Context:

Algester Primary School introduced iPads into its teaching program about 5 years ago. Classroom teachers explored various ways to incorporate the devices into their teaching programs. Over the past few years the school has established a number of 1:1 iPad classes where every student purchases their own device and brings it to school. The school currently has 17 iPad classes. In some cases the school provides a device for students who are unable to purchase one but these cannot be taken home so students do not get the full benefit of the devices.

The school provides a set of six iPads for its 20 non-iPad classes.

The school uses the internationally recognised SAMR model (Substitution, Augmentation, Modification & Redefinition) for the pedagogical implementation of iPads and digital technologies within its classrooms.

The school is currently at a tipping point regarding the adoption of iPads. The current dichotomy of iPad and non-iPad classes is limiting our development and the learning outcomes of our students. Our experience is that the type of teaching and learning taking place in the iPad classes is approaching the highest phase of the SAMR model while that being undertaken in the non-iPad classrooms is struggling to move beyond the substitution phase.

It is the view of the school that the best way forward is to promote full iPad adoption throughout the school. The purpose of this paper is to justify the reasons for this move and the proposal of a strategy for this to take place.

Research

One of the benefits of mobile devices is that they enable learning anywhere, anytime. This allows a shift away from the industrial era model where the classroom is the central place of learning driven by the teacher and limited to instruction within the school day. In deploying mobile devices, the teacher is no longer at the centre of the learning process and the instructional time can transcend the school day. (Goodwin, 2012). Algester has witnessed a surge in the learning undertaken at home by students in iPad classes. A discourse founded in the United States Of America, entitled 'Flipped Learning' explores the use of mobile devices for undertaking home tasks for learning and school time becomes a reflection of this work and engagement in higher ordering thinking tasks. Many of our iPad classes are exploring the 'Flipped Learning' space.

The use of iPads increases student motivation and engagement. (Dept. of Education & Early Childhood Development, 2011). Students use iPads to explore areas of personal interest, research, collate their findings and create their own digital multimedia reports. Some research indicates up to 90% approval ratings of iPads by students when asked if it made their learning more interesting and enjoyable. It has been our experience at Algester that our students love using iPads as tools for learning. They are more excited about their learning, are easily motivated to delve into deep learning using their devices and are fully engaged in their learning tasks.

'The iPad helps me concentrate because it's far more fun than a pen and paper.'

'It helps me learn because I'm more excited to use the iPad and I focus better when I'm on the iPad.'

'The iPad helps me learn because it actually makes me want to learn, which helps me get into it.'

Students, cited by (Dept. of Education & Early Childhood Development, 2011)

Another benefit of iPads is that they promote collaborative learning. (Diemer et al., 2012) Collaborative learning helps students develop skills that have a long term benefit and are feature of 21st Century classrooms as they prepare students for workplaces that involve teamwork, negotiation and collaboration. Studies observing student behaviours indicate that students using iPads are more in sync with their peers than students not using iPads. The iPad-equipped students worked at the same pace as one another and shared their screens to help one another solve tough problems. (Diemer et al., 2012). This can be easily observed in the iPad classes at Algester where students readily work together to solve problems, share their work and ideate new concepts together.

The use of iPads also enhances communication between students (Habler et al., 2015). Student discussion within and beyond the classroom about their learning is always productive and stimulates higher order thinking and reasoning. Student work that is produced at school is easily shared across Bluetooth equipped devices like other iPads, PCs and interactive whiteboards. The school is also exploring safe social media applications designed for students to share their work like 'See-Saw' and we have had significant success with students sharing their work with other students that can be accessed at any time. Students use their devices to clearly articulate their learning. These recordings give teachers perspectives of their learning that were hitherto unavailable to them.

Another advantage of iPads is that there are a number of instructive education game-based applications that support aspects of the National Curriculum. The provision of instant feedback, an element of competition and the ability to prescribe different levels within games-based apps, appeals to both students and teachers. In a sense, the device can become a 'second teacher' in the classroom to support students' learning. (Goodwin, 2012) While computers have served this purpose in the past, the mobility and speed of access of the iPads is far superior to traditional pcs.

A substantial feature of iPads is the ability of teachers to tailor the learning tasks to suit the student. This ability to differentiate for students and cater for individual learning needs and preferences makes the devices truly personal. Many of the instructional Apps track student levels. The open ended Apps like 'Book Creator' allow children of all levels to express themselves at their own level. The predictive text function supports student to learn spelling and the choices involved in all of the Apps to scaffold and compensate for students' emerging skills give a strong sense of student ownership of learning.

The iPad gives students greater control of their learning. (Dept. of Education & Early Childhood Development, 2011). Student voice and student choice is well backed by research for effective learning and the iPad allows students to personalise their learning through the setup of their device, the features they will use in their Apps, and the choice of Apps to serve their purposes. Coined, 'App Smashing' students in iPad classes at Algester typically choose several apps both simultaneously and consecutively to achieve their goals. The previous practice of teaching students how to use single purpose Apps like 'Powerpoint' or 'Word' is no longer relevant as students select the best app for them amongst the ever developing plethora of apps available.

Using iPads changes the way teachers teach and students learn. Schools report that academic performance is improving with iPad use. (Apple, 2016) Five years after implementing their one to one iPad program, Montlieu Academy of Technology, North Carolina, reported growth in test scores

in all core subjects. They improved their academic achievement by 44.9% in reading and over 55% in maths and science. All classrooms at Valencia Park Elementary School, California have implemented a one to one iPad learning program and they have been recognised as one of the top performers in their state. Students gained a reading fluency rate by 4.6 words per minute in Year 2.

At Algester Primary School, our NAPLAN results for 2016 for our iPad and non-iPad classes also show the success of our iPad classes. Our students in Year 5 in iPad classes outperformed students in non-iPad classes in Reading, Spelling and Numeracy with similar performance in Grammar. The results for reading was 21% higher than non-iPad classes. The results for Numeracy were 21% of students in iPad classes performing to a higher standard.

Students in Year 3 in iPad classes also outperformed those in non-iPad classes in Reading, Writing, Spelling, Grammar and Numeracy. The results for reading were 37% higher than non-iPad classes. The results for Numeracy were also similar with students in iPad classes performing 30% greater than those in non-iPad classes.

Future Society:

Our society is changing quickly. Technology is at the forefront of change within workplaces as it permeates all spheres of employment. Automation, robotics, coding, drones etc are all impacting on future work options for students. The age of personal devices is amongst us with most adults using a mobile smart phone for work and play. Education needs to adapt to this changing world.

Conclusion:

Our iPad trials and devolution to 17 iPads classes has proved most successful at Algester Primary School. We believe that the current participation rate in iPad classes of approximately 50% needs to be extended to full adoption in order for us to be even more successful.

Extension Proposal:

- All Prep classes in 2019 (and subsequent years) be iPad classes. A small number of iPads would be made available for school use only for students who cannot obtain an iPad.
- All current iPad classes roll on to 2018 but additional iPad classes established where sufficient numbers are available after an extensive parent education program.
- The cost of parent booklists be substantially reduced in iPad classes.
- A goal of 25 iPad classes in 2018. (a 50% increase from 2017)

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