technology is embedded practice.

Science – junior science, biology, chemistry, physics, earth science

Findings:

- ebooks are used on a daily basis in the science classroom.
- Internet used for research.
- The science department's use of technology is embedded practice.

History – junior history, modern history, ancient history

Findings:

- Students also have access to Clickview, a program that delivers video on their own laptops.
- Students have e-books for Year 9-10 history aligned with the national curriculum.
- The SOSE department's use of technology is embedded practice.

Business Communications and Technology – Senior Syllabus 2012

Findings:

- The use of technology is normalised in the area of Business Communication and Technologies. It is mandated in the senior syllabus that 120 hours of technology must be incorporated in Year 11-12.
- In the business world technology use is the norm and it is the role of schools to educate students for the real world.
- Historically the area of business has driven the use of technology – this has been the case at the school.

Projected BYOx device selection model

Benowa State High School is currently considering a BYOx trial for Year 8. Students will have the option to bring or purchase a laptop that must meet minimum specifications as directed by the school and bring one other device, iPad or smartphone, when required.

Hence device selection Model 2 was the best fit for the school, with one specific school selected device, plus students can bring an additional device. All specific school selected devices run the same operating system.

Year 8 trial considerations

- Funding for 1-to-1 may not be available. It is essential the school trial a BYOx program to better achieve value for money and to fulfil community expectations for the ongoing development and benefits of established ICT in the classroom.
- To be able to fit BYOx into the existing vision.
- The curriculum audit identified where ICT is being used well and could sustain and inform a trial BYOx model.
- There is a high degree of teacher readiness.
- The school is in the process of establishing 20 iPads for use in small Year 8-9 language groups.
- The school wants to be able to adapt the processes they already have in place to try and minimise re-inventing the wheel.
- The school prefers to proceed with caution and take a step-by step approach with a narrow range of devices and carefully thought out equity arrangements.
- A targeted, small group of students involved in the trial will be surveyed before and after to identify any change in student outcomes.

- The school was mindful that every day every student wants everything now. These expectations are shared by the parent community and flow on from the successful implementation of the 1-to-1 vision.

Messages to share

1. Schools are very busy and complex environments. Scheduling professional development can be challenging. Consultation with union/staff delegates is important and can identify staff concerns as part of the leadership process.
2. Implementing Symphony of Teaching and Learning as a whole school approach provided coaching and feedback models that were an advantage when determining school readiness for the 1-to-1 NSSCF and now with the implementation of a BYOx program.
3. Dialogue between the school and local primary schools needs to be considered as part of a coordinated approach that addresses possible inconsistencies with digital pedagogies and community expectations of 1-to-1.

School findings

Process to guide implementation

A four step process was developed through consultation and feedback. There was a strong view that each of the steps should conclude with review and reform. A review of a school BYOx program was seen as crucial to continuous improvement and responding to community needs. It was suggested that BYOx programs should be reviewed and reformed regularly.

Planning for implementation

The identification of technical requirements, mapping against curriculum and pedagogical practice, sourcing and testing of devices, and vendor management was identified as a time consuming process.

Device selection models

As part of this research project, a number of BYOx device selection models were proposed for consideration by schools. The five case study schools had a definitive view of which model was relevant to their school context. School expectations of what a BYOx program should achieve shifted a number of times as research continued.

Social justice

Equity was identified as a major consideration for the implementation of BYOx. School-based researchers reported social justice is largely being addressed through the provision of an equity or loan pool. The researchers identified that potential cost savings identified in the initial planning stages are likely to be required to fund and maintain the equity pool.

Social justice is currently addressed through:

- a daily loan scheme which is run through a book room
- payment plans for parents
- a senior and junior phase HOD of social justice
- ability to bring a broad range of suitable devices that have minimal specifications and thus cost
- identification of students that need assistance, costs often then covered by the school or an outside agency
- provision for costs to be spread as a term payment or as an upfront payment.

Curriculum and pedagogy review

An extensive process that maps curriculum and pedagogy was not seen by the five case study schools as a priority for the BYOx process. It was identified that the pedagogy mapping could be combined with the curriculum mapping documentation.

Professional development

Professional development with a realistic budget was seen as critical to the success of BYOx. The task of increasing staff knowledge was seen as a challenge due to the demands of day to day teaching and time available. The curriculum and pedagogy review was seen as a worthwhile process to assist identification of content for professional development.

Community consultation

Accessing key people was seen as problematic in the larger school settings. Communication was seen as a crucial process that should be open, transparent and consultative to increase the chance of a successful BYOx program.

Policy

Researchers recommended that schools move from Acceptable Use Policy (AUP) to an educative Responsible Use Policy (RUP). It was reported that the guidelines need to be comprehensive to pre-emptively address potential local issues. The concept of aligning the language of restorative practices with a RUP was identified.

Learning journals

Opinions on the use of learning journals range from being vital to the process to not being useful due to time constraints. The use of a learning journal by school-based researchers in the five case study schools was sporadic.

Quality of project documents

Feedback on the usefulness of documentation provided to research schools by the project team was quite diverse. Favourable responses mirrored a need for BYOx information relative to a school's context. The documentation on learning journals was seen as least useful and the information on BYOx RUP as the most useful.

Results

Selecting a business model for BYO device program

There is no one size fits all approach to BYOx. The appropriate model of device selection for a school is determined by the school community and culture.

Five BYOx device selection models

As part of this research project, a number of BYOx device selection models were proposed for consideration by schools. These models ranged from a highly regulated, with a specific school-selected device, to a flexible model where students could bring any device that could connect to the internet. These models were based on the work of Dixon and Tierney (2012).

After consultation five business models of device selection were found to be appropriate for consideration:

- Model 1: one specific school-selected device
- Model 2: one specific school-selected device, plus students can bring an additional device of their choice
- Model 3: school-selected range of approved devices
- Model 4: any device that meets school determined minimum specifications
- Model 5: students bring any device which can connect to the internet, suits their learning style and meets their specific curriculum needs

BYOx

Device selection models



Model 1

One specific school-selected device.



Model 2

One specific school-selected device, plus students can bring an additional device of their choice.



Model 3

School-selected range of approved devices



Model 4

Any device that meets school determined minimum specifications.



Model 5

Students bring any device which can connect to the internet, suits their learning style and meets their specific curriculum needs.

