

Virtual worlds, real minds: an investigation into children, video-games and cognition

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Abstract

The Virtual Worlds, Real Minds project aims to investigate and understand the cognitive processes that take place when young people play video-games, and to provide educators with some insights based on this understanding. Preliminary findings show that traditional, Cartesian ways of thinking can be perceived, along with new, more emotional and interactive forms of viewing and making sense of external stimuli.

Keywords

cognition, video-games

Introduction

This research project started when my nine year-old boy asked me to go with him to a video-game rental shop. A new game had just arrived from Japan and he wanted to get it ahead of his friends. He did not know exactly what the game was about. Needless to say, neither of us knew a single word in Japanese, spoken or (of course) written. This basic fact didn't stop him at all; he was not discouraged in the least - as I would surely be if it was a book I ordered and found out it was written in mandarin... He rented the game; we went back home, he inserted the cartridge in his console and - wonderfully - started playing. Just like that.

How? I wondered. It became immediately clear to me that important mental processes were being mobilised at that moment. He was enjoying himself, he was having a good time, but he was learning as he played. In order to be able to play a new and still "uncracked" digital game, in which written and spoken word were in a different and unknown language, my son had to rescue and apply everything he knew about games and how to play them. And he had to do it "on the fly". The pace and sheer speed of the game didn't allow him time to think. Or maybe it is better to say that he couldn't think in Cartesian ways, rationalising everything as he went along.

"Children resemble more their times than their parents"

Ibn Kaldun, Arabian thinker, XIV century

It was then that I decided to investigate the processes of thinking and learning that are involved in the act of playing video-games, in the hope of reaching further understanding about the ways the new generations think, communicate and interact. If we could advance our comprehension of the young minds, maybe we could devise more efficient educational methodologies. In other words: it is time to develop educational systems that are "in sync" with the generation we are supposed to teach or to provide help when they are learning. Video-games were chosen as a particularly relevant subject also because they are pervasive: kids' main use of technology.

The research project

The research has been going on for a little more than a year and some results are being obtained. These preliminary results are the topic of this paper.

The research is part of a broader project being conducted at the Pontificia Universidade Católica do Paraná, a privately-owned university in south Brazil. It is a medium-sized institution by Brazilian standards, with about 20,000 students and 1,500 staff members. The Faculty of Education started in 1998 a new area of research called the "Centre of Tomorrow Education", with the aim of studying new educational technologies and methodologies, of evaluating the impact of these innovations in different educational environments and of helping teachers and academic staff in the difficult task of applying new technologies and methods in their day-to-day work as educators.

"Virtual Worlds and Real Minds" is one of the projects presently being carried out at the Centre. It started formally in the beginning of the 1999 academic year (which in Brazil is March) and is expected to take one more year to reach final results.

Methodology

The project comprises field work and analysis. Field work is being done in three different environments: home, video-game rental stores and arcades. The home environment is itself divided into two categories: console-based video-games and computer games.

The first part of the observation was directed towards video-game home users. Young people from 4 to 14 years old, mainly middle class, living in three different neighbourhoods. They were observed and interviewed, both at their home and at six video-game rental shops which agreed to co-operate with the researcher, allowing an interesting comparison between these two playing environments. All in all, the universe of this first stage totalled 54 “regulars” (50 boys and 4 girls) and about a little more than a hundred other kids who contributed to the research in more open ways (some were interviewed but not observed while playing, others were observed only once or twice and were not followed-up, for a number of reasons). Data was collected and registered in spreadsheet/data base/graphics integrated software. A control group of 8 kids who claimed not to play games at all was identified and interviewed regularly.

Apart from direct observation and interviewing, a large number of materials was selected and studied, such as specialised video-game magazines, fanzines, web sites, books, posters and other related material which belongs to the gamers’ universe. Video-games of many different types and systems were observed in detail and played by the researcher (as far as I was able to go...).

Preliminary findings

For explanatory reasons, preliminary results are shown in three groups:

- classical processes and patterns of thought;
- non-Cartesian and emotional intelligencies;
- social behaviour and sociability patterns.

Thinking digital

First, it could be observed that many of the ways of thinking that educators put a lot of effort into developing in their students are already being employed by kids when they play their games. Association, generalisation, analysis and synthesis, transfer, projection, simulation, trial and error and a

number of other forms, alone or combined, are put into action by the gamers all the time.

It is not in the scope of this paper to present and discuss all those “ways of thinking” and how they operate in the gamers’ minds and actions. But let us take generalisation, as an example. One of the main components of Cartesian/Newtonian processes, generalisation occurs when there is not enough data to proceed – so we start from what we have and try to extrapolate the ideas we consider as generic enough (and so, applicable) to the new situation; generalisation also happens in the opposite direction, when we have too much data and must discard what is not relevant (for not being generic enough) in order to proceed within a safety error margin. Well, that is what we can see young people doing when they put a new game in their favourite console or when they get to new phases of a game. They advance by grasping – in a wink of an eye – what is relevant and what is not, what must be discarded and what must be fulfilled so they can deal with new situations. Surely educators would love to see their students doing the same when they tackled the contents of a traditional course...

