SmartStart: Pathways to New Learning with Indigenous Children

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Research undertaken for IBM
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EXECUTIVE SUMMARY

This report presents the findings from the third phase of a project that was designed to explore the ways in which tablet technologies can be used to enhance teaching and learning in early childhood settings. The new contexts for learning reported here are four Indigenous Child Care centres in the Australian state of Victoria. They form part of the Multifunctional Aboriginal Children’s Services (MACS) network that were funded to meet the educational, societal and developmental needs of Aboriginal children for long day care in Victoria.

This project, as with the previous two phases, builds on the successful IBM KidSmart Early Learning Program by extending it into the 21st century. We have explored the potential of tablet technologies for building (foundational) knowledge in literacy and numeracy and to consider how tablets might extend contexts for knowledge building, meaning making and learning in the early years. Reconceptualising the impact of KidSmart for the 21st century required more than simply updating the technology. It required reconceptualising curriculum and pedagogies and using new tablet technologies in transformative ways. To achieve this we needed to rethink learning and the skills that we believe are essential to live and be productive in this new era.

In this phase of the research we address the issues inherent in the Council of Australian Governments (COAG) Closing the Gap Indigenous policy to address the serious disadvantage that Indigenous learners face in the 21st century. We wanted to support Indigenous educators to become familiar with the pedagogies and practices that would enable their children to be able to acquire fundamental skills in literacy and numeracy that would assist them to participate successfully in their communities and beyond. We suggest that there is a need to grow a generation of new learners beginning in the preschool years. There is an increasing recognition that the early years matter in terms of later successes in the education system (e.g. Perry Preschool Project – Schweinhart et al.; 2005). We believe that interventions to support learners in the Primary and Secondary years of schooling could be minimised if young children are provided with quality early childhood education in the preschool years. Here, we document some ways in which early learning might be transformed for Indigenous children with the use of new technologies in the preschool years. We contend that if we grow a generation of new learners in the early years there will be less of an imperative for intervention to support the acquisition of fundamental skills later in the schooling process.

What distinguishes learning in the 21st century is that it is multimodal. We can support learners in the preschool years by enabling them to explore concepts, acquire new skills and apply them in meaningful ways. This will incorporate using a variety of modalities that include learning experiences that take place using traditional materials as well as with new technologies. When children experience such dynamic learning contexts they will become a part of their lifelong learning repertoire. Children will feel a sense of belonging and become engaged with new ideas as they encounter them. If this becomes embedded practice in the early years, we hope it will continue to characterise the school experience for Indigenous students.

This phase of the research aimed to:

1. Explore the potential of applications (Apps) to support the teaching and learning of foundational skills in literacy and numeracy with Indigenous preschool children.

2. Examine the ways in which tablet technologies can be incorporated and integrated into early childhood programs to support new forms of meaning making, knowledge building and learning in the early childhood years for Indigenous children.
Recommendations

1. Apps that support the acquisition of fundamental skills in literacy and numeracy can be used productively by Indigenous preschool children. They can be used in conjunction with ‘real’ world play materials so that focused attention on the beginning skills, basic concepts and using language to become literate and numerate can form the basis of learning in the preschool years.

2. Everyday activities and interests of children can be incorporated into creating personal and community eBooks that can then be read by the children, together with traditional books, to foster a love of reading.

3. While the children are interacting with tablets, using a variety of Apps, it is essential that educators talk with them and encourage them to use the everyday language associated with the activities they are participating in. In this way their early learning vocabulary is established and can be used in a variety of contexts.

4. The next phase of the project should involve Indigenous children in exploring and documenting their communities and places of interest in their local area. This will incorporate inviting elders into the centres to document their stories as eBooks, and also include explorations and investigations of interesting locations within their locality. It is envisaged that this will incorporate ‘nature play’ in the natural environment and the documentation of play and language in eBook formats.
Background

In 2008 COAG agreed to six targets that sought to address the disadvantages faced by Indigenous Australians. These goals pertained to life expectancy, child mortality, education and employment. Two of them directly relate to this research project. They were to:

- ensure access to early childhood education for all Indigenous four year olds;
- halve the gap in reading, writing and numeracy achievements for all aged Indigenous children by 2018;

