Early Childhood iPad Initiative

Summary

The Early Childhood iPad Initiative (ECiI) was a strategy implemented in 2012 in 19 Western Australian government primary schools in metropolitan, regional and rural areas. Through individual partnership agreements with each school, the Western Australian Department of Education sought to focus on two key reform areas:

- effective and evidence-based teaching of literacy and numeracy with the integration of iPad devices
- strong school leadership and whole-school engagement with literacy and numeracy through the integration of iPad devices.

The project used an action learning model where teachers were supported by the Department's Curriculum Partnerships Team and a project coordinator designated by ECiL.

Target student group

The schools selected for inclusion in the Initiative were:

- Baler Primary School
- Bullsbrook District High School
- Campbell Primary School
- Cassia Primary School
- Currambine Primary School
- Forrestfield Primary School
- Grovelands Primary School
- Hilton Primary School
- Kalgoorlie Primary School
- Maddington Primary School
- Manjimup Primary School
- Parkfield Primary School
- Seaforth Primary School
- South Hedland Primary School
- Tranby Primary School
- West Beechboro Primary School
- Yakamia Primary School

The schools were selected based on their improved NAPLAN results in 2009–2011 as a result of involvement in the National Partnership on Literacy and Numeracy program. Most of the schools were in suburban and outer suburban areas of Perth, along with three schools in the regional centre of Port Hedland, and one each in Bunbury, Manjimup and Albany. ECiI focused on students in years 1 and 2. A total of 1,671 students were involved

Method

ECiI built on work undertaken in 2010 at Settlers and Aubin Grove primary schools, Western Australia, under the School Innovation Grants program where funding was used to implement ICT practices as an integral part of literacy blocks.

The Initiative's intended outcomes were:

- improvement in students' learning outcomes in literacy and numeracy
- increased independent and self-initiated learning among students
- increased student motivation and active engagement in learning
- improvement in teachers' capacity to plan for and meet individual student's needs
- extension of students' learning beyond the classroom
- improvement in parental engagement in learning and strengthening of home–school links.

As existing research on how iPads can enhance literacy and numeracy learning in early childhood education is still somewhat limited, the Initiative was designed as an action learning model, supported by a project coordinator. Her role was to:

- consult with other Western Australian Department of Education Central Office personnel
- select assessment tools and support schools to review student results
- deliver professional learning programs
- develop resources for action learning
- support schools in their selection of iPad applications aligned to identified learner needs and to maximise the impact on literacy and/or numeracy achievement
- support schools to implement iPad technology strategies in classrooms
- support schools' documentation of curriculum-based iPad integration identified in the action learning phase
- respond to point-of-need requests.

Schools were provided with an Early Childhood iPad Initiation Pack outlining requirements and expectations. Teachers were given iPads for use during the previous summer vacation to allow for building of familiarity and confidence before commencement of the Initiative.

The first stage of the Initiative involved schools becoming technologically prepared, undertaking pre-program assessment and beginning professional development. The second stage, the action learning phase, involved using the iPads in the classroom.

Teachers were supported by the ECiI project coordinator in administering and completing:

- the Western Australian Department's On-entry assessment in year 1
- the ACER Progressive Achievement Tests in Reading (PATR) in year 2
- an online teacher survey on ICT practices
- an online student survey on engagement and motivation.

Teachers were also funded for release time to participate in iPad workshops delivered by the ECiI project coordinator and/or teachers from Settlers and Aubin Grove primary schools who were able to share their experiences of using the technology.

Local web-based and paper resources were used as well as information from international and national education iPad trials. (See the Further reading and links section for details of the trials.)

After pre-assessment and technological installation, over 850 iPad devices were distributed. These were generally for use on a shared basis with schools determining how: for example, a set number allocated per class or pooled and their use timetabled so that the iPad-to-student ratio was increased.

Schools were then able to proceed with the action learning phase. This included collaborative planning and networking, and selecting and implementing appropriate iPad applications. Teachers were assisted in this by the provision of an iPad Application Evaluation Rubric made available online at the Initiative website http://det.wa.edu.au/ipadsforeducation/detcms/navigation/ipad-initiative .

Schools conducted monthly after-school action learning meetings to reflect on progress, ideas and innovations, issues and solutions. These meetings generated discussion about alternative approaches and provided advice to individuals on how to proceed. In some cases Settlers and Aubin Grove primary schools acted as mentors. The emphasis was on trying new approaches and evaluating the results.

Each ECiI school tracked results and completed brief action learning reports that were collected, collated and analysed by the project coordinator. Assessments of students and surveys was repeated at the end of the year. Principals were also required to provide a report.

Results

Anecdotal information from the reports, surveys and interviews supports the aims of students having increased motivation and engagement in learning – especially disinterested students and students with special needs. Students were described as enthusiastic and focused when using iPads, resulting in improved behaviour in the classroom. The students themselves overwhelmingly stated that they enjoyed using them.