Regulated



Flexible

BYOx – the range of device selection models in action

Model 1

The [Queensland Academy for Science, Mathematics & Technology Years 10-12 \(QASMT\)](#) is implementing Model 1, with one specific school-selected device.

QASMT Parents and Citizens Association conduct an annual tender for Windows tablet devices with leading computer manufacturers. A suitable device is selected based on value for money and performance. The chosen device is made available as a one-off purchase to Year 10 students and is utilised until the completion of their studies.

Model 2

[St Luke's Grammar School](#) is implementing Model 2, with one specific school-selected device, plus students can bring an additional device of their choice.

BYO has been in place since 2010 with Year 11-12 students bringing a netbook, laptop or tablet computer which access the school's student Wi-Fi network. The program currently caters for students in Year 8-12, with an iPad program in place for Year 7 students.

Students are permitted to use up to two devices on the Wi-Fi network, one laptop and one e-book reader. Smartphones or game consoles are excluded from acceptable additional devices.

Model 3

[Waverley College](#) is implementing Model 3, with a school selected range of approved devices.

Access from personal devices at Waverley College is limited to internet and email use. Students are unable to access documentation saved on the school network using their privately owned device.

The school-selected range of approved devices include:

- a Mac laptop or personal computer
- An iPad; a personal computer tablet or an Android tablet

Model 4

[Lincoln Community School](#) is implementing Model 4, with a laptop that meets the school determined minimum specifications.

Lincoln Community School recommend suitable specifications and software to students, providing detailed requirements on their [school website](#) to guide parents or students purchasing a device. An example is below.

Machine type	Laptop
Platform	PC/Mac
Screen size	13 inches or more
Processor	Intel i3 or higher AMD Athlon II or higher
RAM	2GB or higher
Hard drive	160GB or higher
Operating system	Windows 7 Professional or higher, Mac OSX 10.6 or higher
Wireless	802.11g or higher
Ports	2 USB ports, audio in/out, in-built microphone, VGA
Battery life	4+ hours (6+ cell or higher)

Model 5

The [Illawarra Grammar School](#) is implementing Model 5, with students bringing any device which can connect to the internet, suits their learning style and meets the specific curriculum needs.

Students in Year 7-12 are required to provide their own portable ICT device for classroom use. The school allows students to access their wireless network with wireless enabled devices. School initiated research identified that the majority of students already possessed a suitable device.

A successful BYOx school based model of device selection

A successful BYOx model should provide students with outcomes that include:

- improved student learning outcomes through the use of technology that facilitates learning
- students developing and maturing as digital citizens – embracing digital opportunities and responsibilities
- normalising technology use between the school and home
- greater autonomy in the classroom
- improved motivation and increased engagement
- increased comfort and confidence using a familiar device students can use for learning immediately
- opportunities to collaborate on projects with students from other schools

- using technology that is appealing at home that can also be appealing and interesting in the classroom
- rapid development of technological skills for increased future employability.

(Alberta Government, 2012; Lee, Levins, Hubbard, & Freedman, 2013; Ministerial Council on Education, Employment, Training and Youth Affairs, 2008; Nielsen, 2013; Wainwright, 2013; Sweeney, & Intelligent Business Research Services Ltd., 2012)

A successful BYOx school based business model needs to be equitable, affordable, scalable and sustainable. It should support high quality teaching focused on the achievement of every student.

Essential BYOx attributes schools must address	Targeted outcome
Equity	Home circumstances, ethnicity, language, religion, gender or disability have no bearing on differences evident when comparing student academic outcomes.
Affordability	Maximised student participation rates, no duplication in the expenditure of public money in areas such as licensing, imaging or network costs. A sound return on investment.
Scalability	Ability to trial BYOx in a number of classes or year levels, then expand by building on successful processes. Seamless downscaling, should unforeseen circumstances warrant it.
Sustainability	Address the attributes of equity, affordability and scalability. BYOx program implementation within existing IT infrastructure, with provision for upgrading the local network. Alignment to the school improvement agenda, school culture and community expectations.

Advantages and disadvantages of BYOx device selection models

Components		Model 1	Model 2	Model 3	Model 4	Model 5
Advantages	Demand for teacher to troubleshoot device issues in class may be lower	●	●	○	○	
	Planning considerations may be based on one device and software suite	●	○			
	Devices have the same capabilities – potential benefits with licensing, support, curriculum delivery	●	●		●	
	Lower demands made on the school network	●		●	●	
	Technical support may be less complex	●	●	○	○	
	Set parameters for device capability ensure suitability for use	●	●	●	●	
	Set parameters for device capability may simplify teaching, planning and assessment	●	●	●	●	
	Some students may already have a suitable device		○		●	●
	Offers greater flexibility – student selected free choice of device		○			●
	Students take responsibility for device maintenance	○	○	○	●	●
	User determined price range		○		○	●
	Students work with a device that is personalised to their learning style and preferences		○		○	●
May reduce social justice issues					●	
Disadvantages	Restriction to a specific device may limit student's ability to be innovative	●	○	○	○	
	Greater demand on teachers to manage technical challenges			○	○	●
	Lesson planning/pedagogy needs to cater for multiple devices/software/applications/operating systems		○	○	●	●
	AUP/RUP policies may require updating		●		●	●
	Potential to increase demand on the school network		●		○	●
	Teachers and technicians required to be familiar with multiple devices/software/applications/operating systems		●	●	●	●
	Potential liability/insurance issues		●		●	●
	Potential issues managing unfiltered access on 3G/4G		●			●
	Potential network and information security issues	●	●	●	●	●
	Compliance with software licencing increases in complexity		○	●	●	●
	Reduced capacity to leverage bulk purchasing benefits			○	○	●
	May address equity – for students who can't afford or don't have a device				○	●

Model 1: one specific school-selected device

Model 2: one specific school-selected device, plus students can bring an additional device of their choice

Model 3: school-selected range of approved devices

Model 4: any device that meets school determined minimum specifications

Model 5: students bring any device which can connect to the internet, suits their learning style and meets their specific curriculum needs

Key:

● Likely

○ Possibly

□ Unlikely

Four steps to implementing BYOx

Four steps to implementing BYOx originated from the [21 steps to 21st century 1-to-1 successes](#). The 21 steps resource may be used by school communities implementing 1-to-1 student laptop programs.