The project, known as Closing the Gap, had broad goals to support Indigenous Health, Welfare and Education and plans to encourage early childhood development as well as significant investments in schooling. The National Partnership Agreement on Indigenous Early Childhood Development, was designed to provide for early learning, support for Indigenous families and stated targets for improved health for both mothers and their children. One of its major aims was to improve Indigenous families’ use of early childhood development services to optimise the development of the children and an overarching goal was that Indigenous children should acquire the basic skills for life and learning. One of the findings from the final report indicated that there was anecdotal evidence that early learning activities in the child and family centres were leading to children being better prepared for school. Implicit in the plans and the actions taken as part of the project was a recognition that investment in the early years pays ‘significant dividends later in life’ and that the investments ‘are making a positive difference’ to the lives of Aboriginal and Torres Strait Islander children, families and communities. There was a recognition that evidence based practice was needed to support the sharing of exemplary educational practices since these had the potential to transform the lives of Indigenous children as they progressed through schooling systems to achieve more favourable outcomes.

Since this time prominent Aboriginal leaders such as Noel Pearson have called for new strategies aimed at improving the educational outcomes for Indigenous students. Pearson suggested the use of direct instruction, as the most effective method for improving the learning outcomes of Indigenous children in literacy and numeracy in primary schools. Direct Instruction provides teachers with scripted lesson plans and involves students reciting responses to the teacher as a group. It has been asserted that this approach might be good for ensuring that milestones in literacy and numeracy are met. Where implemented school leaders indicate they are already seeing strong results but many are cautious and want to know that short terms gains in test scores are sustainable.

One of the significant differences about learning in the 21st century is that it is multimodal (Yelland, 2007; 2015). Young children experience learning in a wide variety of contexts and learn with different resources that are found both in their ‘real’ worlds as well as via new technologies. New learning (Kalantzis & Cope, 2012) requires teaching strategies and opportunities to meet the needs of communities of learners who are experiencing changing social futures. New learners are responsive to change and dynamic in their thinking so that they are able to adjust to changing times effectively. They benefit from being fluent in 21st century skills (Partnerships for the 21st century, 2008; Trilling, 2009). These skills - creativity, critical thinking, working collaboratively and communicating ideas effectively - enable new learners to function at a high level in contemporary times. They are enacted from a sound knowledge base of foundational skills which enable ideas to be generated and tested. They are encouraged by learning experiences characterized by engagement with new ideas, inquiry, exploration, curiosity, and a passion for learning. They exist in communities of learners who have a strong sense of social justice and empathy so that being a good citizen is an integral part of the moral imperative of their education.

Acquiring the fundamentals skills and concepts to become literate and numerate are an integral part of being a new learner in the 21st century. For all children this process begins at birth and occurs across both formal and informal contexts of learning (Yelland, Butler & Diezmann, 2014). Fluency in literacy and numeracy enables the 21st century skills and supports growing a generation of new learners who are able to fully participate in society. It is essential that a range of pedagogies (teaching strategies) be used so that children can both acquire the foundational skills and apply them appropriately and creatively in relevant contexts that constitute their lifeworlds.

In planning for these imperatives, it is essential, in the 21st century, that all children access to new technologies and that they are able to use them, when appropriate, to learn. New technologies incorporate the range of devices (hardware) that are available in the marketplace. They are ubiquitous and constantly changing and include, computers, tablets, smartphones and a myriad of other mobile devices. The notion of a digital divide (Warscher, 2004) originally highlighted the disparity between the ‘haves’ and the ‘have nots’ with regard to access to these devices. As access has improved for many, a new digital divide exists whereby the quality of activities enabled by new technologies can be distinguished. Low-level activities involve consuming applications often basically designed for entertainment. High-level applications stimulate creativity, critical thinking, collaborations and the sharing of ideas, and are only possible in environments that encourage diversity and personalized learning. Hence, the type of applications become of major importance. The difference can be characterized as being a consumer or creator of the new technologies (Yelland, 2011) with the latter role resonating with new learning and providing the experiences required to excel in contemporary times.

