

## LEARNING STRATEGIES OF HOMO ZAPPIENS: TOWARDS NEW LEARNING ARRANGEMENTS

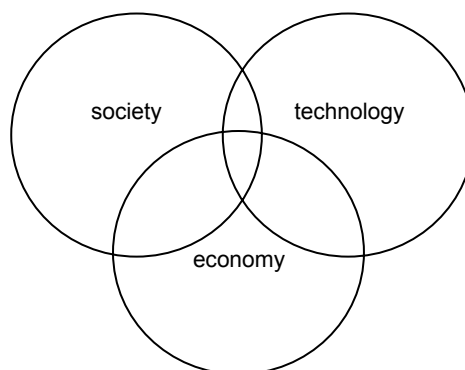
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Future students in higher education belong to a generation that has grown up with a PC mouse in their hands, a TV remote control, a mobile phone, an i-Pod, a PDA, and other electronic devices for communication and entertainment. Technology has changed dramatically the way nowadays' children live, computer games, the Internet, MSN, wiki's, and blogs being an integral part of their lives. Today, the average college students in the USA have spent less than 5,000 hours of their lives reading, but over 10,000 hours of playing games, not to mention the 20,000 hours of watching TV (Prensky, 2001). In a country such as the Netherlands (16 million inhabitants) 6 million kids send 25 million messages a day through MSN (Microsoft, 2005), and children are exposed to around 8.000 brand images and icons a day (Lindstrom, 2003). It seems we could speak of a special generation, or even more than that, a Homo Zappiens.

Parents and educational institutions complain about this generation and many think that all these technology gadgets and software is a waste of time, damages health and leads to social isolation. This article takes a positive view towards this Homo Zappiens and tries to explore the socio-cultural, technological and economic backgrounds that underpin the up rise of this new generation. It also describes the consequences for our education system that seems no longer to meet the needs of Homo Zappiens nor that of the future knowledge intensive society.

### DRIVING FACTORS FOR CHANGE

Three major determinants are at work for changes occurring in our education systems. They are socio-cultural changes, economical changes, and technological changes. These changes are interdependent and act in parallel over time. We will subsequently describe these three forces of change.



**Figure 1: Major factors influencing education systems**

### SOCIO-CULTURAL CHANGES

The ways how human beings communicate, collaborate and process information are critical issues in a society that depends on the production of intangible goods and services. By the end of the eighties of last centuries children were born in an advanced technological environment. Homo Zappiens represents a generation that was born with a PC mouse in its hands and a computer screen as a window to the world (Tapscott, 1998). This generation has grown up

with technology and learns through computer screens, icons, sound, games, exploration, questioning others, and show non-linear learning behaviour.



**Figure 1: Homo Zappiens born since the end of the eighties, developing crucial learning skills for a creative and chaotic society**

Homo Zappiens is playing video games. Games are immersive, demand proactive players who solve problems, and provide an environment in which children can experiment with a variety of roles. Homo Zappiens communicates using tools such as MSN, chat rooms and cell phones. The average number of MSN windows children use while communicating is 10. And at the same time they listen to their favourite play list (Veen, 2003). In chat rooms, Homo Zappiens uses different electronic personalities (Turkle, 1997), here again they experiment with social roles. And when watching 4 or 5 TV channels at a time Homo Zappiens knows how to find the essence of each of the programs and construct meaningful knowledge out of the various TV programmes (Rushkoff, 1997).

Homo Zappiens have learnt to deal with information overload by clicking and zapping. It has learned how to navigate efficiently and effectively through information, how to communicate, and how to build effectively on a network of peers. Experiencing these digital information flows, kids develop an exploratory learning approach trying to give meaning to the information provided. In particular, games seem to stimulate this exploratory approach as kids often start gaming without knowing the ultimate goal of a game (Gee, 2003; Goodson, Lankshear & Mangan, 2002). Instead, they define their own goals, finding out the available tools and defining the appropriate strategy to achieve their goals. Through this exploratory approach kids develop a number of meta-cognitive skills directly related to learning. Homo Zappiens is a self directed learning, a good problem solver and experienced communicator. It uses technology as a friend, and it thinks digital (Negroponte, 1995).

