Computer Games & Learning: Symbolic Work through Iconic Play

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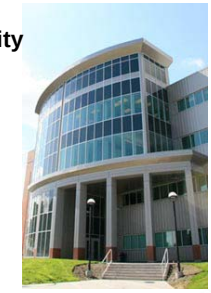

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Games and Learning?

Hopeful parents

Being a notably well-mannered 10-year old, my nephew Alex first asks me nicely if he can use my laptop to play one of his favorite games, "SimCity."

"Sure," I reply.

I watch as Alex gently opens the laptop lid, boots up the computer, and nimbly picks out "SimCity 2000" from the start menu. Earlier, I had shown him step-by-step how to construct a viable metropolis, starting with a power plant, moving to power lines, streets, railways and so on.

But Alex chooses instead to open "Tokyo," one of the cities that have come pre-packaged with the game.

Tokyo is represented as a dense, expansive and isometric urban landscape, teeming with rail and road traffic, with landmarks such as the "Imperial Gardens" and the "Sumida River" clearly labelled. I advise Alex that he may want to make the game easier by choosing the setting "No disasters" from the "Disasters" menu (which also includes a list of separate disaster types.)

But Alex replies: "No, I think I'll leave it that way."

He soon is completely absorbed in the game, squirming slightly in the hard wooden chair, but with his eyes fixed on the screen.

I leave him to the computer. After ten or fifteen minutes, I go back to check how Alex is doing.

I am slightly surprised as I see on the screen that the city of Tokyo is beset by disaster: The once thriving metropolis is now a combination of crumbling and flooded buildings and raging fires.

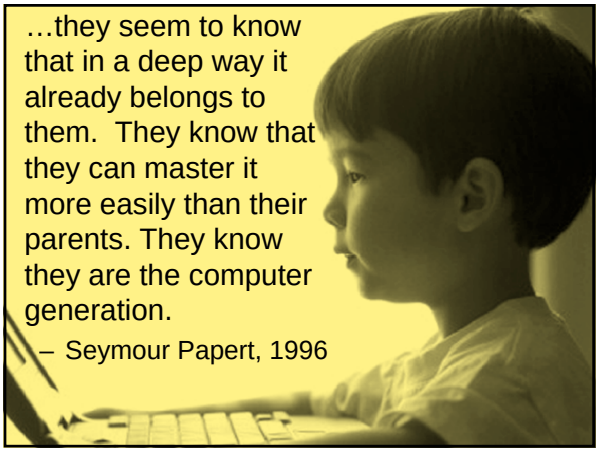
“What happened?!” I ask.

Alex turns to me excitedly and says:

“Did you know that you can put out the fires with the rain from the hurricanes?”

The computer generation

Across the world there is a passionate love affair between children and computers. I have worked with children and computers in Africa and Asia and America, in cities, in suburbs, on farms and in jungles...



…they seem to know that in a deep way it already belongs to them. They know that they can master it more easily than their parents. They know they are the computer generation.

– Seymour Papert, 1996

Net Generation & Learning

- Kids grow up “bathed in bits” (Tapscott, 1999, 2008)
- With computers, kids can "learn" "through the process of play" (Turkle, 1984)
- “Adults must accommodate – a different and more difficult learning process” (Tapscott, 2003)

Games Generation & Learning

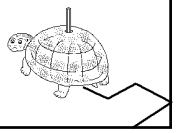
- Video "game designers" are described as having "a better take on the nature of learning than curriculum designers" (Papert, 1998; p. 88)
- "Whenever one plays a game, and whatever game one plays, learning happens constantly, whether the players want it to, and are aware of it, or not" (Prensky, 2001)

My Focus

- What is “play?”
- What is education and its relationship to play?
- How does ‘playing’ with computers relate to education and playful learning?
- Begin with the justification for the claims mentioned above.

Why (1980)?

- Stated most simply, my conjecture is that the computer can concretize (and personalize) the formal. Seen in this light, it is not just another powerful educational tool. It is unique in providing us with the means for addressing what Piaget and many others see as *the obstacle which is overcome from child to adult thinking*. (1980, p. 21)



Why? (Now) - J.P. Gee

"Instead of learning about a subject by listening to a lecture or by processing paper-based alphanumerics (i.e. reading), students can enter and explore a screen-based simulated world that is the next-best thing to reality."