This project extends these contentions and asserts that in order to encourage and facilitate new learning in the 21st century, Indigenous learners need access to new technologies, opportunities to master the fundamental skills of literacy and numeracy, and be provided with opportunities to apply them in culturally relevant ways so that their experiences are meaningful and learning outcomes are improved. This will then provide the context for decision making about life choices, such as employment and participation in society. There is an imperative to grow a generation of new learners and this begins in the early childhood years.
Research Design

The Contexts

This study was designed to explore and document the innovative ways in which tablet technologies could be integrated into early learning scenarios (4 year old Kindergarten groups) to support new learning in MACS. Four centres participated in the project. They were located in Melbourne (YapperA), Morwell (Gunai Lijd), Shepparton (Lulla’s) and Echuca (Berimba). The tablets used were iPads.

We wanted to consider the potential for new learning (Kalantzis & Cope, 2012) with new technologies, and support teachers to use tablets to transform their pedagogies and practices in early childhood Indigenous education. Our previous research had shown the variety of ways in which tablet technologies could benefit learning in preschools. We sought to extend this work with educators and children to encourage new learning that was culturally relevant and would enable the children to acquire fundamental skills in literacy and numeracy that they could apply in diverse contexts.

A total of ten educators, and 63 children participated in the study. The average age of the children was 4 years 3 months with a range from 3 years 7 months to 5 years 5 months. The educators were experienced, with each one having taught preschool children for over 5 years.

In conversation with the educators it was evident that they felt a primary goal for kindergarten was to have the children ‘school ready’ by the end of the year. Each one of them thought there was an imperative to have technology, such as iPads in their kindergarten room. They made statements to indicate that they felt that using technology was essential for living and learning in the 21st century, particularly for Koori children as many did not have them in their homes. So, the educators thought that coming to kinder and having both structured and unstructured learning experiences with the iPads was important for the children’s early learning. They viewed the advantages of using iPads as being related to engagement with learning, improving fine motor skills, having opportunities for new and challenging experiences, preparing children for the ‘real’ world and enabling them to find out new information. They viewed the disadvantages in terms of being able to manage the time around the use of the iPads and of sharing them between the children in the groups when so many wanted to use them. This was also related to concerns that the children would become too reliant on them in their play and that they would want to use the iPads exclusively and not play with traditional play materials. They also expressed a concern about safety issues online.

The educators ranged in their own levels of confidence with new technologies and their feelings about using them. However, they all indicated that they were ‘excited’ and ready to ‘embrace’ the iPads and ready to learn new ideas that they could try out with their kinder kids.
The Early Years Learning Framework (EYLF) (Department of Education, Employment and Workplace Relations, 2009) was an important policy imperative that guided the work of the educators in this project. The EYLF provides the context for early learning and the reporting framework for all early childhood educators in Australia. The EYLF is designed to support learning contexts in which all young Australians become:

- Successful learners
- Confident and creative individuals
- Active and informed citizens.

The framework characterizes children’s lives in terms of them belonging, being and becoming and it has five learning outcomes that are interrelated and support deep learning via careful planning of experiences – they provide the contexts for children to:

- Have a strong sense of identity
- Be connected with and contribute to their world
- Have a strong sense of well being
- Be confident and involved learners
- Be effective communicators

It is suggested in the framework that information and communication technologies (ICT) can be beneficial for planning learning opportunities in the early years. There is a recognition that ICT can support collaborative explorations and investigations and that they constitute a medium for expressing ideas. Their use is viewed in the context of being part of a wide range of materials that should be available for early learning. An example is shown in Appendix 1 to illustrate how the use of a new technology (iPad) can be incorporated into preschool planning. Further, in reporting for accreditation purposes, examples need to be provided in the form of observations of children engaging in learning. Appendix 2 is a learning scenario of a young child using an iPad to illustrate one way in which this is achieved.
Findings

The findings will be considered in two ways. First, we used Apps to support the acquisition of fundamental skills in literacy and numeracy. In literacy this meant recognizing letters and their corresponding sounds and sound blends and building a strong vocabulary of everyday names and activity words. For numeracy it included:

- the ability to recognize and use early mathematical language such as positional and relational terms (e.g. up, down, over, under, in, out...).
- the names of colors and shapes
- using the basic processes of describing attributes, matching, sorting, classifying, and making and using patterns
- recognizing and using numerals to create groups of specific numbers of items and combining or reducing them as an early introduction to addition and subtraction in context. (see Yelland et al., 2014)

Second, we wanted to create contexts for the children to use the foundational skills in culturally relevant ways. For example, using newly acquired vocabulary to create stories and to be able to read them individually or in groups. Many early reading books and resource materials do not contain representations of Indigenous children. In this project we were able to create eBooks and other items that incorporated the children in the storyline. We included aspects of their daily lives so that they could apply their learning and be involved directly in making and interpreting the eBooks.