<i>Homo Zappiens</i>	<i>Former Generations</i>
≡ twitch speed	≡ conventional speed
≡ multi tasking	≡ mono tasking
≡ non linear approaches	≡ linear approaches
≡ processing discontinued information	≡ processing single information flows
≡ iconic skills	≡ reading skills
≡ connected	≡ stand alone
≡ collaborative	≡ competitive
≡ active	≡ passive
≡ learning by playing	≡ separating learning and playing
≡ instant payoff	≡ patience
≡ fantasy	≡ reality
≡ technology as friend	≡ technology as foe

**Figure 2: Characteristics of Homo Zappiens and former generations (based on Marc Prensky)**

## PLENARY SESSIONS

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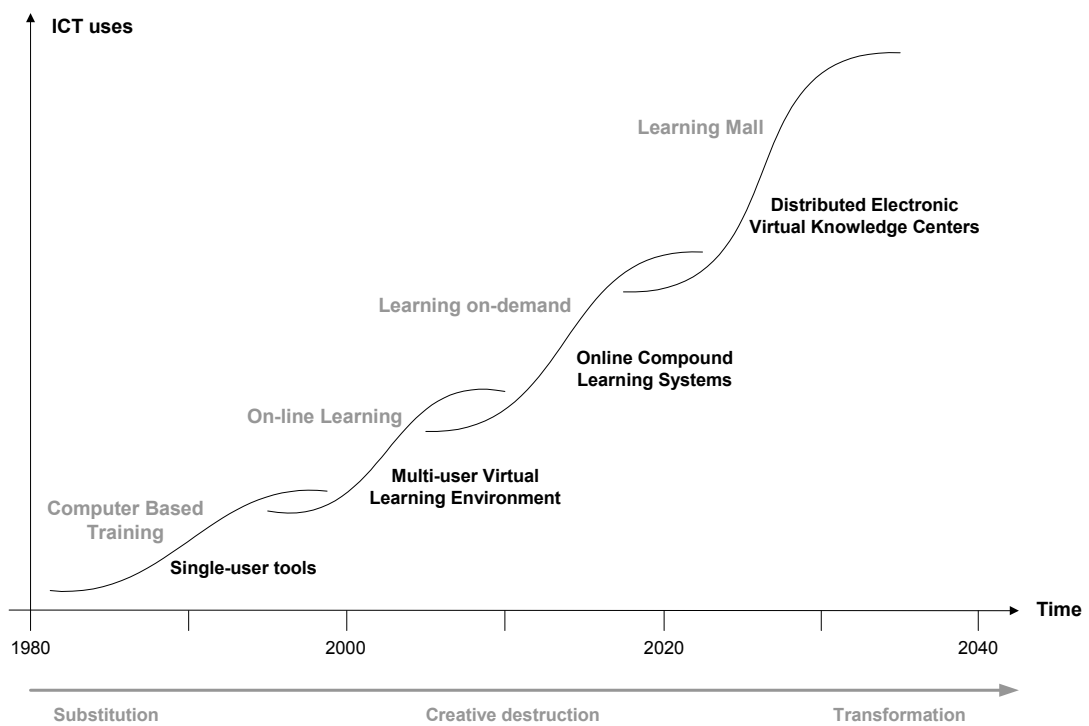
### ECONOMY

Economies are evolving from producing tangible goods towards producing intangible goods or services. In addition, production systems become global and labour differentiation takes place at a continental level. These changes are irreversible and will continue to evolve. European economies will continue to depend on knowledge intensive industries and as a consequence the labour market will consist of knowledge workers. We need different students, students who are able to create knowledge. How do you learn to create knowledge? Certainly not by reproducing somebody else's knowledge by heart. It is more about constructing new knowledge of your own. This demands learning at the level of synthesis. Can the current education system respond to the needs of the new generations' learning approaches? Can schools respond to the challenges of a rapidly evolving information society? The basic design of our schools has been rooted in Taylorism. The organizational structures of industries were based on hierarchy, mass production, standardization, planning and control. The same structures have been replicated for governmental, health and education systems. Although the industrial era has gone and the services oriented economies have undergone profound changes due to the uses of information technology, schools have continued to survive the way they have been designed 150 years ago. It must be said; schools have been very adequate institutions in the industrial era, however nowadays we should classify them as industrial archaeological museums. For a society that is heading for a new era in which creativity is critical for surviving in a growing global competition, our education systems need to be redesigned. The 'chalk and talk' lectures, whole classroom teaching, standardized curricula and examinations, and age-based groups still being the mainstream organizational structures, are inadequate for today's needs. And a growing number of parents do know this when they realize that their kids are in schools which they recognize so well from their own childhood. We did design the adequate education system for the industrial era, why should we be reluctant to redesign it for the upcoming creative society? Western countries have invested huge amounts of money and effort in restructuring their old industrial economies into modern service oriented societies. Isn't it strange we did not the same with our education system?