The five case study schools assisted with the refinement of the process. The five case study schools advised that the implementation process was not a linear progression, nor a one size fits all approach. Many tasks are undertaken in parallel and there is some cross over from one step to the next. Schools implementing BYOx programs are strongly encouraged to review and revise their progress at the completion of each step.

The Four steps to implementing BYOx are:

- investigation
- initiation
- implementation
- integration

Elements of the four steps process

The elements from the four steps which generated the most discussion from schools were:

- stakeholder consultation
- equity considerations
- budget considerations
- policy considerations
- importance of adequate professional development

Stakeholder consultation

The stakeholders identified by the case study schools included:

- parents
- community
- P&C
- students

- school staff
- central office, regional and district Education Queensland staff, Regional Technology Managers
- school communities or clusters
- local community representatives
- business representatives.

The ability to access key people at all stages in the process, and to do so in a timely fashion, was seen as problematic. The desirability of a process for effective consultation outside of existing P&C or school council forums was raised. One school made educational decisions using the paradigm of learning communities which helped to consider the interaction of individuals within the group and plan for these interactions (Sevigny & Prevost, 2006).

Equity considerations

To ensure that all students have the same opportunity to achieve, schools need to identify and implement a range of strategies. Equity in the five case study schools was largely addressed through the provision of an equity or loan pool of devices. Other social justice considerations additional to the provision of an equity pool included, insurance, excess, warranty and hire scheme considerations.

It is critical that equity pool devices have the same functionality as the rest of the BYOx fleet. A loan pool of inferior devices sourced cheaply or for free does not give all students the same opportunities or experience. Each time a loan device is used by a student that is not able to supply their own, they will make their own assessment regarding the degree to which they or their learning are valued by the school community.

Potential cost savings that may have been identified in the initial planning stages are likely to be required to fund and maintain the equity pool. School decisions to maintain laboratories of desktop computers under BYOx will have implications on school budgets.

Budget considerations

There are a range of identified budget considerations for schools to address when considering a BYOx program.

Some Queensland state schools are considering their options and contingency planning in response to the cessation of NSSCF. Schools reported the desire to maintain a 1-to-1 computer to student ratio in Years 9-12 has initiated debate about the most appropriate approach to maintain the status quo.

The prospect of cost shifting the purchase price of computer devices from school budgets to parents under a BYOx program is appealing for schools. However, by allocating responsibility for the purchase

of expensive school materials to parents, a marked increase in parental expectations is anticipated. The cultural change that BYOx brings will create opportunities for enhanced school and community relationships through a shared commitment to a quality education for children.

If the budget is the main consideration for adopting BYOx, then the appeal will reduce when the real cost of implementation is calculated. Additional school-based infrastructure, technical support and bandwidth upgrades are obvious areas that may require attention. The absence of central office processes and support increases the total cost of BYOx programs in schools. Additional considerations, responsibilities and costs (time and money) for activities for schools to consider include:

- provision and maintenance of an equity pool of BYOx devices
- potential requirement to maintain computer laboratories for media studies and other discipline areas which may have a dependency on high end equipment
- possible additional infrastructure costs required to ensure that network security is maintained when a complex BYOx program is implemented or the local network or bandwidth requires an upgrade
- the time taken to research, consult, plan and identify BYOx devices which meet pedagogical and curriculum requirements
- investigation, testing, configuration and recommendation of devices by school staff in the absence of a preferred supplier arrangement for BYOx computer hardware – schools are able to align recommendations made to the community with devices on the Queensland Government preferred supplier arrangement list ([QGCPO 861-12](#)), however the cost savings from a bulk procurement arrangement will not be passed on to parents.
- there is a risk that parents will purchase devices that are not fit for their intended purpose and experience issues in relation to vendor support
- investigating compliance with relevant departmental policies and procedures, ensuring that the BYOx model implemented and devices utilised do not compromise network security, information privacy or other policy and procedural considerations
- administrative costs – integration of the relevant aspects of a BYOx program into existing school based documentation, communication and website
- procurement, vendor liaison and Service Level Agreements require expertise, time or perhaps dedicated staffing that may become a significant issue in a BYOx environment
- first level support for students that are experiencing difficulty with their device and the subsequent assistance for students and parents to identify and navigate the process for device replacement or repair under the warranty arrangement (vendors will most likely require schools to be the first point of contact for warranty claims)

- potential increased costs for professional development dependent on data collated in the initiation step of implementation and the number of unfamiliar devices which may be introduced into classrooms
- identifying technical requirements, sourcing and testing devices, vendor management and mapping pedagogical practice is a time consuming process.

Policy consideration

Policies for consideration when implementing BYOx:

- [Appropriate Departmental Collecting, Securing, Accessing, Amending, Using and Disclosing of Personal Information](#)
- [Acceptable Use of the Department's Information, Communication and Technology \(ICT\) Network and Systems](#)
- [Maintaining the Security of Department Information and Systems](#)
- [Using Non-Departmental Online ICT Services where Personal Information is provided](#)
- [Malware and Malicious Code Prevention](#)
- [Safe, Supportive and Disciplined School Environment - Behaviour Plan for Students](#)
- [Student Resource Scheme](#)
- [Managing Risks in School Curriculum Activities](#)
- [Queensland Procurement Policy](#)
- [Purchasing and Procurement](#)

Refer to Appendix 2 for further policy considerations.

Professional development

The department supports the personal and professional growth of all its employees by developing workforce capability. Catering for the contemporary learner and assisting them to develop the 21st century skills necessary to thrive in educational, social and recreational settings will require structured professional development for all staff at all stages of their career.

'The key challenge is how to lead staff on pathways that ensure efficient use of effective pedagogies while minimising the amount of professional development and staff downtime required. This is and will always be ongoing' Noosa District State High school-based researcher

The constantly changing nature of ICTs requires staff to develop, refine or maintain new skills, knowledge and approaches to delivering the curriculum. Staff must ensure they cater for students preferred modes of learning when supporting student learning needs.

The links below provide access to materials for staff to identify opportunities for building their capability and for leadership teams to plan whole of school professional development programs.