It also meant providing learning contexts in which the children were challenged to explain their various experiences using mathematical terms. The camera in the iPad meant that everyday play activities could be photographed, or videoed, and saved for later conversations about aspects of the play scenarios. For example, if the children built a construction with blocks, subsequent discussions about the relative sizes of the blocks, their position in the structure and how many blocks were used could occur. Similar discussions could be had about a painting, a collage or in relation to any of the indoor or outdoor activities planned by educators.

Literacy and numeracy Apps

A list of the Apps used and the foundational skills that they apply to can be seen in Appendix 3. Each of the Apps had several games or activities embedded in their design. Some of them used randomized examples so that each playing experience was varied each time the game was played.

The experiences with the Apps represented a focused time on particular skills and concepts that the educators could build on in their conversations with the children while they were playing with them, as well as in other learning activities. They could also help the children to make connections about the concept with the different activities that were provided as part of the planned program in the kindergarten.
There are a large variety of Apps that support early learning of the letters of the alphabet and their associated sounds. They enable young children to start recognizing each letter and leads to reading words and creating their own stories. For example, in Alpha Tots, each letter of the alphabet is introduced individually by name, and then a word beginning with that letter is accompanied by a graphic so that the child can see how the letter is used in context. This is done for both objects (e.g. book, car, house) and actions (e.g. mix, fix). With Alpha Tots we observed the children making connections between the various letters of the alphabet and the letters that make up their own names as well as familiar items (table, chair and carpet) around them. The audio features of these Apps also helped those children who experienced problems with the pronunciation of words. The Apps encouraged children to recognize letters and words and to say them out aloud.

When the letters are recognized they can be combined to make words, so that in an App like Monkey lunch box various words can be read aloud. We encouraged the educators to talk with the children both individually and in small groups and ask them questions such as:

- What letter is this? What sound(s) does it make?
- Can we think of a word that starts with this letter? What about another word?
- Can we think of a word that has this letter at the end?
- These conversations are an integral part of the learning process.

Using Apps such as Alpha Tots and Monkey Lunch Box were visual, audio and linguistic learning experiences and were extended into conversations about letters, sounds and words with the educators. With Apps such as iWrite words the children could trace over letters and numerals and the experiences became tactile. This enabled them to become familiar with the structure of letters and numerals and how they felt. In doing these activities the children were guided by the App in a structured way, in terms of the direction of each stroke, and were then able to transfer this experience to paper and pencil representations of the letters and numerals on paper. At the same time the children were extending their personal vocabulary of words and numbers, which they could then apply to other learning activities.
**Becoming numerate**

The (Presto Bingo) Colors and Shapes Apps provide playful experiences to help the children to identify and name these in a variety of contexts. Again, it is critical that educators engage children in conversations about the Apps in order to consolidate the mathematical language in context, and to link it with different situations. For example, when Sam was playing with the App PB Shapes. He told Laura that he needed to find squares. Laura told them that the shape was not a square, but was a rectangle. She went on to explain that a rectangle is different from a square because it has two long sides and two short sides that are the same length. She then told Sam that a square has sides that are the same length. When Sam was playing on the light table later that day, he sorted the (three dimensional) shapes into squares and rectangles and then counted how many were in each group. He called out (to Laura): “See this shape... it’s a rectangle like in the game... and this is a blue square... sometimes in the game they are green too.”

Similarly connections were also made between the activities in the Apps (e.g. naming colors in PB Colors) and with making color collections and combinations with items such as buttons.

Bugs n’ numbers and Bugs and buttons provided opportunities to recognize and match numerals in the context of various games that had the common theme of bugs/ insects. Not only was this an attractive proposition for many children who are fascinated by bugs, but also the games enabled them to go through a range of early experiences that could be repeated with three-dimensional materials in the centre. For example, the children were able to:

- match numeral cards with the correct number of items
- create sets of items of a specific number
- sort items based on a particular attribute (color) and then think of a new way to sort them
- compare how many items in a group and say which had more or less?
- Make and finish patterns using a variety of items

Playing with these Apps and talking with their educators enabled the children to experience early literacy and numeracy concepts in dynamic interactive contexts that built on and extended their ‘real world’ play experiences. Taken together these multimodal learning opportunities prepared the children to experience reading with both electronic and traditional reading books.

