The Coding Club

By Rhonda Powling

Our school library space is a place for the whole school community to use. It is the one place in the school that accepts and helps everyone, together equally. We have an online space and offer digital resources but we also find the physical resources and space are still needed and wanted. It is still used by the community and it is where everyone can be engaged in learning, both on a personal level and as a group.

So, naturally, following true library form, our school library began to develop and offer spaces for activities that would both teach and empower our students (and maybe our teachers).

We began with chess and offered the, already formed, Chess Club an opportunity to showcase their game and then we moved on to 'Lego lunchtimes'. The younger students were very keen but we also found that many older students and a few teachers couldn't help themselves and just had to put few together pieces when they walked passed.

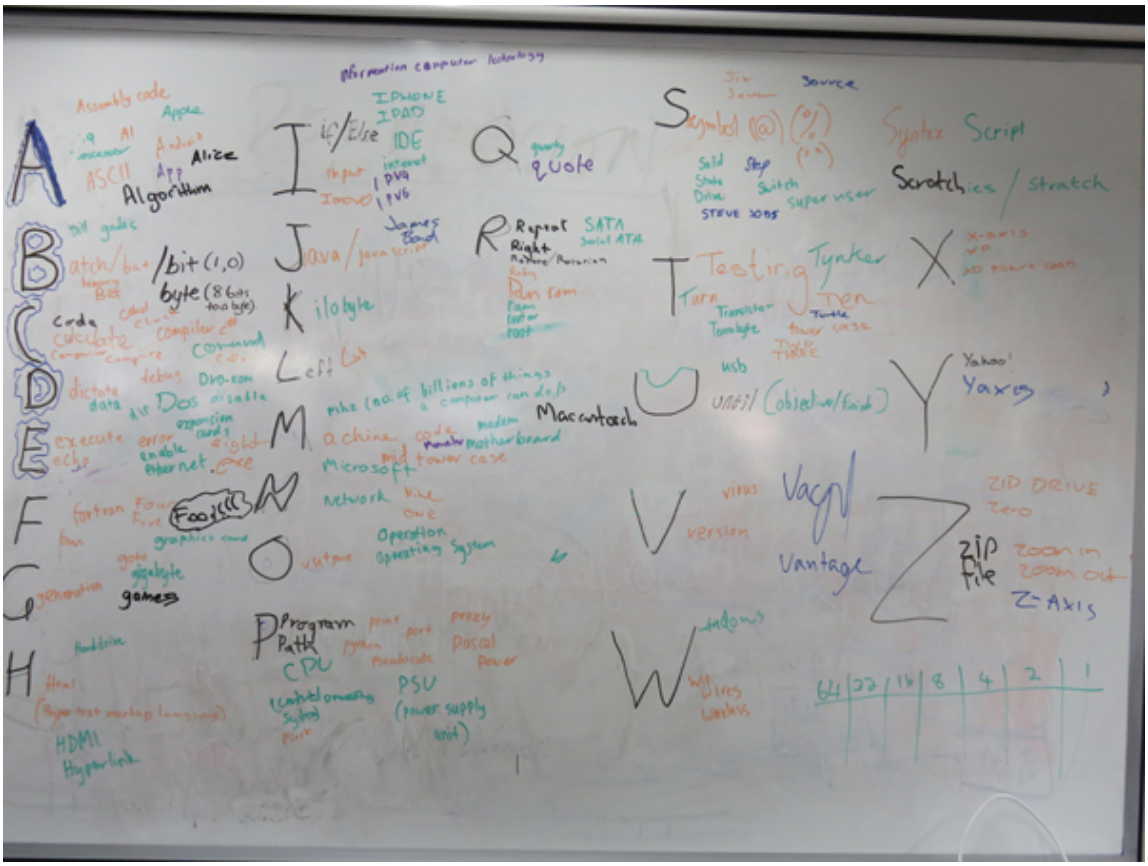
As we chatted with the students when they were in the library, it became evident that many were interested in gaming and also coding. No one in the school was doing anything to support the interests of these boys. I took the idea to one of the ICT teachers and our first steps toward creating a coding club were taken.