'Students have loved the creative apps and are confident in using the technology.'

Teachers reported that they, too, largely enjoyed the experience of using iPads in the classroom. They had a definite influence on the way they taught, and were considered an effective additional teaching tool. Generally, they felt that their own capacity to plan for and meet individual student's needs would be enhanced with growing familiarity with the devices and their applications.

The extent to which schools were able to embed pedagogical change was critical to maintaining the momentum created by the Initiative. Where this occurred iPad technology integration became an integral part of school culture.

Various channels were adopted in the schools to communicate the Initiative to parents, including newsletters, website information, parent–teacher meetings and open days. Parents were also encouraged to visit classrooms and see how the iPads were being used. Teachers' perceptions of parent engagement were very positive. Where students had iPads at home or parents were able to purchase them, there was interest in extending learning at home.

'Children enjoyed sharing knowledge with parents.'

Teachers reported the following additional positive outcomes.

- iPads offered the potential to present a positive environment for assessment, especially for students who feel undue pressure in a test environment – iPads are seen to make them more relaxed.
- The iPads provided an easier way to record and share still pictures and videos, especially where a cloud environment was used.
- Students were able to self-assess their work and save their tasks for later assessment by the teacher. Students also enjoyed the ability to undertake self-assessment by playing back recordings.
- A high level of interest was shown by non-participating schools and increased networking among schools who held iPad open days.
- iPads enabled a reduction in other ICT (including laptops, PCs and photographic devices) and consumables (such as paper).

However, a number of challenges presented themselves in the implementation of the Initiative that impacted on the achievement of some intended outcomes and the effectiveness of others.

A major challenge involved difficulties with setting up and maintaining the technical requirements for iPad use. This was the case for many schools and particularly for those in remote locations. Difficulties included issues relating to iPad sharing and email and iTunes accounts, and the need for wi-fi to be installed or enhanced. The resulting time delays meant that for many schools the implementation phase was considerably shortened.

Lack of familiarity with applications was another factor that impacted on time. Appropriate iPad application (app) selection was crucial to the success of the Initiative. The iPad Application Evaluation Rubric helped guide teachers towards applications that transformed learning and did more than replicate resources they already had (for example, books or pen and paper).

Nevertheless, the overall evidence, including anecdotal evidence from principals, teachers, parents and students through the surveys, reports, action research outcomes and interviews, indicates the Initiative's objectives were well-achieved on almost all fronts.

A medium-sized regional school reported that:

> student engagement in learning was transformed, which translated into like transformation for teachers. The action learning results showed that iPads were effectively integrated into the curriculum, students' results in the focus areas improved, and parent and school partnerships were strengthened.

> The school is now fully immersed in the implementation of iPad devices into the curriculum across the whole school and their use has become the norm. The School Board has agreed to endorse a parent-funded iPad program in years 4–7 and a ratio of one iPad to two students for years K–3 in 2013. The school has a vision that every student from years K–7 will have an iPad by 2014.

Teachers have prioritised iPad implementation and involvement. The school hosted an iPad open day attended by 65 network participants. Teachers opened their classrooms and shared information about their successes integrating iPads into the curriculum. These included showing how teachers used the device as a creation tool to design personalised, differentiated content to meet learning needs. For example, they designed 'Beat the teacher' videos that incorporated the use of the teacher's face/voice and flash cards of sight words that the students needed to learn. Teachers reported that this assisted more students to quickly learn their words as they were able to see their teacher on the iPad and work through their lists. Usually this would require one-on-one teaching but the video capabilities of the iPad enabled several students at a time to benefit.

A small-sized metropolitan school reported:

> Learning has been transformed for a special needs student at our school. The use of apps such as Proloquo2Go has enabled the student to communicate with the teacher, use assistive technologies to share how they are feeling and participate in classroom lessons. Classroom and specialist teachers have created personalised, relevant and differentiated content to cater for the student's physical, emotional and social learning needs.

Lessons learned

The first key lesson was the extended amount of time needed for many schools to achieve technical set-up. It is clear that schools intending to use iPads need adequate wireless networks and designated technical support in place before student use of iPads in the classroom can begin.

The second key lesson was the time required to achieve familiarity with appropriate apps. Prior familiarity with and/or sharing of existing knowledge of various apps would enhance understanding of the range and types of apps that are appropriate and allow quicker program implementation.