During this phase of the research we read eBook stories to the children such as Teddy’s day and Peppa Pig at the fair. These eBooks extended traditional reading experiences in a variety of ways. First, the eBooks have ‘read along’ modes. A child could choose just to listen to the story in tandem with the pictures. Second, the story can be retold using their own words. Each book contained a series of activities on each page that extended the scope of the book. For example, on one page in Teddy’s Day children can create a drawing, which then goes on to the wall of the living room in which the character is playing with her Teddy on that particular page. Or they can make a jigsaw with the characters as they are playing. With the Peppa Pig book – you can choose to modify the text by recording your own words for any page. The pages of the eBooks are brimming with items and actions that act as a catalyst for language and conversations about a wide variety of things that children find interesting. It might be about dancing (there are dancing mice in Teddy’s day) or eating fairy floss at a special event (Peppa Pig)

Learning these foundational skills, concepts and language is not just experienced on the iPads. Using the tablets forms part of the daily program and is linked with other play materials located both inside and outside the classrooms. This was illustrated in the learning story with Sam above. In this research we found that the experiences with the Apps on the iPad acted as a catalyst for more focused conversations when the children were playing in other areas of the centre. This
happened both spontaneously and with scaffolding from the educators. All the educators were familiar with basic mathematical language, concepts and beginning skills from a professional learning experience around Early Mathematical Explorations (Yelland et al, 2014) that happened in the year prior to this project. This project took an integrated and practical approach to language and conceptual learning from birth and provided educators with strategies to support early learning for numeracy and literacy.

Once children have acquired the foundational skills they are able to communicate and make meaning in more effective and sophisticated ways. In this project we wanted the children to apply their knowledge and skills in new and diverse ways. So we used the iPads to do this.
This is me! An introduction to Madpad

MadPad is an App that enables a montage of twelve pictures and sounds to be created and replayed. One of the things that we found to be useful when introducing a new creative App such as MadPad to young children was to show them an example. They could then use this to help produce their own version, or innovate on it because they could see some relevance of it to their own experiences and interests. In this instance, MadPad enables users to view and play with other users’ MadPad creations on the Internet and share on YouTube. In one, a series of 12 photos and sounds of a car are arranged in a 4x3 matrix and in others there are various scenes and sounds from daily lives as well as others using a range of musical instruments. The idea is that the clips are short (10 seconds) and ‘snappy’ and can be played individually or collectively. It is the range of sequencing the items and innovating on the sounds that makes it so much fun and lifts its creative potential so that each time it is a different experience.

For the young children in the centres, the MadPad montages provided the context for a short burst of conversation or sound creation that could then be linked with others to form a whole matrix of sounds. These then acted as a catalyst for exploring the sounds or ideas encapsulated in the matrix of videos. When working with preschoolers we found that we had to do several ‘takes’ with each child before we could use the 10 second recording. At the most simple level we did MadPad montages in which the children introduced themselves and said what they liked best. For example, “My name is Mira and I like cows!”. Other completed montages included a collection of playground sounds, favourite spots in the garden and a statement about favourite animals. All of the MadPad montages were played with repeatedly by the children and a rich source of conversations.
By far the most exceptional use of the iPad was in the creation of eBooks with an App called Book Creator. These eBooks could also be saved as iBooks in a different App. Kindergarten aged children (4 years old) are in the process of acquiring literacy and numeracy skills that enable them to explore the world and share their ideas with others. They need to practice their skills in a rich variety of contexts. This may include: playing at shopping and using the appropriate terminology; using items and engaging in conversations; talking about constructions while playing with blocks and creating eBooks on the iPad.

The availability of children’s books that include Indigenous children as characters are limited. We were able to include the children in the centres and their everyday experiences as the source for stories. In each of the centres we made eBooks that captured the children’s daily activities including special events. These included:

- And Indigenous children’s celebration day: On this day the centre arranged for a range of activities including both modern and traditional Aboriginal dancing groups
- A visit to the local Indigenous cultural centre
- making a book about aliens
- exploring the garden created at the centre
- playing in the playground
- finding out more information about our group of friends

The eBooks were multimodal. They included, text, drawings, photographs and videos. The text was both written as well as being spoken by the children. When the books were finished the children could share them between the two iPads in each centre via AirDrop, and then they could be read whenever any child chose to do so. This was quite frequent, as the books seemed to take preference over traditional books. The eBooks provided a context to practice reading and for listening to stories. The narratives had direct and personal relevance to the young children’s lives. The children wanted to sit and read the books that they had made themselves. This, in turn, had the effect of increasing their vocabulary and improving their reading capacity.