- [DETE Induction](#)
- [Valuing Performance Policy Statement](#)
- [DETE Induction Strategy](#)
- [Developing Performance Framework](#)
- [Education Queensland Professional Standards for Teachers](#)
- [Induction resources and planners](#)
- [Beginning teacher induction](#)
- [Queensland College of Teachers](#)
- [The Learning Place](#)
- [Professional development calendars](#)

The Cybersafety and Reputation Management team provide face-to-face and online OneChannel presentations for staff and students on various facets of online social technologies including:

- proactive uses and benefits of social media
- current and upcoming trends in social technologies
- strategy ideas for professional, educational and school promotional purposes
- digital citizenship, reputation and footprint
- key issues relating to online privacy and cybersafety
- responding to incidents of reputation management and online bullying.

For further information or to request a presentation at your school email Cybersafety.ReputationMangement@det.qld.gov.au.

Discussion

Discussion point one: Why implement a Bring Your Own x program?

The fundamental shift in the role of the teacher is to move from being the source of knowledge to becoming the initiator of environments where students create and interact with knowledge in real, relevant and contextualised situations (O'Neill, Nixon, & Hodson, 2007).

A device in the hands of every student

The department recognises that 1-to-1 programs are a critical component in an international move towards individualised learning. Participation in 1-to-1 programs is associated with:

- increased student and staff technology use
- increased student engagement and interest levels
- modest increases in student achievement.

(Bebell & O'Dwyer, 2010)

The provision of a 1-to-1 computer to student ratio and infrastructure has largely been enabled through government funding, the most recent being the federally funded [National Secondary School Computer Fund](#) (NSSCF). NSSCF provided a 1-to-1 computer to student ratio and supporting infrastructure for Year 9-12 Queensland state school students in December 2011.

'From the current 1-to-1 technology scheme, daily loan program, and investment of infrastructure and resources across the school, it seems a natural progression to move to a BYOx program. We are guided by a leadership philosophy of educationally and developmentally appropriate devices purchased for purpose' Calamvale Community College, school-based researcher.

'The BYOx program is being considered to help realise the school vision and in response to the high level of interest in the current 1-to-1 laptop program the school has run for the past four and a half years' Jindalee State School, school-based researcher.

Privately owned devices in schools

The department refers to privately owned devices as any technology owned by an individual, including staff, students, or their family.

Schools should ensure that devices used in a BYOx program are fit for purpose. Questions that need to be considered include:

- How are students going to attain more than modest increases in learning outcomes if they are restricted by the available tools and access to relevant information?
- Does the device allow students to innovate, collaborate and communicate?
- Does the device meet pedagogical and curriculum requirements?
- Does use of the device pose unacceptable risks with potential breaches to privacy legislation, network and information security, virus and malware threats?
- How well will the device function in the third or fourth year of the program?

There are arguments for and against students using their privately owned devices at school. Lamaster and Stager (2012) warn that bringing any device in a flexible Bring Your Own Device (BYOD) environment diminishes the otherwise enormous potential of educational computing to the weakest device in the room.

However, Curtis (2012) states permitting students to use their own mobile devices provides them with an opportunity to personalise their device, which in turn allows them to access and engage with their learning in ways which meet their individual needs. Alberta Government (2012) states students invest time, thought and energy into customising their personal device and setting it up to suit their needs. 'The student is typically quite proficient with the device and will use it anytime, anywhere to learn. Such devices, in the hands of every student, afford seamless learning opportunities that bridge the formal learning in schools, with the informal, outside of classrooms and schools' (Alberta Government, 2012).

BYOx in school context

Consultation with the five case study schools determined BYOx program benefits include:

- a solution to maintain a 1-to-1 model for our students, providing them with access to technology 24/7
- a solution to address a shortfall in funding
- students are comfortable and confident using a device they are familiar with
- students wanting to personalise their device to suit their own learning
- allowing a greater range of parental choice in the purchase of devices
- creating a diverse community of devices helping to enhance awareness of emerging technologies
- exposing staff to a wide range of platforms which further develops ICT capabilities
- promoting reciprocal learning between staff and students in a contemporary learning environment.

Identified pressures leading schools to consider BYOx:

- addressing the constraints on school budgets and the restrictions this is placing on a schools ability to continue or expand 1-to-1 laptop programs
- recognising that there is a high level of privately owned devices within the community and the preparedness or desire to use these devices at school
- capitalising on the concept of privately owned devices, where students are already familiar with the device and its capability
- parent/caregiver contribution generates an increased level of interest in how devices are being utilised
- by utilising students' privately owned devices, education does not start or end at the school gate
- alignment with the school vision to improve student learning outcomes in more future focussed and global citizenship contexts.

BYOx Decision support tool

The consultation process for the BYOx Decision support tool included engagement with Regional Technology Managers (RTMs), primary and secondary schools nominated by the RTMs, selected school leaders and the five case study schools. All involved saw the tool as a highly valuable component of the BYOx planning process.

The BYOx Decision support tool:

- assists with thoughtful and sustainable decision making around the implementation of a BYOx program
- provides school leaders with a process that is timely, self-explanatory and provides results that are easy to interpret
- elicits meaningful and positive discussion around focus areas and the respective level of school engagement
- provides schools with a picture of their current status and allows for a gaps analysis of work that needs to occur in order to reach their preferred future BYOx model.

The five case study schools responded positively to the BYOx Decision support tool.

'This discussion tool identified exactly what our issues are. This would have saved us a great deal of time in the investigation phase when developing our BYOx vision' Noosa District State High School, principal.

For an overview of the considerations for the BYOx Decision support tool refer to Appendix 1.

Discussion point two: Considering curriculum and pedagogy

The [Melbourne Declaration on Educational Goals for Young Australians](#) was a catalyst for the [Digital Education Revolution](#) and [Australian Curriculum](#). The Melbourne Declaration on Educational Goals for Young Australians challenges schools to ensure that the effectiveness of ICT is significantly increased.

'In this digital age, young people need to be highly skilled in the use of technology. While schools already employ these technologies in learning, there is a need to increase their effectiveness significantly over the next decade' (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008).

The Queensland Studies Authority provides syllabuses and related materials for use by Queensland state schools (Kindergarten to Year 12). The Curriculum into the Classroom (C2C) resources assist Queensland state schools to implement the Australian Curriculum in the subject areas of English, mathematics, science and history from preparatory to Year 10.

The department's [Pedagogical Framework](#) outlines the expectations for school pedagogical frameworks. The needs of contemporary learners must be central to school pedagogical practices under a BYOx program. A school's response to these learning needs is to be identified and promoted in the school's pedagogical framework.