Concrete → Symbolic

"In fact, the very process of game-playing can be viewed as learning to understand the 'rules code'" (Prensky)

Literacy; manipulation of abstract symbols

General Principle: computers (& inter-active computer games) have the power to make the *abstract and symbolic* concrete and accessible

Concrete → Symbolic

- Helps with *the* obstacle which is to be "overcome from child to adult thinking"

Visual, Concrete Manipulative

Symbolic, Coded Abstract

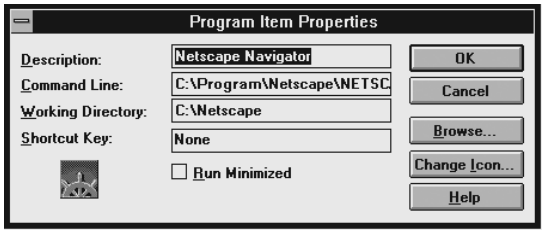
A bit of History: Circa 1968

- The computer needs to present users with a "learning-rich environment"
- "in which learning can have the character of play."
- Referred to Bruner's 3 mentalia: enactive, iconic & symbolic
- Like Piaget: Preoperational, Concrete Operational, Formal Operational
- *"Doing with Images makes Symbols"*

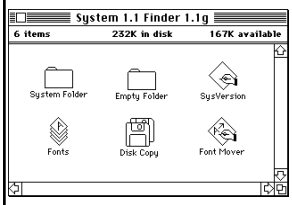
"Doing with Images makes Symbols"

DOING	mouse	enactive	know where you are, manipulate
with IMAGES	icons, windows	iconic	recognize, compare, configure, concrete
makes SYMBOLS	Smalltalk	symbolic	tie together long changes of reasoning, abstract

Doing with images makes symbols



1968/1984 → 2008



The Question of Play

What is "Play?"

„Das Spielen hat einen eigenen Wesensbezug zum Ernsten.
Im Spielen selbst ein eigener,
ja, ein heiliger Ernst gelegen ist…
Und doch sind im spielenden Verhalten alle Zweckbezüge, die das tätige und sorgende Dasein bestimmen, nicht einfach verschwunden, sondern kommen auf eigentümliche Weise zum verschweben." – H.G. Gadamer, 1960

Gadamer, Piaget on Play:

- Autotelic
- Autonomous
- **Symbolic/Meaningful:**

This form of meaning creation is not "bound" to the physical world, and yet it is not structureless. … Through play we see how the things in this world need not have fixed meanings. That which in the "**open sense-making**" is a pencil now suddenly is a bridge, a road block, a soldier, or a house.

Open to Sense-Making:

Open to Sense-Making?

Ellen Ullman: The Museum of Me

Around Christmas in 1990, I was at a friend's house where her 9 year old son and his friend were playing a video game that was the state of the art at the time, Sonic the Hedgehog. They jumped around in front of the TV and gave off the sort of rude noises boys tend to make when they're shooting at things in a video game, and after about half an your they stopped and tried to talk about what they'd just been doing. The dialogue went something lake this:

"I wiped out at that part with the ladders."

"Ladders? What ladders?"

"You know, after the rooms."

"Oh, you mean the stairs?"

"No, I think they were ladders. I remember, because I died there twice."

"I never killed you around any ladders. I killed you where you jump down off this wall."

"Wall? You mean by the gates of the city?"

"Are there gates around the city? I always called it the castle."

The boys muddled along for several more minutes, making themselves more confused as they went. Finally they gave up trying to talk about their time with Sonic the Hedgehog. They just looked at each other and shrugged. (Ullman, 2000; pp. 30-31).

Sonic the Hedgehog

- Does not lead from kinesthetic and iconic engagement to symbolic accomplishment
- The experience of the boys “resisted description”
- “leaving each in his own electronic world.”
- “a world full of wordless pictograms, trails leading in all directions.”
- “intensely private, charged with immanent meaning…but often confusing for someone else.”

Icons and User “Power”

- the interface of icons and windows provides "the user [with] the *illusion* of freedom." (my emphasis)
- "the windows and other devices of the overlapping window interface" actually "serve to restrict context“
- Does this empower the user, or necessarily present a rich learning environment?

Letztere sind die sogenannten User oder drastisch, aber historisch richtig ausgedrückt, die moderne Klasse der Idioten. Die Parallele ist deshalb so eindeutig, weil User wie Idioten den Quellcode, der ein Programm oder einen Gott deklariert, weder schreiben noch lesen können. Wie seit jeher üblich, werden solche Idioten mit Ikonen traktiert. (Heidenreich)
-1997; Icons, User und Idioten

Questions

- Is there a symbolic literacy accessible to children via “iconic enaction” in computers & games?
- Is this literacy empowering and liberating, or limiting and confining?

Links

- Paper of presentation: learningspaces.org/n/papers/play2.html
- Heidenreich: http://www.khm.de/~sh/texte/icons.html
- Marc Prensky: http://www.marcprensky.com/
- Seymour Papert http://www.papert.org/