The use of the iPads to make eBooks became a record of the activities that the children participated in. They were examples of using literacy and numeracy in meaningful ways. For example, we made a visit to a local cultural centre during one session. The eBook became a dynamic and permanent record of the day’s events that could be revisited at any point in time when individual or groups of children wished to recall them. In this particular example – the visit to the cultural centre included hands on experiences with traditional artifacts as well as listening to Uncle playing the didgeridoo and the children guessing which animals he was mimicking on the ‘didge’. Uncle could not be present back in the
centre – so the book became a permanent recollection of his playing and the children loved to recall this in their later reading of the book.

Some centres also decided to print the books as well as have them in the electronic format. This provided the context for another dimension of multimodal representations of the books and conversations around why the video could not work in the printed version – a feature that was important for many of the children in the various groups.

A benefit of printing the eBooks was that we were able to use QR (Quick Response) codes. We created QR codes using an App called QR code generator. For example, we made an eBook about a scooter race held at the Kindergarten (see Appendix 4). The eBook contained videos of each child racing around a track in the playground on the scooter. These videos showed how long each child took to complete a circuit. Our aim was to find out who was the faster on the scooter in the group. Each of the videos was then uploaded to a private YouTube account, using the YouTube app on the iPad, and assigned a URL. The URLs were uploaded individually into the QR code generator App and a unique QR code was automatically created for each video. The unique QR codes were printed and pasted onto each respective page of the hard copy. The children could then use their iPads to scan each code to view their video.

In another example of using QR codes we created a poster of the children’s favourite things. This included a photo of each child in the group with a QR code placed next to the image. When scanned, the QR code linked directly to the video on YouTube of each child speaking about what they liked doing best.
Creating plays with Play School and Sock Puppets

Two other creative Apps are worth mentioning here. PlaySchool Art Maker lets children create various scenarios with their favourite characters from the popular TV show. The children can choose a setting (e.g. a farm, the beach, underwater, bedroom or the moon), place the characters and appropriate items in the scene and then record a one minute video in which they can add their storyline with their voice.

The videos can again be compiled and made into an eBook or simply be saved in the App for later viewing. The scenes created provide very useful catalysts for talking about the various forms of mathematical language. They can stimulate conversations around positional and relational terms and incorporate activities such as counting and finding patterns in the scenes that have been created. The children loved to playback their creations and share them with their friends. In the process they talked about the various characters and items in each scene as if they were friends. Each video constituted a multimodal language experience that was created by the children themselves.

In Sock puppets a background and characters can again be chosen and incorporated into play based scenarios. The children seemed to enjoy these activities and carefully thought about the words that they might use when they were recording their short play sequences.
Conclusions

The learning scenarios presented in this report support the contentions that tablet technologies, and specifically the iPad, have the potential to enhance and extend new learning opportunities for children as young as 4 years of age. They can do this in four specific ways:

1. They can support the acquisition of early foundational skills in literacy and numeracy. There are a myriad of Apps that claim to ‘teach’ basic concepts. We used a small number and also used explicit teaching moments when children were engaged in outdoor or indoor play activities – to encourage and reinforce the application of these fundamental ideas and connect them to other learning activities in the centres.

2. They encourage the use of skills and particular concepts that are complex and can stimulate multimodal thinking, by raising the level of awareness about how things can be done electronically as well as in the ‘real’ world and having conversations about the ways in which they are similar and/or different.

3. They provide the medium in which everyday activities and special events can be recorded and revisited. For example, in this project we used the BookCreator App to create eBooks that were constantly revisited by the children to recall what they had been doing at the centre at that particular point in time.

4. The activities provide contexts for using language and communicating with others. We found that engaging in the iPad activities stimulated conversations between the children and that the educators were also able to engage the young children in interesting and sustained talking to build their early vocabulary and skills in reciprocal talking.