Mapping school curriculum and pedagogical practices

The five case study schools mapped their school curriculum and pedagogical practices as part of a soft audit process for the research project. The data obtained from the curriculum and pedagogical mapping process is valuable for planning the implementation of BYOx and better-informing the change management processes.

With a focus on the digital normalisation required for a successful BYOx program, our case study schools undertook a curriculum and pedagogy review to ascertain their readiness for BYOx. Each school examined the extent to which the use of ICT was normalised across a number of year levels and subject areas. Normalisation of ICT in this context refers to the extent of assimilation of ICT into pedagogical practice and the school-based curriculum.

All schools identified significant progress in their journey to the normalisation of ICT. By reflecting on their curriculum and pedagogical practices schools were able to identify their existing capacity for BYOx and frame their strategic planning. Both elements were considered essential for a successful BYOx program.

One school was undertaking a review of pedagogy at the time of the research project, which reduced the usefulness of the provided materials as the process was already underway. There was widespread agreement that any templates published for use in future ICT mapping processes should combine curriculum and pedagogy rather than treat them separately.

The data collected by schools was sufficient for them to identify strengths and challenges related to ICT use. Engagement in the mapping process also allowed schools to identify curriculum demands and possible implications of a BYOx program in their school context. It was reported that the data from the mapping process enabled effective planning and demonstrated how technology fits within current pedagogical frameworks.

As schools are at different stages in the digital delivery of curriculum, the level of normalisation of ICT across all learning areas in a school is unlikely to be consistent. This is exemplified by staff from one discipline area in a case study school coming to the realisation that the student interest and engagement components of their curriculum delivery could be improved by increased integration of ICT. This realisation was the catalyst for a process which will see a refinement in curriculum design and pedagogical practice.

Queensland state schools currently implementing 1-to-1 programs will be aware of the challenges in managing the cultural change required to deliver consistent high quality teaching to every student. Ward (2012) identifies, in some cases, the use of digital technologies replicate traditional paradigms rather than the contemporary paradigms of interactive, cooperative, collaborative learning. A paradigm shift is required so that students are motivated and engaged rather than controlled and managed (Ward 2012).

Digital resources are embedded in the C2C materials and provide a level of protection for students from being exposed to the digitised delivery of traditional teaching resources. 'There is an expectation that all staff use C2C materials. Thus there is already some consistency surrounding what digital resources staff use in their lessons' Jindalee State School, school-based researcher.

It is interesting to note that all case study schools have existing 1-to-1 programs in place and believe they are ready to implement a BYOx program, however, none identified improved student learning outcomes as a consideration for implementing BYOx. Implementing BYOx as a progression to an evolved 1-to-1 program in response to expectations of contemporary learners and the wider community cannot be achieved without consideration and considerable effort to improve school pedagogical frameworks and practices.

All staff involved in this study were clearly passionate about meeting the needs of students. Student learning outcomes, equity considerations and the obvious desire to make a difference to their learning experience were at the forefront of all discussions with the school-based researchers. The absence of improved student learning outcomes from the reasons for implementing BYOx may be a combination of the small sample of schools and that improved learning outcomes were an assumed outcome of BYOx.

Discussion point three: The contemporary classroom

The digital age means pen and paper are fast becoming a thing of the past. As technology continues to change, so do the modes in which we work, play and learn. The use of technology is increasingly becoming normalised in all aspects of our life (Hockly, 2012). This normalisation of digital technologies in education is clearly expressed not only by the tools that are used, but also by the type and way content is accessed, stored, compiled, critiqued and collaborated upon.

Leadership teams proposing to introduce BYOx programs in traditional classrooms with traditional teaching practices are advised to investigate the extent to which BYOx devices are likely to be utilised. The degree to which devices are integrated into the delivery of curriculum and whether the community will see a return on their investment, in terms of device usage, improved student attitudes to learning and learning outcomes requires consideration.

'If your school is to achieve 100 per cent student uptake of bring your own technology (BYOT) and in turn normalise the use of the student's technology, all the key members of the school's community, its students, parents and teachers, have to have and be naturally using the technology' (Lee, Levins, Hubbard, & Feedman, 2012).

ICT initiatives in Queensland schools are founded on the [Information and Knowledge Strategic Plan 2011–2015](#). This strategy promotes educators and students working digitally in ways that pervade and impact every aspect of schooling (teaching and learning), and providing individualised pathways to learning success.

Information and Communication Technology capability

Information and Communication Technology capability is one of seven [general capability](#) areas in the Australian Curriculum. The Australian Curriculum, Assessment and Reporting Authority (ACARA) has developed a learning continuum that outlines the Information and Communication Technology (ICT) capability students should possess at key junctures. The knowledge, skills, behaviours and dispositions contained within each general capability area are embedded across the curriculum.

There are five interrelated elements in the ICT capability learning continuum, including:

- applying social and ethical protocols and practices when using ICT
- investigating with ICT
- creating with ICT
- communicating with ICT
- managing and operating ICT.

Contemporary teachers

Bebell and O'Dwyer (2010) identified the majority of studies show successful 1-to-1 programs are dependent on the teacher. This highlights the need for a realistic assessment of curriculum and pedagogical practices prior to implementing a BYOx program. A classroom that accommodates the needs of the contemporary learner is a prerequisite of BYOx (Bebell and O'Dwyer 2010).

Lee (2012) argues that 'until you have at least a critical mass of your teachers having normalised the use of the technology, your school will remain in an ever more dated insular, paper based operational paradigm unable to benefit from the opportunities opened by the digital and networked world being enjoyed by the path finding schools'.

The department has identified elements of effective classroom instruction that are promoted by contemporary teachers. Through explicit teaching, [contemporary teachers](#) support their learners to become skilful in using technologies and digital resources to:

- learn new concepts
- deepen understandings
- collaborate and create new ideas and knowledge
- function effectively and productively
- connect with people who can support their learning
- find quality, relevant resources
- critique the notions of others and create and publish their ideas for a wide audience.

Contemporary learners

The department has identified the behaviours a [contemporary effective learner](#) demonstrates. These capabilities are identified and promoted in a school's pedagogical framework. Contemporary effective learners:

- live and operate in a digital world
- collaborate with friends, experts, resources and learning communities
- participate in world events in real time
- adapt to new technologies easily
- find and leverage what they need to be productive
- create, critique and publish content
- access learning wherever they are
- locate, filter content and tap into knowledge anytime

Discussion point four: Leadership and change management

Instructional leaders create and lead a sustainable, high performance, learning culture to achieve specific school improvement priorities. Attending to the requirements of staff and the provision of adequate and appropriate professional development are key components to be addressed when planning a change management strategy for the implementation of BYOx. Effective change management strategies enable schools to implement change in a unified transition to achieve planned results.