Overall, similar initiatives' objectives would appear to be more easily achieved where most, if not all, of the following strategies have been addressed:

- willingness of staff to accept and embrace changes to pedagogical and whole-school practices
- effective curriculum leadership/expertise on-staff, or the ability/availability of expertise for employment at the school
- effective research and use of technology integration models (Technological Pedagogical Content Knowledge [TPCK]; Substitution, Augmentation, Modification and Redefinition [SAMR]; and Blooms Digital Taxonomy)
- access to network support in the implementation of key strategies
- adequate resource allocation (for example, designate year levels to use the devices, allocate funds for iPad maintenance)
- a suitably trained resource nominated to manage iPad connectivity and ICT integration issues
- appropriate professional learning sessions prior to a teacher introducing iPads in the classroom
- enhanced iPad utility by integrating them with other ICT, such as interactive whiteboards and Apple TVs
- creative apps that are chosen to stimulate student interest and motivation
- apps that are chosen may be adapted to personalise learning, especially when used with children with special needs
- teachers share ideas across schools, whether through informal channels or professional learning activities
- iPads are used in a shared environment utilising cloud-based apps to store student work
- iBooks, iMovies and other iPad recordings are used to provide a positive avenue for students to self-assess and for teachers to monitor student performance.

'The sharing of ideas, knowledge and skills has been invaluable.'

Next steps

> 'This year [2012] has been a learning curve … next year I will be able to capitalise
> on the confidence I have gained this year.'

As a result of their experience in 2012, iPad schools are in a better position to undertake more informed future school planning and policy formation with regard to implementing iPad technology in classrooms. Teacher pedagogy has adapted to the Initiative and teachers themselves reported that they were better prepared and keen to maximise utilisation of iPads in 2013.

Greater familiarity with the devices and understanding of which apps facilitate the best outcomes will mean that some of the changes to school practices initiated in 2012 will be enhanced, allowing greater integration of the iPads into daily routines. These practices included tailoring of exercises to student ability, identification of apps that directly link to curriculum outcomes, identification of improved performance assessment opportunities, and broadening the use of iPads to other curriculum areas and year groups.

Also, with more teachers using iPads and apps, there is capacity for teachers to share knowledge about appropriate apps, as well as other aspects of iPad use.

At the end of 2012, the plan was for 17 iPad schools to each support one new school to replicate the Initiative in 2013 and for iPad schools to conduct open days for networks. The Improving Literacy and Numeracy National Partnership (ILNNP) is developing the capacity of 10 Early Childhood Initiative schools to support schools that want to implement tablet technology. The 10 schools are developing professional learning resources and opportunities and can provide advice. In 2013 the 10 schools will work primarily with the other ILNNP schools, but will build their knowledge, confidence and capacity to work with other schools by the end of 2013 and into 2014. The ILNNP schools being supported by the iPad schools in 2013 will also have the skills and resources to work with a wider range of schools in their networks and regions into 2014. The idea is to gradually expand the centres of expertise.

Research base

The ECiI project was informed by identified approaches to teaching that lead to improvements in students' literacy and numeracy learning. These underpinned the Smarter Schools National Partnership for Literacy and Numeracy 2009–2011 and were considered still applicable to the 2012 ECiI Initiative and incorporated in the planning packs. They were:

- structured and explicit teaching to assist all students to succeed
- focusing on what matters most, with an emphasis on literacy and numeracy, so the basics of all future learning are achieved
- using data to drive improvement
- using an action learning approach
- building teaching and instructional leadership expertise
- building and maintaining a culture of sharing and responsibility
- tailoring the Initiative to the overall direction of the school
- a high level of expectation and teacher efficacy.

The following research models were chosen to help teachers integrate technology into teaching and learning. The aim is not for technology to be the focus but to see how the technology fits into the curriculum to meet student needs.

The SAMR model was created by Dr Ruben R Puentedura in the early 1990s. It describes a continuum of the extent to which technology is integrated in the classroom, from the lowest level of enhancement of existing practices to the development and creation of new practices.

The SAMR model was the main focus of the ECiI professional learning program. Teachers from one of the mentor schools demonstrated, through classroom visits, how the top level of the SAMR continuum – redefinition – would look in the classroom. Teachers were also able to use the continuum as a guide in the selection of apps and for self-assessment.

The TPACK model was created by Dr Matthew Koehler and Dr Punya Mishra in 2006. It addresses the intersection of pedagogy, technology and content knowledge for effective classroom application. The model, which is recommended by the Western Australian Department of Education, provides an overarching framework for using technology in the classroom.

Bloom's Taxonomy, as in Anderson & Krathwohl's revised version, and Churches' adaptation for digital use, in particular the diagram of the categories, was especially useful in assisting teachers to understand how iPad use could be incorporated into teaching.

The models were presented, demonstrated and explored through hands-on workshops and classroom visits. Teachers in the trial were encouraged to use the models and share their experiences in collaborative groups as well as using them as a framework for daily reflections in their action learning journals.

In addition, similar national and international initiatives informed the development and implementation of ECiI and these are listed in the Further reading and links section below. Of particular value were the accounts of previous iPad projects in Victoria (iPads for Learning Trial), Queensland (iPad Trial), at Burley School in Chicago, and the work by early childhood teachers at Settlers and Aubin Grove primary schools.