These four aspects of using the iPad are vital for Indigenous children so that they are able to fully participate in new learning in the 21st century. Our beliefs resonate with the goals of Closing the gap. We recognize that growing a generation of new learners from the early years is essential if Indigenous children are to have positive learning outcomes throughout their education. We contend that if we are able to achieve this in the early years it will alleviate the need for intervention in the later years of schooling and be of major benefit to all Australians.
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ENDNOTES


Appendix 1: Sensory Play: Term 1

EYLF OUTCOME 1: CHILDREN HAVE A STRONG SENSE OF IDENTITY

- Confidently explore and engage with social and physical environments through relationships and play.
- Engage in and contribute to shared experiences.
- Persist when faced with challenges and when attempts are not successful.
- Be open to new challenges and discoveries.

EYLF OUTCOME 2: CHILDREN ARE CONNECTED WITH AND CONTRIBUTE TO THEIR WORLD

- Broaden understandings of the world in which they live.
- Use their sensory capabilities and dispositions with increasing integration, skills and purpose to explore and respond to their world.
- Use play to investigate and explore ideas, experimenting with cause and effect, trial and error and motion.
- Respond through movement to musical experiences.

EYLF OUTCOME 3: CHILDREN HAVE A STRONG SENSE OF WELLBEING

- Engage in increasingly complex sensory-motor skills and movement.
- Use their sensory capabilities with increasing integration, skills and purpose to explore and respond to their world.
- Respond through movement to musical experiences.
- Respond through comments on differences between experiences in the ‘real’ world and those on the iPad.

EYLF OUTCOME 4: CHILDREN ARE CONFIDENT AND INVOLVED LEARNERS

- Express thought and interest in their environment.
- Are curious and enthusiastic participants in their learning.
- Use play to investigate, imagine and explore ideas, experimenting with cause and effect, trial and error and motion.
- Transfer knowledge from one setting to another and make connections between experiences, concepts and processes.

EYLF OUTCOME 5: CHILDREN ARE EFFECTIVE COMMUNICATORS

- Respond verbally and non-verbally to what they see, touch, hear, feel and taste.
- Express ideas and feelings and understand and respect the perspectives of others.
- Use their sense to explore the environment, living things and natural and processed materials.

The benefits in relation to the 5 EYLF outcomes of providing such play spaces to your child are listed in the below.

The senses of touch, sight, smell, taste, and hearing are how young children explore the world around them. As educators, it is our job to help them explore their senses by providing appropriate experiences for learning through sensory play and learning.

To help your child in this domain, identify children’s strengths and interests, choose appropriate teaching and learning strategies, and design the learning environment (EYLF Being, Becoming and Belonging, pg. 9).

To stimulate the sense of **sight**, we will provide access to the following experiences: chalk on blackboards, drawings on board, ink on paper, garden, finding Worms, colours, bubbles, to water play.

To stimulate the sense of **smell**, we will provide access to the following experiences: cooking, fragrant soaps, flower in water (lemon, orange).

To stimulate the sense of **touch**, we will provide access to the following experiences: soap, bath, space, different genre of music.

To stimulate the sense of **taste**, we will provide access to the following experiences: cooking (pancakes, cupcakes, damper, herbs), fruit in playdough, fruit in water (lemon, orange).

To stimulate the sense of **hearing**, we will provide access to the following experiences: introduce new instruments, songs, different genre of music.

The senses of touch, sight, smell, taste, and hearing are how young children explore the world around them. As educators, it is our job to help them explore their senses by providing appropriate experiences for learning through sensory play and learning.

To help your child in this domain, identify children’s strengths and interests, choose appropriate teaching and learning strategies, and design the learning environment (EYLF Being, Becoming and Belonging, pg. 9).

To stimulate the sense of **sight**, we will provide access to the following experiences: chalk on blackboards, drawing on board, ink on paper, garden, finding Worms, colours, bubbles, to water play.

To stimulate the sense of **smell**, we will provide access to the following experiences: scented water, bubble bath, fragrance soap, mystery bag of different smelling things.

To stimulate the sense of **touch**, we will provide access to the following experiences: objects and colours in salt, fine sand, and rice, writing with different objects (feather tips, twigs) in paints, inks, sand trays, water play with equipment and objects, lux soap, slimy goop, jelly bath, variety of natural materials, mystery bag, different fabrics in dress-up area.