What should we do and how to begin? We pondered these questions but just jumped in by offering a place to play minecraft.edu starting at the beginning of term 4, 2015. We explored the benefits of good communication, collaboration and negotiation as students worked together to create a Minecraft world. It was very successful. The boys were very excited and enjoyed their experiences but also learnt quite a bit about working with others and sharing.

Coding Club

In term four our school has a week called Year Eight Immersion. Students choose what they want to do for the week from a range of daylong learning activities that are offered by different learning areas. Last year teacher, Fiona Matthews and I offered two options, Minecraft on one day and coding (calling it Code I.T.) on the other. This really

made us think about what we could offer in these two areas to keep the students interested for a whole day. Fiona had been looking at developing a year eight digital technology course for the Victorian Curriculum and was interested in trialling appropriate activities. We both plan to collect feedback from the students.



Coding terms identified by students.

Immersion Day - Coding

There are quite a few ways to begin to learn about coding but hands-on and experimenting is the best. You don't have to 'do it all yourself' as there are many online sites that offer coding experiences. However, as always, some options are much better than others.

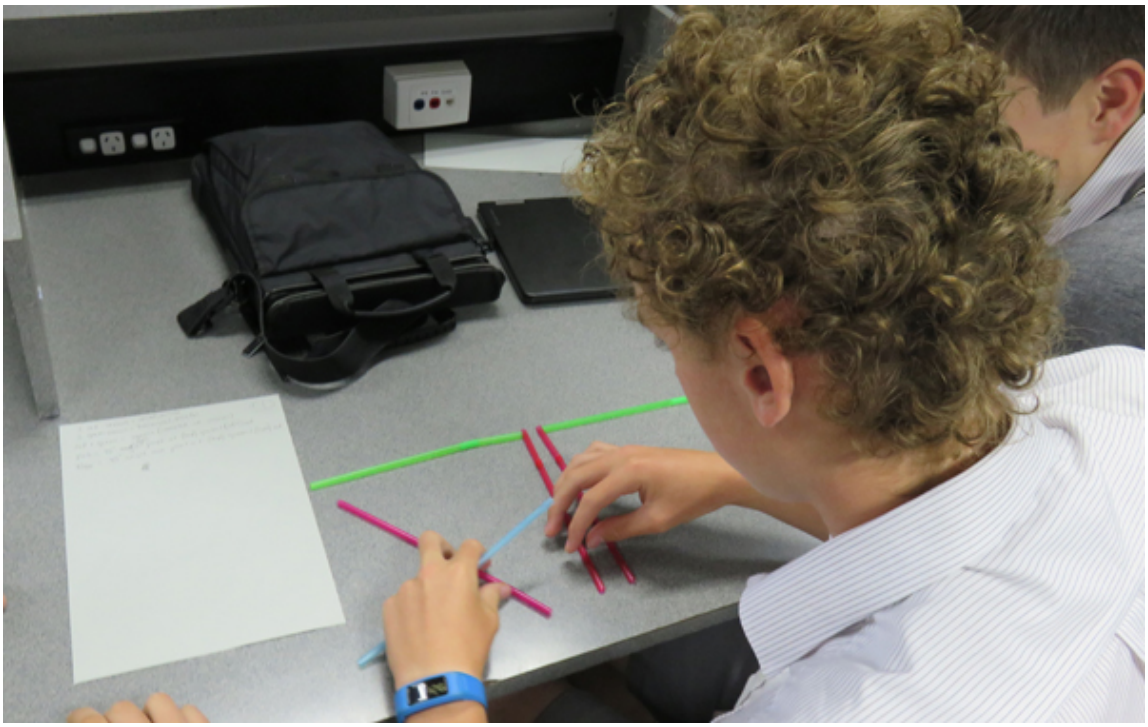
We were not sure where to begin although we realised that there would be various levels of interest and experience amongst the boys and we had to be able to appeal to and engage them all. With this in mind we developed a program within a basic framework that allowed boys a degree of choice.

