Pennant Hills Public School
Bring Your Own Device

White Paper
1:1 BYOD (Bring Your Own Device) Program

Pennant Hills Public School is beginning to plan a program in which students bring to school, for their own individual use during learning time, a personally owned device (iPad/tablet/laptop). This program is referred to as 1:1 BYOD. It is hoped the program will commence for students in Years 3-6 with a staggered implementation between 2016-2018.

This Position Paper seeks to outline the rationale behind such a program, the considerations needed to be explored and the implementation process planned thus far by the School.

Rationale

At Pennant Hills Public School, we believe that it is our responsibility to provide quality education which allows all students to develop to their full potential. It is important that teaching and learning reflects the needs of our students today and be focussed on the future, not the past, preparing our students for the fast-paced changes of the real world. We cannot ignore the development of technology and the opportunities it affords our students to create, communicate, solve problems and work collaboratively across all learning areas at school. It is no longer the case that the use of ICT is a helpful addition to learning or a part of the wider curriculum; ICT is now shaping and transforming how all subjects are learned and how teachers facilitate the educational context.

All schools must cater for the diverse needs of learners if they are to achieve their intended educational goals. Pennant Hills Public School, as part of its Strategic Plan 2015 - 2017, has identified the need to ensure “innovative teaching practices and instructional methods enabled by technology to more precisely engage and address the learning needs of all students”. We are committed to providing student-centred, innovative learning programs, integrating technology to develop 21st century skills.

In order to address the issues identified in the Strategic Plan, the staff continues to investigate ways to further enhance the school’s capacity to cater for diverse learning needs, using technology to promote student-centred and self-directed learning opportunities.

The Melbourne Declaration on Educational Goals for Young Australians (MCEETYA, 2008) states that “rapid and continuing advances in information and communication technologies (ICT) are changing the ways people share, use, develop and process information and technology. In this digital age, young people need to be highly skilled in the use of ICT, while the Australian Curriculum states that ICT will “transform the ways that students think and learn and give them greater control over how, where and when they learn”. Both of these key national statements on education in
Australian documents acknowledge that the use of ICT is crucial in meeting today’s educational outcomes. It is noted in the Melbourne Declaration that successful learners “have the essential skills in literacy and numeracy and are creative and productive users of technology, especially ICT, as a foundation for success in all learning areas.”

The use of ICT is an integral part of contemporary teaching pedagogy and the expectations with regard to the role of teachers in using ICT are articulated in Standards 2.6, 3.4 and 4.5 of the Australian Professional Standards for Teachers. The effective use of technology is also embedded in the Quality Teaching Framework for teachers in NSW Public schools.

**Literature Review**

**21st Century Skills**

While the core subjects of literacy and numeracy are key to the development of our primary school students, according to Robinson (2011) “the current education system was designed for a different age. Our children are living in the most intensely stimulating period in the history of the earth. They are being besieged with information from all platforms and we are penalising them for getting distracted.” Due to technological advances “65% of today’s students will be employed in jobs that don’t exist yet” (Wolfe, 2013). As educators we need to teach our students skills for learning in the 21st century. Researchers point to the importance of a focus on the 5Cs of 21st Century Learning. Tucker (2014) suggests that education systems need to infuse the “5Cs (communication, collaboration, critical thinking, citizenship and creativity)” into their practice, to assist in preparing students for their role in the world and support them in developing the capacity to cope with “accelerated technological change”. This perspective is reinforced by Donovan, Green and Mason (2014) who argue that the 5Cs are “learning and innovation skills necessary to prepare students for increasingly complex life and work environments in today’s world”.

![21st Century Skills Diagram](image)
Use of Mobile Technology in the Classroom

A significant development in the field of ICT in recent years has been the development and uptake of mobile technology. Looi et al. (2010) note that while “mobile devices are changing rapidly, important commonalities remain the same: portability, mobility and versatility. These functions make learning ubiquitous in and out of classrooms, provide potential opportunities for collaborative learning, and enrich the learning experiences with the support of technologies”. The rapid development of cheap and innovative programs, or apps, designed specifically for this new form of technology has had a major impact on education and the educational context itself.

It can be argued that mobile technology can be personalised to cater for individual student needs with content being adapted or settings customised (Ciampa & Gallagher, 2013; Chou, Block, & Jesness, 2012) with greater ease and at more manageable cost than at any time in our past. Added to this, the functionality of the device can be easily tailored to meet the needs of the user by adding and removing apps. This enables students to choose how they wish to demonstrate learning from a range of multi-modal options (Milman et al., 2014).