The department has devised the Four steps to implementing BYOx to guide school leadership teams considering introducing a BYOx program, in particular when developing the vision, creating and managing teams, and communicating with the school community. Change management is a key component of the four steps. Development of a change management strategy will ensure a plan is in place to support staff development and manage the associated cultural change.

Kotter (2012) suggests eight steps for leading change:

- establishing a sense of urgency
- creating the guiding coalition
- developing a change vision
- communicating the vision for buy-in
- empowering broad based action
- generating short term wins
- never letting up
- incorporating changes into the culture.

Planning for controlled and sustainable change as part of a BYOx program should be reflective of the school pedagogical framework. The use of private devices by students may challenge:

- existing values and beliefs about teaching and learning
- pre-conceptions about privacy legislation
- content and modes of delivering professional learning to support consistent whole-school pedagogical practice
- existing practices in the areas of curriculum, pedagogy and assessment.

Mechanisms to monitor the effectiveness of the change management process and the status of BYOx implementation, based on feedback from the school-based researchers include:

- data from classroom walkthroughs
- information gathered at teacher planning meetings
- feedback received at forums and year level meetings
- comparative OneSchool data related to student behaviour incidents during periods of instruction
- historical school based data related to student learning outcomes
- historical state-wide data related to student learning outcomes
- self-assessment against the [Education Queensland Teaching and Learning Audit](#)
- self-assessment against the core systemic principles from the pedagogical framework
- [Australian Curriculum ICT capabilities](#).

Discussion point five: Infrastructure and resourcing considerations

The department undertook broader school engagement to determine business requirements concerning infrastructure and resourcing to support BYOx. As there were only five case study schools involved in the in-depth research, additional schools were asked to provide feedback.

The wider group of schools covered a broad demographic range including primary, secondary, colleges, multi-campus sites, metropolitan, regional and rural remote locations.

The 61 schools involved included:

- the five case study schools
- 17 schools via participation in web conferences
- 39 schools in the darling downs south west region responding to a Regional Technology Manager initiated survey

The schools provided feedback on:

- connectivity
- internet access
- authentication
- resource access
- procurement
- support

A number of potential issues requiring resolution for the successful delivery of a BYOx program were identified from collated data and feedback from RTMs.

Connectivity

Regardless of location across the state, the ability for student owned devices to be connected to the internet and local area network (LAN) was seen as one of the most important considerations for the delivery of a BYOx program.

High density Wireless Local Area Network (WLAN)

With the proliferation of wireless only devices and the need for ubiquitous access, the provisioning of high density WLAN access in all teaching spaces where BYOx devices will be used was seen as a priority. It was recognised that secondary schools have been equipped with WLAN across campuses as a result of the National Secondary School Computer Fund (NSSCF) deployment, totalling 309 schools out of 1240 Queensland state schools. Many primary schools feel they will be financially

challenged to achieve the same level of access without additional financial support from the state or federal government.

Internet access

Bandwidth was also identified as a major consideration. Many schools indicated their concerns about the relative slow performance of their current Wide Area Network (WAN) connections. They also indicated concern about the perceived high cost and lengthy process required to obtain access to a bandwidth upgrade. There was also concern expressed that with a BYOx program there would be an increased parent/student expectation for the school to be able to provide reliable and high speed filtered internet access.

Currently all Queensland state schools have access to a broadband Web and Internet Access Service (WIAS) with the minimum standard based on a 1.5Mbps link (unless unavailable). Many schools have chosen to upgrade their bandwidth, at school cost, to ensure the internet link requirements more closely align with the number of devices and usage requirements of both the curriculum and administrative functions of the school. Schools that were part of the NSSCF program were upgraded by the project, including ongoing additional usage charges to a maximum of 50Mbps based on their enrolment metric. Schools wishing to upgrade their bandwidth are currently requested to make contact with their RTM who will guide them through the bandwidth upgrade request process.

It was also noted that in a BYOx environment there is likely to be an increased reliance on cloud-based applications to allow for a more flexible device choice and to remove the reliance on locally installed software applications.

Authentication

Feedback from schools indicated they are keen to avoid complex processes when connecting BYOx devices to the school LAN. The connection of privately owned ICT devices is addressed in the departmental policy [Acceptable Use of the Department's Information, Communication and Technology \(ICT\) Network and Systems](#). The majority of schools contacted during the project were hopeful that Microsoft Office 365 would provide a number of solutions to identified network security and information security issues under BYOx. Schools were keen to see a solution that allowed access of unknown devices to the departmental network.

Authentication of unknown devices needs to be a seamless process that happens without any user intervention. Centralised malware management processes were also identified as critical.

Resource access

Schools recognise resource access as one of the complex and unique challenges that will arise as a consequence of implementing a BYOx program in a school community. Currently staff are able to

operate confident in the knowledge that generally all students have access to the same software resources. It was recognised that the internet represented the most common resource that the majority of BYO devices are likely to have access to, even though it may be via a variety of different web browsers.

Procurement

Many schools identified a desire to have some form of centralised procurement process to support a managed BYOx deployment. They noted requirements for both a centralised device and software procurement program to support BYOx at a school level.

Centralised device management may:

- limit the challenges (warranty, quality, device variety, service delivery)
- ensure more consistency around the devices that students purchase
- ensure best value for money for parents participating in the program
- coordinate supply arrangements, including aggregation in some cases

Centralised procurement of software could provide significant support by:

- advocating and negotiating with software vendors for low/no additional cost student licence arrangements
- managing the transition from a whole of department purchase, to one which is collaboratively owned or student owned

Support

The provision of support requirements for a BYOx program can be classified into three levels – local (school level), regional and centrally provisioned.

At a school level, feedback indicated the need for:

- professional development for staff to ensure normalisation of ICT can occur and to address the potential risks when introducing BYOx
- appropriate leadership capacity to ensure the implementation and sustainability of the BYOx program
- adequate technical support to triage issues and, where appropriate, initiate/provision an appropriate strategy to ensure continuity of learning

- the need for community support for a BYOx program and the need to engage the broader school community in the entire process
- clear recognition of the need to address the equity challenges which will occur for students unable/unwilling to participate in a BYOx program or awaiting repair of their BYO device.