### TECHNOLOGY

Technology is the third major change force that coincides with the above-mentioned change factors. Research on IT and ICT uses in the corporate sector has shown that the growth of technology follows a natural S-shaped curve, consisting of distinct stages from scratch to maturity (Nolan, 2000; Rogers, 2003).

If we take Nolan's stages theory and his three eras of organizational learning, and we transpose these theories onto the educational sector, we may perceive similar eras. Where the micro era can be compared to computer based training, can the network era be compared to online learning. If we take learning-on-demand into account a third S-shaped curve can be indicated. And if we consider social and economical trends, such as lifelong learning, digitization of libraries, virtual universities, flexible and ubiquitous technologies, these may give us a fourth S-shaped curve, which we will call learning mall (see figure 4).



**Figure 4: Successive Stages of Educational Technologies and Practices by Piet van der Zanden and Wim Veen, 2004**

The time axis represents the period from 1980 to 2040; moving from the first widely used computer applications within education to the complete implementation of a learning mall of the future, where any desired or required learning object can be obtained online. The time axis also represents the learning material, which is constantly fragmented in a creative destructive way and gradually transformed into complete independent online learning material.

Computer based training represents a period of single-user tools in which the computer made its entrance within education and was brought into use for mathematics, computer-aided design, simulation programs, infinite calculation methods, writing, and presentation skills.

Online learning represents multi-user tools, such as communication tools, the World Wide Web (WWW), streaming video and a virtual learning environment for online courses. Lecture notes were digitized and put online, as were video snaps together with references to publications that could be reached via hyperlinks.

Learning on demand represents the next generation web based oriented virtual learning environment where learning material, which is broken up into specified learning objects, is initially distributed online for regular educational tracks.

Learning mall represents distributed electronic virtual knowledge centres equipped with personalized-learning delivery robots. Student, undergraduates, graduates, post-graduates and other experts will have access to these future distributed online libraries where 'just in time', 'just enough' and 'just for you' learning objects can be retrieved.

#### FOUR CHANGES

Many school managers and school boards do currently recognize the need for fundamental changes in schools and education systems at large. Some of them have already started revolutionary experimental schools. First results from these schools show that students love the new approaches that have been adopted and that learning results are satisfying. In the Netherlands, about six schools have started recently to work along entirely new lines. In addition, parents who no longer accept traditional schools have started schools that are based on the ideas and ideals of the Sudbury Valley School in the USA and the Summerhill School

## PLENARY SESSIONS

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in the UK. Again, in the Netherlands 20 schools have been created this way and another 40 schools are under construction. When comparing these educational experiments it is interesting to see that all of them have adopted four major organizational, pedagogical and curricular changes (see figure 5).

<i>Traditional Schools</i>	<i>Future Schools</i>
⌘ 50 minutes lectures	⌘ 4 hours periods
⌘ Subject matters	⌘ Interdisciplinary themes
⌘ Classrooms for 30 students	⌘ Areas for 90 to 120 students
⌘ Age based groups on a yearly basis	⌘ Continuing individual learning paths

**Figure 5: Major characteristics of traditional and future schools**

From figure 5 we may see that the underpinning principles for new ways of learning appear to be self direction, challenge and immersion. Students are supposed to work independently and collaboratively, using technology extensively. They are challenged to solve complex problems that are relevant to them and authentic, and they are challenged to come up with creative solutions.

Concluding, I think that pressure on our education system will grow substantially. Politicians and schools will have to cope with these pressures by making choices in teaching and learning practices that meet the needs of Homo Zappiens. The educational market will probably evolve towards a sector consisting institutions providing a variety of teaching and learning services from which parents can choose. It is beyond doubt that technology will play a major role in this future educational scene.

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