Further reading and links

Primary references

Anderson, LW & Krathwohl, DR (eds) 2001, A taxonomy for learning, teaching and assessing: a revision of Bloom's Taxonomy of educational objectives, Longman, New York

Churches, Andrew, Educational Origami – Bloom's Digital Taxonomy, http://edorigami.wikispaces.com/Bloom%27s+Digital+Taxonomy

Department of Education (Western Australia), Director General's statement: The early years of schooling, http://det.wa.edu.au/policies/detcms/policy-planning-and-accountability/policies-framework/director-generals-statements/the-early-years-of-schooling.en?oid=com.arsdigita.cms.contenttypes.FileStorageItem-id-11914352

An initiative of the Western Australian Director General's Classroom First Strategy, this statement aims to provide school leaders and early childhood teachers with clear expectations and guidance about curriculum, pedagogies and assessment appropriate to the early years.

Mishra, P & Koehler, M 2006, Technological pedagogical content knowledge: a new framework for teacher knowledge, *Teachers College Record*, 108(6), 1017–1054, http://punya.educ.msu.edu/publications/journal_articles/mishra-koehler-tcr2006.pdf

Puentedura, Ruben R, SAMR: Models for Enhancing Technology Integration.

TPCK.org, www.tpack.org 🗗

iPad research references

Department of Education (Western Australia), Director General's Classroom First Strategy, School Innovation Grants 2012, http://det.wa.edu.au/redirect/?oid=SiteProxy-id-12567731&stream_asset=true 🗗

Information on School Innovation Grants. Find out where it all started for Settlers and Aubin Grove primary schools.

Aubin Grove Primary School: Through partnerships with the University of New South Wales, schools, staff, parents and students, the use of iPads resulted in improved literacy outcomes for early childhood students. EPubs, videos of students, guided reading and tailoring applications to individual student learning needs resulted in gains in phonological awareness, recognition of sight words and recall of mathematics number facts.

Settlers Primary School: Multimedia literacy strategies with iPads were used with students, and were particularly aimed at engaging boys. Various applications were used to improve phonemic awareness, reading fluency and comprehension through building sight word recognition, phonemic activities and inferential and evaluative question building. Staff attended iCafe meetings to review and evaluate applications, share successful pedagogy and problem solve.

School Innovation Grants 2011: Sharing the Innovations, Western Australian Department of Education, http://det.wa.edu.au/redirect/?oid=com.arsdigita.cms.contenttypes.FileStorageItem-id-11067604&stream_asset=true 🗗

Department of Education and Early Childhood Development, Victorian Government iPads for Learning, http://www.ipadsforeducation.vic.edu.au/ 🔗

This website is for educators who want to learn about using iPads in primary, secondary and special settings. The Victorian iPads for Learning trial examined the impact iPads have on students' learning at home and at school, as well as how iPads can benefit and transform teaching practice.

Department of Education and Training (Queensland), Smart Classrooms iPad Trial, http://education.qld.gov.au/smartclassrooms/documents/enterprise-platform/pdf/ipad-trial.pdf 🔗

This trial was designed to investigate the suitability and effectiveness of the iPad for educational purposes in government secondary and special education sites and business productivity in corporate offices.

iPads at Burley, http://ipadsatburley.blogspot.com.au 🔗

One of the first known iPad trials in education was at Burley School, Chicago. Part of their research informed Settlers Primary School's iPad innovation.

Apple support references

Apple in Education, http://www.apple.com/au/education 🔗

Information on how Apple devices are being used in the classroom, application recommendations and information on iTunes U.

iPad Support, www.apple.com/au/support/ipad 🔗

Video tutorials and information on how to set up and use an iPad.

Additional reading

ACARA, Information and Communication Technology general capability, Australian Curriculum, http://www.australiancurriculum.edu.au/GeneralCapabilities/Information-and-Communication-Technology-capability/Introduction/Introduction 🔗

Department of Education (Western Australia), First Steps, http://det.wa.edu.au/stepsresources 🔗

Department of Education (Western Australia), ESL/ESD Progress Map, http://det.wa.edu.au/curriculumsupport/eald/detcms/navigation/assessment-and-reporting/esl-esd-progress-map/?oid=MultiPartArticle-id-13870554&tab=Main

Early Years Learning Framework, http://education.gov.au/early-years-learning-framework http://education.gov.au/early-years-learning-framework

Contacts

Karren Philp
Manager, Curriculum Partnerships
Western Australia Department of Education
karren.philp@education.wa.edu.au
Phone 08 9402 6127

Sarah McCormick
Project Coordinator, Early Childhood iPad Initiative
Western Australia Department of Education
sarah.mccormick@education.wa.edu.au
Phone 08 9402 6277