Critical thinking about video games

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In an incredibly short space of time, video games have become an integral part of our cultural lives. This article looks at some of the ways that they work, the elements needed for meaningful discussion with our students, and how we can integrate them into the classroom.

According to ABS statistics:

- 12.5m games were sold in 2006;
- 6.1m video game consoles have been sold since 2000;
- 3.6m Australian households have a video game console; and
- 4.8million Australian households have an Internet enabled PC which is capable of playing games.

One of those first games, *Pong*, was released in 1972, over 20 years before many people in high school were even born, and since then, they've evolved into complex online 3D environments that contain sophisticated storytelling, design, art, and programming.

The increase in complexity – from *Pong* to *World of warcraft* - can seem daunting, but like all media, video games have their own grammar, their own syntax, and their own set of rules.

Understanding these components can help with developing traditional literacy and numeracy skills, and also provide a point of connection between teacher and student.

Games & traditional literacy skills

While video games clearly borrow heavily from films in terms of their video and audio content, they can also be deconstructed in terms of traditional literacy.

Verbs & Nouns

All games are made up of verbs and nouns. Verbs are doing words, and in the context of a game, they describe the player's actions—running, jumping, spinning, gathering, dancing. Nouns are the game world objects that the player performs those actions on—platforms, creatures, star-bits, springs, blocks, creatures, tribes, parts.

These may map directly to the player character's actions—in *Super Mario galaxy*, the verbs include run, jump, spin, all tied to individual buttons on the controller—or they might sit at a higher, more abstract level—in the real time strategy game, *Age of empires*, the verbs include build, gather, attack, and ally.

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Story and Fiction

Stories and fiction in games serve a number of useful functions. They can be used to provide a framework so that the game's mechanics make sense, for example, in the *Sims* series of games. Similar to fiction books, in game fiction there is a mirror of the player's real world experience—a washing machine and a bed in the game do the same thing as a washing machine and a bed in the real world.

Stories can also be used as rewards and for constructing goals. The desire to know why the game world is the way it is or to explore the back-

more manageable chunks applies as it does to every other project, no matter the scale.

Flow & State diagrams

Artificial intelligence in games such as *Half Life 2* or the *Sims* initially appears complex, but can frequently be broken down into a small set of interconnected behaviours.

In the *Sims*, characters have a collection of states that describe their brain and rules for transitioning between those states. They might be in a state for sitting in front of the television then transition into a state searching for food when their hunger value drops below 20%. These states and rules to change states can be mapped out in a diagram that describes their behaviour and also provides a framework for programmers to work from.

Divide and conquer

The process of splitting a problem into multiple smaller and more manageable chunks is the foundation of software engineering.

All games appear daunting at first, but by breaking the huge problem down into its individual components—player input, graphics, physics, bullets, enemies, backgrounds, animation, visual effects—the problem can be managed as an interconnected series of much smaller problems.

In the classroom

Video games are easily broken down into their technical components and the relationships established between them.

Have students look at a simple game such as *Pac Man, Centipede, Space Invaders, or Missile Command* and get them to write down the various things happening in the game and then work out which ones would need to know about the others and how they would communicate.

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More advanced students can look at some modern games that come with tools that enable you to modify them. *Half life 2, Neverwinter nights,* and *Unreal tournament,* all come with powerful and extendible Software Development Kits that let you do everything from tweaking game parameters to creating entire new games using their technology.

Conclusion

Video games offer new opportunities for teachers in engaging students in the classroom. They are an integral part of students' personal life and culture, and can support a multidisciplinary approach to learning, with even simple games containing elements of writing, design, art, and ICT. Clever use of them can encourage engagement and new opportunities for both students and teachers, and possibly lead them towards a career in games creation.

Further Reading

- *A theory of fun for game design* by Raph Koster
- *What video games have to teach us about learning and literacy* by James Paul Gee
- *Half life 2: Raising the bar* by David Hodgson

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