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# Gaming in education - aiming to transform, not simply enhance



In June it was announced that North Fitzroy Primary School (NFPS) in Melbourne had received a Schools Specialisation Grant to focus on ICT, and in particular gaming in education.

The journey to get to this place has been a long but very fulfilling and exciting one, where many lessons have been learnt.

Our ICT focus at NFPS is one where ICT is integrated seamlessly throughout the entire curriculum and is used to transform our learning and teaching, rather than merely enhancing it.

The difference between these two terms is explained well by Rueben Puentedura and his SAMR model (see his 2011 paper *Metaphors Models and Flows*), where technology usage is divided into four distinct stages: substitution; augmentation; modification; and redefinition.

'Substitution' is where technology is merely used to replace whatever is being done without technology. 'Augmentation' is where tech-

nology acts as a direct tool with some functional improvement. These two stages would fall into the category of enhancement.

Stage 3 'Modification' is where the task that was previously done without technology actually becomes something quite different when adding the technology (eg. a piece of written work takes on new meaning when it is in the form of a blog).

Finally, Stage 4, 'Redefinition' is where technology allows for new tasks previously inconceivable. These final two stages are what we would define as transformative and it is where NFPS would aim to be in regards to ICT.

Tools we would use within this methodolo-

gy include: laptops on trolleys that are easily transportable; mobile devices such as iPads and iPod Touches; a Mac Lab used for higher end creation; a Google email system that gives our students access to the entire Google suite of apps; an entire school approach to blogging; and a pedagogy centred around 21st Century skills such as collaboration, critical thinking, communication, creativity, networked learning and based on social learning theory.

Gaming is also one of the tools that we would use within the methodology. For us, gaming encompasses numerous styles and platforms including mobile apps, commercial



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off-the-shelf games, puzzle platforms, multi-player games, virtual worlds and serious games. We started our journey towards gaming in education in 2010 when our Grade 5/6 teachers decided to investigate the use of serious games within the classroom.

They used the game *Civilisation IV* to teach a rich learning project centred on civics. The same year level followed this up the next year, by using the game *SimCity* to teach a unit on government. Children played the game to completion and as they did so they reflected and built upon on their learning. Playing the game within a unit of work helped the students in developing knowledge of

curriculum content in order to address the challenges of a simulated 'real life'. Beyond that, playing assisted the students to develop their strategising, creativity and critical thinking skills.

The interesting thing about these games is that they utilised a very well planned unit and the learning that happened because of the game was extended and applied to other classroom situations. For instance, each child had to present a mayoral speech to an online community, justifying why they should remain mayor of their *SimCity* dependent on the strategies they thought were important for good governance.

(The *SimCity* game was part of a DEECD-funded research grant into gaming in the classroom). By immersing the game into thoroughly planned units of work we have found that the novelty factor of the game is quickly removed and instead it becomes an effective tool for teaching and learning.

Since that time much work has been done in the area of gaming in education within NFPS. At the junior (Prep to Grade 2) level gaming is used extensively using iPads and iPods. Many of these games, including *Sock Puppets* and *Puppet Pals* are used within literacy and numeracy sessions. Other, more open-ended games such as *TapFish* and *FarmVille* have been used in the Preps rich learning projects.

Many classes now use game making extensively in their programs, which can effectively teach much of the curriculum. By using games such as *Scratch*, *Blockly* and *Game Salad*, numeracy skills physics and programming for example are very well taught.

Literacy skills such as narrative development, critiquing and evaluating as well as speaking and listening are all very well developed through the game making process. Communication, collaboration, reflection, risk taking, design, innovation, creating and curiosity are further important outcomes.

One of the more interesting things we discovered in one of the game making units we ran was the notion of social learning or learning through networks that occurred. Almost all gaming platforms and game making platforms have very strong networks

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built up around them, where interesting learning takes place.

For example, one child who struggles socially in every area of the school is a leader within the community of *Atmosphir* (an online game making network). He is not afraid to publish underdeveloped work and then take advice and criticism from the community and act on that advice, whereas he would not readily accept these parameters in the day-to-day functioning of a school environment. He is socially very active in this online community, has incredibly deep interactions and his learning is remarkable — something which he does not demonstrate anywhere else in the school's curriculum.

In a recent reflection session he asked the teacher if, under the question “what successes have you had” he could write that he helped other kids. Here is evidence of a child who understands the concepts of online networks and participates in them to develop his learning, which would appear contrary to the evidence displayed in the ‘real world’.

Because of his successful online demonstration of participation and leadership, those skills were transported into the classroom and playground. The child's confidence grew as he was now operating as a teacher to other children around him and his behaviour was significantly modified.

The game making sessions also taught us a lot about planning — being careful to know what you want to teach but having a plan that is dynamic and flexible enough to change when needed.

Two other interesting games we are now investigating are *Minecraft* and *Little Big Planet*. The latter allows for the participant to actively create within the game — on a simplistic level such as adapting their avatars right up to creating their own levels within the game. The students are also investigating how the game can be used to enhance teaching within the school. They have created lessons for literacy (story starters), art and maths. Visit [www.bit.ly/littlebigdudes](http://www.bit.ly/littlebigdudes) to access evidence for their research.

*Minecraft* is a game of interest because of its completely open nature; how it is used is very much up to the individual. Initially 25 children were chosen to complete a term long research project using this game. The driving question for this groups' project was “Can you teach a part of the school's curriculum through the game *Minecraft*?” They picked a curriculum area of personal interest and devised a method of teaching and learning using the platform. After reaching a conclusion, they presented their ideas to the relevant curriculum leader.

Some chose art, some chose maths, some chose literacy, some chose problem solving and some chose cyber safety. The aim is to use the program to teach a unit of work in the Grade 5/6 area during Term 4.

One of the grant's requirements was to build external partnerships. To help us with our *Minecraft* work we have been working closely with Adrian Camm and Quantum Victoria. Quantum has established a fantastic child-administered *Minecraft* server. They also have developed some very interesting

curriculum ideas for the game's usage in the area of science and maths.

One of the interesting things about both these games is the very strong network that exists around the games. Oftentimes we are discovering these networks have developed their own language to discuss elements within the game and actually are developing knowledge that goes beyond the game's structures and designed intent.

A second very strong partnership has been developed with Deakin University. We are working as part of their ARC funded project; Serious play: using digital games in school to promote literacy and learning in the 21st Century. Together we are collecting data in a variety of forms that looks at our process, how does it affect our primary aims of teaching literacy, numeracy and how is gaming linked into the deeper aims of developing higher order thinking skills, strengthen the creative thought process and transform our learning and teaching.

At NFPS, as educators we have moved beyond the notion of student engagement as a driving factor in the use of ICT, as this tends to imply a simple substitution of one means of delivering the curriculum with another with more immediate appeal.

Instead, we are putting the funds towards transforming the nature of the learning itself by fully utilising the existing technology available to us.

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