To stimulate the sense of **taste**, we will provide access to the following experiences: cooking (pancakes, cupcakes, damper, herbs), fruit in playdough, fruit in water (lemon, orange).

To stimulate the sense of **hearing**, we will provide access to the following experiences: introduce new instruments, songs, different genre of music.

The benefits in relation to the 5 EYLF outcomes of providing such play spaces to your child are listed in the below.
### Appendix 2: Learning story

**A Kindergarten Learning Story**  

<table>
<thead>
<tr>
<th>Learning outcomes</th>
<th>Examples or cues to demonstrate this</th>
<th>A Learning Story</th>
</tr>
</thead>
</table>
| **Children have a strong sense of identity**           | • Feels safe, secure and supported  
• Develops their emerging autonomy, inter-dependence, resilience & sense of agency  
• Develop knowledgeable and confident self identities  
• Learn to interact in relation to others with care, empathy and respect. | Darcy was invited to have a turn on the iPad. He chose the PB colors App. The App requires that the user listens to the instructions and then has to ‘tap’ all boxes that match the named color. As each correct item is selected a numeral representing the number of boxes touched appears at the bottom of the screen. Each time the game is played a random color and number of items is generated.  
Darcy played confidently and his sense of pleasure seemed to grow as he played more times. He responded to the challenge of the new game. |
| **Children are connected with and contribute to their world** | • Sense of belonging to group  
• Respect diversity  
• Recognise fairness  
• Socially responsible  
• Show respect | Darcy played and was initially supported by the educator who explained the rules of the game and helped him to count to the larger numbers (the highest being 20).  
Other children came to watch to see how to play the game & wait for their turn. |
| **Children have a strong sense of wellbeing**          | • Strong social & emotional well being  
• Increasing responsibility for own well being | As Darcy played more and understood the game – he played with confidence and at the end was able to explain to others how to play.  
He sat and played for about 15-20 mins and then it was time for him to go home. |
| **Children are confident and involved learners**       | • Develop dispositions for learning  
• Skills of learning – exploring & investigating  
• Transfer across context  
• Resource own learning in variety of contexts | Darcy was able to play the game and sit for an extended period of time which he had been unable to do until this time. |
| **Children are effective communicators**               | • Interact with others  
• Engage with range of texts & make meaning  
• Express ideas in range of media  
• Use symbols to express ideas  
• Use ICT for learning | Darcy listened carefully to the educator for instructions and was able to then tell his peers how to play the colors game. Darcy has sorted by color with 3D materials and extending his repertoire of sorting experiences. He is working in 2D/ 3D modes. |

**Short term review**

Darcy is a very active child and the educators have worked hard with him to increase his ability to sit during activities and increase his concentration span. The iPad holds his interest and broadens his opportunities to talk and increase his vocabulary. Hopefully it will increase his language and cognitive skills.
### Appendix 3: Kindergarten iPad Apps – Learning Snapshot

<table>
<thead>
<tr>
<th>APP NAME</th>
<th>LITERACY</th>
<th>NUMERACY</th>
<th>CREATIVE</th>
<th>SKILLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AlphaTots</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Book Creator</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Futaba</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Jigsaw</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MadPad HD</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Monkey Preschool Lunchbox</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Playschool Art Maker</td>
<td></td>
<td></td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Presto Bingo Colours</td>
<td></td>
<td></td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Presto Bingo Shapes</td>
<td></td>
<td></td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Super Why!</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tally Tots</td>
<td></td>
<td></td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Teddy’s Day (eBook)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Teddy’s Night (eBook)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

- **Sorting/Classifying** includes: sorting/pairing objects, number ordering, colour classifying, object classifying and patterning
- **Spatial** includes: size, shape & volume identification, angles and mazes
- **Matching** includes: puzzles and memory cards
Kinder Crocs: The Scooter Race

Who do you think is the fastest?

Watch the videos to find out!
<table>
<thead>
<tr>
<th>Name</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manarra</td>
<td>20 seconds</td>
</tr>
<tr>
<td>James</td>
<td>14 seconds</td>
</tr>
</tbody>
</table>
Nyoka
18 seconds

Jeannie
17 seconds
Alkira

19 seconds

Shanaya

30 seconds
Maisie

60 seconds

Eva

25 seconds
Cielle

40 seconds

Dylan

62 seconds
Narriah

38 seconds

James was the fastest!

Well done Kinder Crocs!