We began with watching a short introductory video and had the students work on the Hour of Code site. This site is constantly growing. It offers many interactive coding activities as well as links to other useful sites. We allowed our student to choose whatever examples they were interested in. Themes include: Minecraft; Star wars: Building a galaxy with code, Flappy code, Frozen, Code studio – Artist and Playlab.

These activities used sequencing, logic and symbols and showed the value of collaboration . . .

In our next session we worked without digital technology. All code is about instructions so we thought it would be a good idea to explore this idea. We took the boys through what 'machine language' is and had them playing with binary numbers and ASCII code. We had them write their names in binary and solve a secret message written in binary. This was followed by giving instructions to a machine where they had to think clearly about what instructions they were giving as there can be no inference and prior knowledge. Creating this pseudocode caused lot of laughs. Our activities included writing down all the directions for designing with coloured straws and building with plastic cups. They were adapted from a site called CSUnplugged and Tinkersmith Traveling Circuits Lesson 3 My Robotic Friends. These activities used sequencing, logic and symbols and showed the value of collaboration and debugging as you go. It is worth downloading the PDF version. These processes helped contextualise coding.

In the third session we explored coding using several coding sites. We started with Scratch, some students had used scratch at primary school but others had not. There are many Scratch activities with starter projects.



Coding Low-tech or Pseudocoding.

We also had the students sign up to the The Code Academy. This site offers free courses on many coding languages. Our Coding club boys this year have undertaken several. The activities have included: Learn Python and Learn JavaScript. There are also courses on HTML and CSS that the students expressed interest in. During this session several boys who are already writing code at home after teaching themselves, had the opportunity to take apart some of the old desktop computers and talk to some of the technician in our IT department about hardware. It was great to see the interest from both parties.

In our final session the boys shared their creations or discussed what they had learned. It was interesting to see that we had managed to cater for all of the students, although they were very different in learning abilities and experiences. The feedback from all students was very positive.

We took the comments and advice from these boys and began the Coding Club this year with ideas we developed after the Immersion Day.

The Coding Club

The boys have worked on the Hour of Code and then followed up with some sessions from the Coding studio. This is found on the Hour of Code site and offers more options for different coding experiences and galleries. The boys love the interactivity offered by the studio format and enjoy receiving certificates of completion as they finish each stage.