At the regional level the responses identified the need for:

- face to face workshops to support professional development requirements of BYOx and the collaborative opportunities achievable through regional clusters
- adequate staffing arrangements to support and guide schools in a proactive way as they undertake the BYOx journey
- proactive, informed advice from their respective RTM.

Responses identified the need for centrally provisioned:

- resources and support materials
- support to focus on BYOx for schools as technology changes
- online professional development to support schools on their BYOx journey and normalisation of ICT into the curriculum
- upgrade of school LANs/WANs and other infrastructure as required.

Recommendations

Recommendations for the department:

- continue to provide BYOx advice and support to schools
- provide schools with updated information management policies and procedures that incorporate BYOx
- provide schools with definitive information on approved procurement processes, potentially centralised management and coordination of supply arrangements
- accept identified business requirements for BYOx to inform future planning of the department's infrastructure or services
- provide schools with a solution that allows privately owned devices to be used on the network by staff, students and community, which minimises the risk to network and information security or threats from malware and viruses
- ensure access to quality professional learning appropriate to the school BYOx context.

Conclusions

Data and feedback received from schools that engaged with this BYOx research project determined they:

- considered BYOx a progression to a more flexible and evolved 1-to-1 program
- see BYOx as a response to expectations of contemporary learners and the wider community
- consider BYOx as a solution to address a shortfall in funding that currently limits a school's capacity to provide a 1-to-1 computer fleet without parent contribution
- require additional support materials and guidelines to assist with planning considerations for BYOx
- recognise departmental processes and frameworks allow BYOx to be integrated into existing school practices.

The department acknowledges critical areas of concern for schools considering BYOx include the need to:

- address potential equity issues
- identify strategies or forums to enrol the whole school community
- maintain compliance with departmental policies, procedures and guidelines
- ensure school wide pedagogical review informs decision making
- gauge staff readiness for BYOx
- plan the move from the safe, secure and filtered Managed Operating Environment (MOE) to an environment where the school principal may be required to implement local solutions
- source appropriate resources and support to manage the implementation of BYOx
- identify total costs of introducing BYOx.

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Appendix 1

BYOx Decision support tool considerations

- Pedagogy – Does your current school pedagogical framework support BYOx?
- Teacher capability – Do teachers have the capability and confidence required to support personalised learning in a 1-to-1 BYOx program?
- Leadership – How confident are you that BYOx in your school will be supported now and into the future?
- Device usage – How will students use the devices for learning?
- Licensing – How mature are school processes for managing software licensing?
- Students and devices – Your initial views for BYOx
- Equity of access – How will your school support students who are unable to access a device for participation in a 1-to-1 BYOx program?
- Continuity of learning support – Does your planning and funding for BYOx include school based support to resolve hardware, software and connectivity issues?
- Network capacity – What percentage of teaching spaces, where BYOx devices will be used, have high density wireless installed?
- Bandwidth capacity – After consultation with your Regional Technology Manager, has your school the required bandwidth capacity to support a successful BYOx program?
- Infrastructure costs – Have you undertaken detailed analyses of all costs or department initiatives associated with connecting an unknown device to a network?
- Procurement and vendor management – Does your school have the capacity to manage vendors and BYOx contracts?
- Policies/Procedures & Guidelines – Existing policies and procedures our school adheres to include:
- Technical support – Does your planning provide for the additional at-school support that may be required for BYOx?
- Social justice – In which of the following ranges does the school Index of Community Socio-educational Advantage (ICSEA) score fit?
- Funding – The proposed method of funding a BYOx program at the school is...

Appendix 2

Departmental policy considerations

Queensland state schools comply with a range of policies, procedures and guidelines when conducting their core business of teaching and learning. There are a range of relevant policies to examine prior to the implementation of BYOx programs – some include:

- [Appropriate Departmental Collecting, Securing, Accessing, Amending, Using and Disclosing of Personal Information](#)
- [Acceptable Use of the Department's Information, Communication and Technology \(ICT\) Network and Systems](#)
- [Maintaining the Security of Department Information and Systems](#)
- [Using Non-Departmental Online ICT Services where Personal Information is provided](#)
- [Malware and Malicious Code Prevention](#)
- [Safe, Supportive and Disciplined School Environment - Behaviour Plan for Students](#)
- [Student Resource Scheme](#)
- [Managing Risks in School Curriculum Activities](#)
- [Queensland Procurement Policy](#)
- [Purchasing and Procurement](#)

It is recommended that school staff considering implementing BYOx read all relevant policies and procedures in their entirety before commencing a BYOx program. The below is a brief summary of some of the policies and procedures that need to be attended to when implementing BYOx.

Appropriate Departmental Collecting, Securing, Accessing, Amending, Using and Disclosing of Personal Information

The [Appropriate Departmental Collecting, Securing, Accessing, Amending, Using and Disclosing of Personal Information](#) procedure outlines how departmental employees are to deal with personal information under the department's current legislative arrangements. This includes requirements when personal information is disclosed to a third party (for example, student information to a parent/guardian or another government department); transferred overseas; and when personal information will be handled by contracted service providers.

Specific provisions apply across a number of State Acts (Primary legislation). The requirements prescribed in the Queensland [Information Privacy Act 2009](#) are additional to the requirements imposed by the department's primary legislation.

The Primary legislation that contains relevant provisions relating to confidentiality/privacy of personal information are as follows:

- Child Care Act 2002;
- Education (Accreditation of Non-State Schools) Act 2001;
- Education (General Provisions) Act 2006;
- Education (General Provisions) Regulation 2006;
- Education (Overseas Students) Act 1996;
- Education (Queensland Studies Authority) Act 2002;
- Education and Care Services National Law (Queensland) Act 2011;
- Education and Care Services National Law (Queensland) Regulation 2011;
- Education and Care Services National Law Act 2010, AKA Education and Care Services
- National Law (Queensland);
- Education and Care Services National Regulations;
- Public Service Act 2008;
- Public Service Regulations 2008; and;
- Vocational Education, Training and Employment Act 2000.

It is important to note that the confidentiality provisions outlined in these acts are offence provisions. A breach of any one of these provisions may render an individual liable to a fine. A breach of the legislation may also make an individual liable to disciplinary action under the Public Service Act 2008.