While it is also the case that, as never before, mobile devices also cater for a range of different learning styles (Ciampa & Gallagher, 2013) incorporating text, pictures, video, audio and multimedia (Liu, Navarrete, & Wivagg, 2014) and greatly differentiated forms of assessment, enabling students to demonstrate their knowledge and skills in increasingly individuated forms.

An increasing number of studies acknowledge the potential of mobile technology to cater for a range of learner needs in an authentic way. Fisher, Lucas and Galstyan (2013) have found that “the accessibility of the iPad facilitated the collaborations between students. The size, portability, versatility and tactile nature of the iPad are four of the main factors that contribute to its accessibility”. They also explored the concept of public and private space when using tablet devices, identifying the ease with which students can change between them. Devices, such as the iPad, can perform well as both independent and collaborative tools.

Some of the key findings of the research conducted by Macquarie University for the NSW Department of Education and Communities, Use of Tablet Technology in the Classroom (2012) are:

- increased engagement and motivation
- improved student knowledge and skills
- enhanced collaboration and communication between students
- learning for students easy to personalise
- ease of differentiation
- students enabled to easily produce a professional finished product
- instant access to provide just-in-time learning
- student-centred pedagogies supported with the iPad – students learn with, not from the technology
- multimodal nature of the device afforded new opportunities for learning
- more timely and frequent feedback on student work
- intuitive and easy to-use tool with minimal technical help required
1:1 BYOD Mobile Technology and Learning

The New Media Consortium 2015 Horizon Report notes that 1:1 BYOD devices in schools are a means of personalising learning, thus giving learners ownership of their learning. “BYOD has profound implications for primary and secondary education because it creates the conditions for student-centred learning to take place”. As noted by Chou et al. in 2012, “with sound pedagogy and implementation, one-to-one learning has the potential to transform the classroom into a true learner-centred learning environment in which communication, collaboration, and creative problem solving flourish to create student-driven learning”.

Incorporating student owned mobile technology into the school environment enables the creation of “seamless learning spaces” (Pegrum et al., 2013; Ciampa & Gallagher, 2013; NSW Department of Education and Communities, n.d.). These devices expand space and time for learning, and “formal and informal” learning. 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.

Situational Analysis

During 2015 Pennant Hills Public School has undertaken an iPad Pilot Project to explore the educational opportunities that mobile devices can provide. With the support of the P&C, the school purchased sixty iPads for use within four classes (1T, 2M, 3D and 4C).

A variety of apps were loaded onto the iPads with a specific focus on cross curriculum apps that facilitate the creation of digital content. The management of the installation of apps was centralised and teachers could request new apps as required. Teachers utilised the iPads in a variety of ways with usage varying from research tasks to open ended creative tasks. Whilst teachers initially believed tasks would be app specific it became extremely evident that students could have choice and control of what apps or tools they could use to demonstrate their learning. Teachers reported by allowing their students to choose how they demonstrated their learning, the results went off the charts. Teachers were surprised by how much they DID know, and the depth of knowledge and understanding that the students could competently share and explain to all. By leveraging the thousands of different ways technology allows the multiple methods of demonstrating learning, students engaged in self-directed and self-motivated learning. The ability to choose how they shared what they learned meant they cared about WHAT they learned.

At the conclusion of the pilot project, parents positively recognise that through the use of technology (iPad) children are better able to develop 21st century skills. Overwhelmingly, the iPad Pilot Project has been valuable for all students as recognised by students, staff and parents. Convincingly 100% of staff and students recognise how valuable the experience has been as does the majority of parents.

There are a number of schools within the local area that have implemented a 1:1 BYOD program. The Department of Education is encouraging of the concept as a form of technological innovation and is supporting its schools in this process through the production of policies, guidelines and literature reviews as well as technical support and advice.
Pennant Hills Public School will establish a 1:1 BYOD program for the students of Years 3-6, with a staggered implementation period to commence in 2016. The school has identified two main areas of consideration in the implementation of this program:

- Pedagogical Considerations
- Technological Considerations

**Pedagogical Considerations**
The implementation of any technology program within a school must be based upon a sound pedagogical rationale. Pennant Hills Public School has a number of strategies and programs in place to cater for the variety of learner needs within the school.