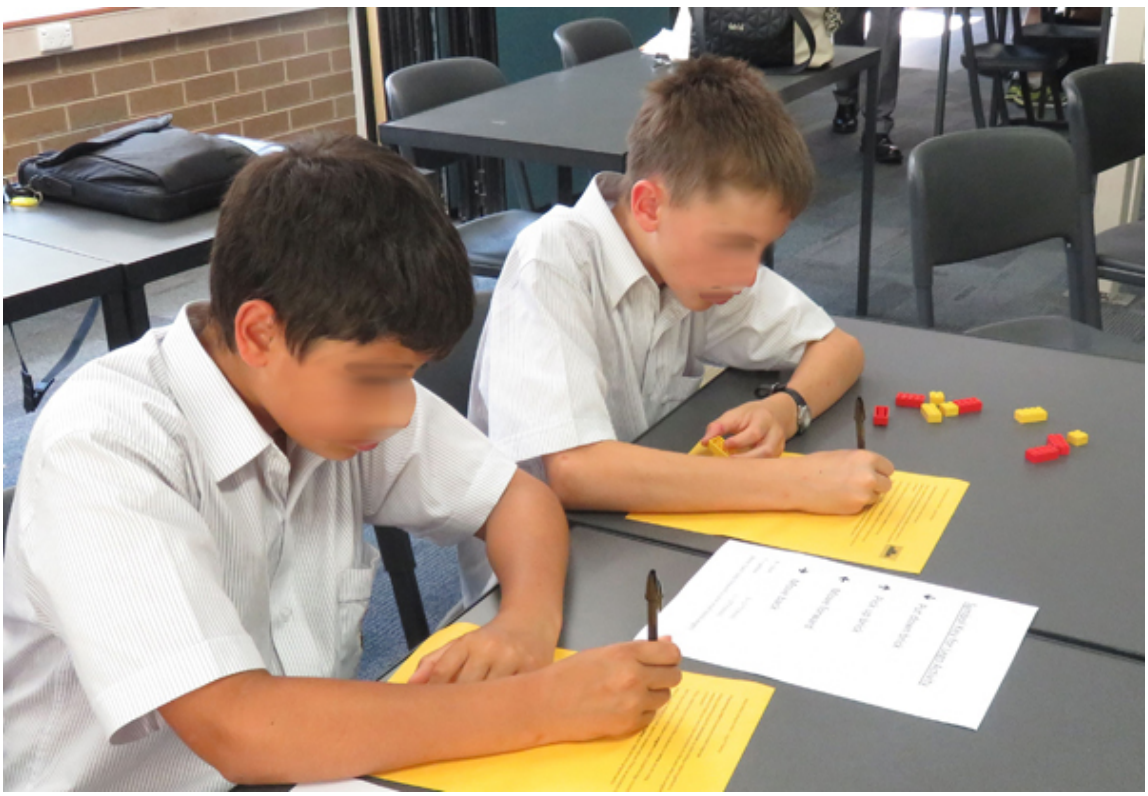
The boys love the interactivity . . .

We have also tackled different coding experiences from the other coding sites. The boys have gone to Beyond Hour of Code. The activities that were linked from here offer advanced tutorials for coding and build on the Hour of Code. The activities that interested our students included: Learn to program with robots; Get creative with coding Scratch; Learn Python programming Grok Learning.

We also pointed them to The Code Academy. This site includes free courses on many coding languages. Our Coding club boys have undertaken several so far. The activities have included: Learn Python and Learn JavaScript. There are also courses on HTML and CSS that they have expressed interest in. They have also used Programming with Python that offers simple activities that test your skills.

Coding Low-tech or Pseudocoding.

At the moment several are working on the W3schools site where they have been learning HTML. Fiona and I suggested that they might like to create their own webpages using HTML and as an exercise to test their ability create a Coding Club website where they can showcase their skills and interests. Most have taken to this idea and are working towards this achievement.



Coding Pseudocode.

Our club meets every Friday at lunchtime; the students can bring their lunch with them. They sit down and get started on whatever activity they are interested in that day. We give them the space and help with the coding when

and if they ask. They also help each other. Our students are mainly in years seven to nine and some of our senior students have taken an interest in what they are doing and are happy to come in and help as well.

We have plans to offer some Hour of Code sessions to teachers to show what we are doing and let them have some fun. We are still learning in what is a constantly changing field. During Maths Week some students from Swinburne came to talk to our students about coding. It was a full house and the students were fascinated to see what the universities were doing.

We are still learning in what is a constantly changing field

The Maths and the ICT Learning Area staff are all very encouraging and the IT technicians are also supportive of our Coding Club. Some parents have approached me on parent/teacher conference nights to thank us for giving this opportunity to their sons. Coding is becoming the new essential literacy. One article I read last year said it was the second most studied language in the UK, only coming after French. In 2016 the Victorian Curriculum has Digital Technology included as part of the Technologies Learning area. All schools will have to ensure that students learn the sorts of skills our Coding Club students learn for fun.

Visiting Swinburne students.

At the beginning of this article I described how our school library and its staff are focused on teaching our students (and teachers) to think for themselves, to think creatively, and to develop their own solutions to problems. The Coding Club offers just one more way we can do this.

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