One of the aspects which may present teachers and educators with food for thought is the way gamers deal with error. They are not afraid of making mistakes, of following the wrong turn or of choosing a bad weapon. They know that to err is to learn: error is a natural, necessary part of a learning curve. How different from what they get in schools, where they are taught that to make a mistake is something bad, something to be ashamed of. No wonder they accept a passive role as students while they are so very active playing games.

Thus, kids are not discouraged to play a new game. On the contrary, they love the challenge, they yearn for the new and are not afraid of facing new obstacles. When dealing with a new game or screen within a game, they think – fast – and they act, without hesitation, on the basis of what they decide, after considering, with mind and body, what should be done.

Emotional intelligence on the fly

This complex structure of trial-and-error, of thinking and acting, of seeing and doing, of feeling and knowing, of risk and feed-back, is quite amazing for an adult who was raised believing in the power of rational, logical, procedural thinking.

For emotions, intuition, sensibility play a very important part in the world of the gamers. Many times, when a problem arises which is not solvable by association with past experiences, by generalising, analysing, transferring, previewing or any other rational way, they trust their feelings, their intuition. “I don’t know how, but I was sure I should go that way”.

Experience here is also important. Everything they had done before may be of significance when playing a new game or facing a new challenge.

They also know that you must keep a delicate balance between being “cool” and relaxed and being keen, attentive, adrenaline-driven if you want to be a good gamer. Emotional intelligence applied...

Sociability in the gamers’ world

Other interesting considerations from the educational point of view can be made at this point. For instance, research is very important in the world of video-games. Gamers publish and read magazines, web sites, fanzines and other printed materials. They look into these materials to find and share tricks, suggestions, opinions, open and secret codes, even illegal or at least unauthorised information that shows how to defeat a tough enemy, how to get more money or new lives, how to go faster, how to find that secret passage. They also consult more experienced gamers (nothing to do with age: experience is measured by the time one has already spent playing); they build and use a highly integrated network of players; they interact.

In a way, gamers tend to form a kind of “urban tribe” as defined by French sociologist Michel Mafesoli: a post-modern pattern of sociability, in which individuals behave in certain pre-defined ways accepted and valued positively by the group, who derives its own identity as a group from these shared values. This pattern affects the way kids play (and the way they learn) since the ones who interact tend to be more effective in reaching their goals. The isolated individual gamer must rely on his own capabilities and often these are not enough to win (to “zero”, to “detonate”) a tough game. Thus, we may be facing a very interesting case of a co-operative, collaborative learning environment.

This may conflict with the highly competitive nature of games, digital or not. In the specific case of video-games, it seems that competition is seen more

like a dispute against the machine than against the other players. We can see that in a boy’s party (if there is a video-game console available, that is where kids will gather around): young and older kids helping each other to defeat the mean phantom. They do not really care if a friend killed the monster in less time (they will try to better their scores later); they want to learn how to do it, or how to do it faster or more efficiently.

There is a lot more to games than simple hand-eye co-ordination. Among other capacities, it can be observed that a gain can be in terms of visual understanding, in media awareness and in the development and use of a multimedia, interactive language.

Problems over the horizon

On the other hand, an educator can easily see a number of problems in the games kids play. There is violence, for sure. A kind of sublimated violence, as some psychologists argue, or at least the representation of violence. Video-games – a boy’s world, for sure. Many games are “politically incorrect”, since kids look into virtual worlds usually through the eyes of a white-macho-American hero, who kills everything that moves. They go beyond a sexist view. Here are Nazi fundamentals: everyone who is not like me wishes to do me harm; better to eliminate them before they get a chance to eliminate me.

These arguments are not to be discarded lightly. They suggest a deeper investigation on the sociological and psychological aspects of video-gaming, which are beyond the scope of this research. Even so, it can be pointed out that violence, racism, sexism are not inventions of the games industry and would not disappear from the world were games abolished (as some propose). It is our task as parents and educators to contextualise these issues, to discuss them, to amplify the world of references and values for children to appropriate right choices. It was noted in this research that some very violent and bloody games are popular, but not played as much as other, more involved and challenging games.

Another negative aspect perceived during this investigation was a tendency, shown by some kids, of over-self-valuing. A good gamer considers himself “the best”. He can always find a way to defeat his enemies, to win a challenge, to find hidden treasures. He is so good that nothing is

beyond his capabilities. Life outside the game must be the same. He will always be a winner. There are some considerable dangers here, from a narcissistic isolation to a self-centred, egotistic individualism.

Next steps

Field work will continue with the groups mentioned above and with two new groups: computer-game players and arcade gamers. Those two groups were left out of the first stage of the research because they tend to involve kids older than 14 years, and in the case of arcade players, from other social strata.

Analysis of data will be carried out with more attention to statistical procedures and methodologies. Observation and interviewing will continue, with special attention to the control group. Cognitive aspects will be the main issue to be tackled, in the hope that we will be able to deepen our understanding about the ways the new generations think, communicate and act.

As author Douglas Rushkoff [2] pointed out,

“To look into the children’s world is not to look back to what we were. It is to look into the future”.

References

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Biography

Antonio Simão Neto has a masters degree (M.A.) in film and television studies for education, awarded by the University of London Institute of Education. Currently he teaches educational technologies and distance education at the Pontificia Universidade Catolica do Parana, in south Brazil.