Acceptable Use of the Department's Information, Communication and Technology (ICT) Network and Systems

The [Acceptable Use of the Department's Information, Communication and Technology \(ICT\) Network and Systems](#) procedure is related to the safe operation of the department's network and covers all ICT services, facilities and devices that are owned, leased or used by the department.

The department restricts access to its network and ICT systems by privately owned ICT devices. Currently in schools, access to the network by a student's privately owned device is not recommended as network security could be breached. A principal may determine that for educational purposes students will use their private device to access the network. This connection to the network is provided only if the device meets security protocols. Schools that wish students to connect to

the department's network are required to develop procedures that ensure the students' privately owned devices are assessed prior to connection and have the necessary security provisions, as outlined in [Maintaining the Security of Department Information and Systems](#).

Acceptable Use Policy and Responsible Use Policy

Schools currently draft digital media policies to assist the regulation of student internet use and to protect students from harmful content. Schools address this through an Acceptable Use Policy (AUP) or a Responsible Use Policy (RUP).

An Acceptable Use Policy (AUP) outlines what students should not do when using the internet. This policy is centred on providing set guidelines and boundaries.

A Responsible Use Policy (RUP) focuses on what students should do, rather than what they should not do. Instead of providing strict guidelines and boundaries, a RUP is about educating students. An RUP provides students with the tools and information to become smarter consumers of content on the internet. Through supported learning, students can identify misinformation.

Maintaining the Security of Department Information and Systems

The [Maintaining the Security of Department Information and Systems](#) procedure identifies conditions for maintaining security and protection of the department's information and information systems. Compliance with the procedure in a BYOx environment ensures that security and privacy of information and information assets is maintained.

School principals are obligated to conduct annual reviews of security practices and conduct risk assessments to ensure information and systems are securely operated. BYOx programs are required to operate within this procedure.

Using Non-Department Online ICT Services where Personal Information is Provided

The [Using Non-Departmental Online ICT Services where Personal Information is provided](#) policy provides information about privacy responsibilities when using an ICT product or service not provided by the department. This applies to both free and purchased services. The risks related to a breach of an individual's privacy arising from use of a low-cost or free service are far greater than security risks associated with a Managed Operating Environment (MOE).

Currently schools must ensure compliance when engaging with a range of services including web publishing services, online document scanning and data storage, short message service products, consultation and survey tools. In a BYOx environment the potential shift to a cloud based platform may increase the opportunities for students and staff to unknowingly breach this procedure.

Regardless of whether a cost is charged or not, the department must take all reasonable steps to enter into a contract or an agreement with service providers that include privacy clauses which inform the provider of their obligations to protect loss of personal information, unauthorised access, use, modification or disclosure, or any other misuse in accordance with the [Information Privacy Act 2009](#).

Malware and Malicious Code Prevention

The [Malware and Malicious Code Prevention](#) procedure outlines users have a responsibility to prevent, detect, remove and report computer virus and malware attacks or malicious code on the department's ICT network to reduce the associated risks of these threats. The department has entered into an enterprise software licensing agreement for antivirus software to combat SPAM. On average, the department prevents more than 300 million malicious emails per year.

Schools implementing BYOx utilising emerging technologies such as the iPhone, iPad/iPod and Android based devices within the corporate ICT network need to be aware that these devices are currently not supported by the department's antivirus solution. All reasonable care should be taken to ensure information is secure when connecting these devices to the department's ICT network. It is possible that configuration and operation of these devices may be impacted following a revision of existing information management policies.

Safe, Supportive and Disciplined School Environment

The [Safe, Supportive and Disciplined School Environment - Behaviour Plan for Students](#) procedure aligns with the expectations for all departmental staff under the [Code of School Behaviour](#) and legislated obligations to maintain good order and management of schools. The school Behaviour Plan for Students outlines facilitation of a supportive school environment and outlines a range of responses including whole school, targeted and intensive behaviour support as a means of facilitating positive learning and responsible behaviour in students.

It is recommended that the behavioural expectations and logical consequences related to the use of BYOx devices are referenced in the Behaviour Plan for Students.

Student Resource Scheme

The [Student Resource Scheme](#) policy states a parent is directly responsible for providing students with textbooks and other resources for a student's use while attending school. As a service to assist parents with the cost of these educational resources, the school may choose to operate a student resource scheme.

The purpose of the scheme is to provide parents with a cost effective alternative to purchasing textbooks, resources, consumables and/or materials from elsewhere, through reduced prices gained from the school's bulk purchasing processes

The scheme can include equipment hire such as a laptop. Additional inclusions can include computer disks and memory sticks, computer printing, internet access and computer support.

Schools are advised to consider minimising charges for textbooks and traditional consumable items to offset any increase in costs to parents as a result of BYOx. This should be reflective of the savings made from the reduced use of consumables such as paper and the transition from the use of physical textbooks and novels to digitised versions.

Managing risks in school curriculum activities

The [Managing risks in school curriculum activities](#) outlines responsibilities for managing these hazards and risks. [There are a](#) variety of hazards and risks to be managed to ensure the health, safety and well-being of all involved in a contemporary curriculum program.

BYOx considerations may include the following:

- recharging multiple devices at once in a classroom
- students working in chill out zones in ways that may not be ergonomic or with devices that are likely to become hot
- carrying devices with a larger screen size and associated increase in weight
- suitability of carry cases or bags
- uninterrupted time that students use devices

Queensland Procurement Policy

[Queensland Procurement Policy](#) is the state government's overarching policy for the procurement of goods and services. Its purpose is to deliver excellence in procurement outcomes for Queenslanders through six principles.

Purchasing and Procurement

[Purchasing and Procurement](#) outlines the procedures that schools must follow when purchasing or procuring goods and services from suppliers external to the department, regardless of the source of funds including students, parents and fundraising.

The intent of the Queensland Procurement policy and the department's Purchasing and Procurement policy will influence school based activities if parents are directed to a sole or single vendor for BYOx computer devices.

Schools recommending a vendor for externally sourced goods and services are required to do so in accordance with:

- an approved [Procurement Arrangement](#) if available and suitable
- the department's [Minimum Competitive Offer Process](#)
- an [Alternate Sourcing Strategy](#) approved by a purchasing delegate up to and including \$20,000 or a procurement delegate up to the financial limit of their delegation.