As a number of schools within the local area have implemented similar programs, visits were arranged to see 1:1 classrooms in action. The Principals and class teachers of these schools spoke positively about the impact the program has had including the high levels of student engagement and changes in classroom pedagogy.

Critical to the success of the Pennant Hills Public School 1:1 BYOD program will be the pedagogy used to create an environment that accommodates diverse student needs. Our class teachers are competent and experienced in integrating multiple technologies into the classroom.

At Pennant Hills Public School, we acknowledge that the successful implementation of any technology program is reliant on quality professional learning linked to the Australian Professional Standards for Teachers. We will continue to ensure that professional learning around the implementation of BYOD:

- has a strong focus on pedagogy
- allows time for teachers to become familiar with devices and applications
- provides the opportunity to attend formal professional learning sessions
- engages in informal collaborations with other teachers and schools engaging in 1:1 BYOD programs
- uses the support of a learning technologies officer from DoE
- builds a professional community of practice as a platform.

As illustrated in the literature, mobile handheld technology has an inherent capacity to be personalised and when used in a 1:1 environment allows easy, sustained and consistent access for individual students. When students use their own personal devices it can also create links between learning at home and school. The introduction of BYOD is consistent with the pedagogical literature that has been informing Pennant Hills Public School's Strategic Plan.
TPACK Framework (Koehler & Mishra, 2008)
The framework represents the integration of three bodies of understanding: Technical Knowledge, Pedagogical Knowledge and Content Knowledge. TPACK illustrates that the inclusion of technology in an education setting is a complex and multifaceted process and that successful integration cannot be achieved without considering pedagogy and content.

The SAMR Model (Puontedura, 2009)
The SAMR (Substitution, Augmentation, Modification and Redefinition) model is also used to help teachers evaluate how they are using technology. The first two stages - substitution and augmentation - accomplish "traditional" tasks that have been enhanced by the use of technology. It is in the next two stages - modification and redefinition - where technology can be used to transform learning and involve rich, open-ended, student-centred activities. It is our belief, based on the current and emerging research that BYOD represents the next step in the transformation of our educational context from one in which technology merely supports the initial stages of learning to one where students are genuine participants and co-creators of knowledge, skills and values.
**Technological Considerations**
In second semester of 2014, the school engaged in discussions with DoE ICT technicians to ensure the capabilities of the wifi network were going to meet the demands of a 1:1 device environment at Pennant Hills Public School. All technical considerations, with stable wireless connectivity being the main infrastructure focus, were discussed and addressed. The wifi network funded by the P&C was installed over late 2014 and early 2015 to meet the future focussed technological demands of a 1:1 environment.

**Safety**
Internet traffic at Pennant Hills Public School is filtered by the DoE Internet filter. All mobile devices will access the Internet via this filter. Please note that when students use the Internet at home (or anywhere else) access will be filtered by whatever system is in place in that location. Because students will have free access to the school’s wireless network, the use of 3G and 4G wireless connections is not permitted. If the device has a SIM card, parents are required to store the SIM at home.

Safe and responsible use of technology is an essential part of participation in this program. For many years Pennant Hills Public School has implemented an ICT Acceptable Use Policy and utilised a variety of programs and initiatives to educate students to be safe digital citizens. During 2014/15 the school has used the ‘Cybersmart’ programs, and engaged the professional support and advice of the Australian Communications and Media Authority and local police commands. Both of these professional organisations have worked with the students, teachers and parents in relation to cyber safety. Ongoing education about cyber safety and how to be a responsible digital citizen will be an integral part of the 1:1 BYOD Program in 2016.

All participants (parents, students and teachers) in the program will need to sign and abide by the school’s Acceptable Use and associated policies.

**Equity**
Pennant Hills Public School will maintain a BYOD Equity Policy to ensure all students no matter what the families’ financial means are, have access to computing resources, inside and outside of class time, that are required for school work.

The school will not purchase a device to assign to your child nor will the school make a device available for a permanent or semi-permanent loan. In substitution of a personal device the school will consider options including:

- priority or reserved access to desktop computers in the computer labs or the library during class time, before or after school or during lunch breaks,
- loan of a laptop or other device for a particular time in class.
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- Canley Vale West Public School
- Malabar Public School
- Pennant Hills High School
- Castle Hill High School

Further Information can be located on the school website.

BYOD White Paper
BYOD Policy
BYOD Minimum Specifications
BYOD Student and Parent Agreements
BYOD Frequently asked Questions
References


