Digital technologies

Digital technologies – does the phrase make you nervous? This newsletter provides strategies for putting your (digital) toe in the water. It provides links to advice about screen time for young children. It helps you identify current unplugged play activities that support coding and computational skills.

Intertwining language learning and coding

At first glance the idea of combining language learning and coding seems like a stretch. But the multiple learning aims at Uranquinty Pre-school have led to this odd combination and the children are loving the outcomes.

Uranquinty Preschool is a small, community-based preschool just outside Wagga Wagga in New South Wales. The preschool operates three days per week and is run by a management committee that employs four educators including a teaching director.

The pre-school was a finalist in the Narragunawali awards in 2017 for work in supporting understandings of Wiradjuri culture and people. Centre director Louise Grigg says:

‘We put a lot of effort into bringing in resources to support understandings of Aboriginal cultures and how to extend this focus into lots of different areas. A local Aboriginal man designed a map for us that has symbols from his culture as well as image and words from the Wiradjuri language. It’s a largish vinyl map with a grid as well. Our children draw related images on cards and place them on the map at various stations connected with the language. It’s a great way of learning some vocabulary.’

The focus on language then extended to learning the Indonesian words for some of the images on the map as the pre-school is part of the ELLA program.

The pre-school then became involved in the Little Scientists program. Professional learning included exposure to Bee-Bots which enable children to program the digital devices to move in particular directions. This Wiradjuri-based map was a perfect place to use the Bee-Bots. The staff at the pre-school have been delighted to see the results. Louise has emphasized how easy it has been to introduce this.

‘BeeBots are a good starting point for children as they are simple to use – they are a great beginning for understanding directional language, and the beginnings of coding. It’s amazing what the children are capable of doing.’
Louise says that when she commenced involvement with Little Scientists, her conception of STEM (Science, Technology, Engineering and Mathematics) amounted to “doing a science experiment”. She joined with three other teachers in the region to create a network. They now present Little Scientists workshops for other educators. Participants have widely varying levels of interest in the area initially but the training has made a big difference to skills and knowledge of STEM.

“We know that our children will be expected to change careers so many times and that 70 per cent of employers identify STEM-skilled workers as the most innovative. Little children are so open to new ideas, to inquiry-based learning, they just zoom in on new things.”

The focus on digital technologies at Uranquinty varies from year to year. A younger cohort of children in 2019 has meant that children have been using iPads, binoculars and magnifying glasses to capture the insect life around the centre. Term 4 will involve a return to using Bee-Bots in ways that intertwine content knowledge and learning new processes.

**Try some things**

The National Association for the Education of Young Children (NAEYC) has put together some tips for educators. *The T in STEM: Creating Play-Based Experiences That Support Children’s Learning of Coding and Higher Order Thinking* provides five tips to get started practicing Higher Order thinking (HOT) and early coding foundational skills without any technology.

You will find some more ideas in the article *Introducing the ‘new’ digital literacy of coding in the early years* which links Play-based Digital Learning (PBDL) with coding and robotics.

*Coding for kids – without a computer* provides some great practical ideas.

Spatial reasoning is said to be the best predictor of whether children will end up in a STEM-related career. *Five easy ways to boost children’s spatial skills* provides evidence-based ideas for you to follow up.

*Data - Patterns and Play (Introduction)* is a 4-minute video made by the team at CSER (The University of Adelaide) who have led learning about digital technologies in Australian schools. *The power of the humble Beebot* is a blog entry from the CSER site which provides some examples of practice.

Early childhood educator and writer Ann Gadzikowski explores ways to nurture children’s ethical decision-making and critical thinking skills in this blog entry titled *Teaching Artificial Intelligence in Kindergarten*.

Communicating in Algorithms: Connecting coding to literacy is a blog entry by a Canadian kindergarten teacher that unpacks this argument: “I believe that kindergarten children who utilize complex, integrated coding activities in their daily lives will have opportunities to strengthen their literacy skills.”
Getting started with Bee-Bots
Monash University lecturer Dr Sarika Kewalramani has an ongoing interest in coding and robotics in early childhood education. She recommends some of the following activities in an article titled 'Why preschool is the best time to spark an interest in STEM':

- Using trial and error, children program the Bee-Bot to perform different tasks. It's a great opportunity for children to estimate things. For example, how many times will your Bee-Bot need to go forward to reach the farm and beach in their city?
- Ask children to design their own story for the Bee-Bot's adventures to encourage creativity. Children can draw a story map, and use images to illustrate it.
- Promote group work and set up problem-solving challenges. For example, robots can dive into the ocean to find the treasure or climb up a mountain without going into a volcanic area.

Monash University is offering a face-to-face training day about coding, robotics and technological design thinking for early years educators on October 30 2019. Find details here.

Other sources of ideas for using Bee-Bots include:
How to make your own bee bot map
Bee-Bot - a teacher's guide
Buzzing with Bee-Bots

Resources

Empowering children to use technology to be active and creative
Read how NSW-based kindergarten Wee Care in Sydney incorporates a focus on technology. Ruth Weinstein, Wee Care owner and director was interviewed by Early Childhood Australia. In that interview she said: 'When we first talked about using technology, we thought that children spent too much time on screens, so we challenged ourselves to find technology that we could use in new and different ways that support our program and the pedagogy of what we're doing at the centre'. Read more here or listen to this podcast episode of Feel Play Love. It features as well as Ruth Weinstein talking about her approach to technology in the early years and Professor Susan Edwards of ACU who discusses the importance of developing awareness in young children of what digital technologies are and of how they are networked, and of the value of co-viewing and co-playing with children.

For South Australian services
The Early Learning Unplugged Challenge Activities is a 100% unplugged version of the SA-based Commissioner's Digital Challenge specially designed for children aged 3–5. Children can learn the fundamentals of computational thinking without using a device – by simply playing a game of hide and seek or creating their own robot dance routine with Cody Buttons cut-outs.
STEM learning in the early years
Read an update on the ELSA project with an outline of some of the apps that have been developed and what their learning objectives are. Find a list of picture-story books that support development of computational and coding skills – you might be surprised by what is on the list!

Differing perspectives
This article reports on the Tots and Tech conference held in 2017 that explored the benefits and downsides of media and technology use in early childhood.

Staying safe online
The eSafety Commissioner has produced several tipsheets for parents including advice about ground rules and tips about screen time.

Using digital touch technologies to support children’s learning
This ACECQA article differentiates between instructive apps, manipulable apps and constructive apps with short videos and links.

Tips for parents of young children using digital technology
In 2018 ECA launched the Statement on young children and digital technologies. They have now published an article providing tips for families drawn from the Statement.

Safe technology use
This South Australian government resource provides advice about recommended screen time for young children at differing stages for development and tips for parents in terms of managing children’s addiction to screens.

Have a play!!!
The new GiST website is designed to support girls becoming engaged with STEM activities. Most of the site is aimed at school-aged children but the section for Families has a lot of great play ideas. You and your children could have a lot of fun with some of these ideas.