Virtual Worlds in Education: Educational Utopias?

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Abstract

The past decade has brought an unprecedented boom of virtual worlds (VWs). The minds of the upcoming generations are conquered by computerized media. The number of internet users grows at an incredible speed, with the world wide web spinning into every aspect of life, very much so in education. Some predictions speak about conventional education being replaced by virtual learning environments. This paper attempts to define the educational principles of virtual learning environments, along with their most important features, examining the advantages and downsides they bring along.

The presence and importance of virtual worlds in reality are unquestionable, the social impact created by them, the threats and the opportunities are to yet be analyzed. Using virtual environments in education will yield challenges, gains and result losses.

Sections will discuss the boom of virtual worlds, the emergence of virtual worlds in education, their opportunities, benefits and boundaries. In conclusion predictions for the future applications of VWs in education will be summed.

It will be pointed out that virtual environments can provide technically and socially almost boundless potentials for education, and these potentials are to be exploited more extensively. Participation in VWs constantly and rapidly grows creating not only technical but also social challenges. Opportunities show into the direction of an educational utopia, while threats might turn VWs into a dystopia. The real challenge is the delicate balance and the responsible attitude.

Introduction: The worlds of the billion+

In 2007 Gartner, the world's leading information technology research company, predicted that by the end of 2011 eighty percent of active internet users will have some kind of participation in some kind of a virtual world. [1]

The number of internet users during the past ten years show a steady and rapid growth globally, although the degree of internet penetration reflects dramatic differences spanning from below 1% in the Far East and Africa to 80+% percent in the most developed European countries. (Fig. 1)

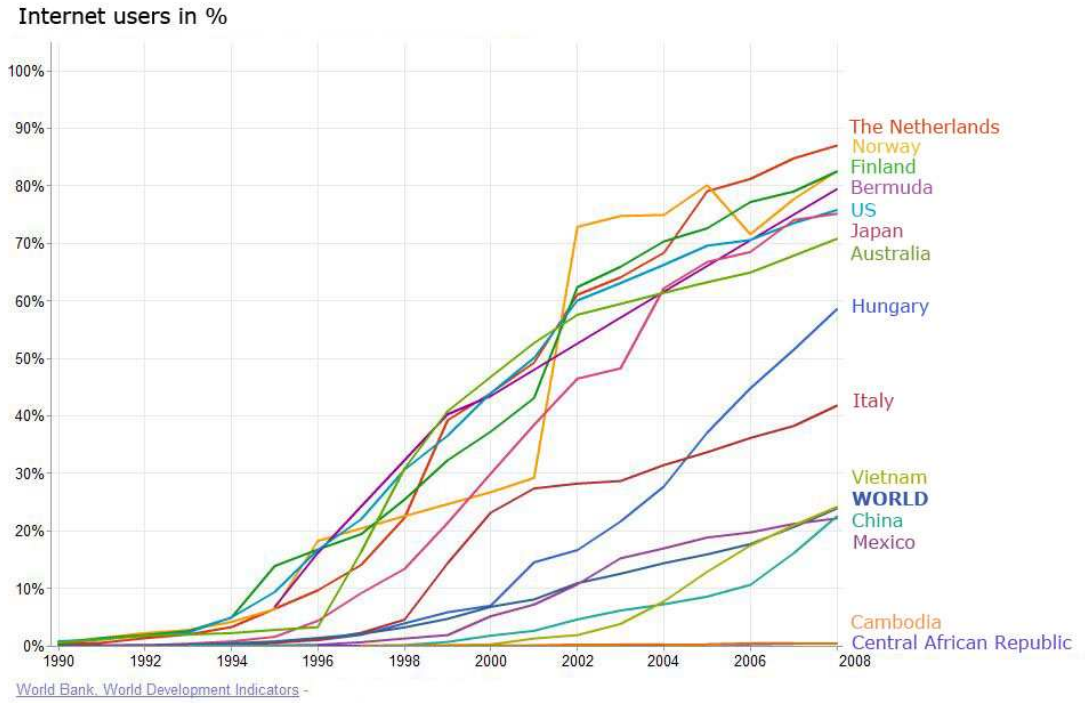

Figure 1: Internet users by country
Source: World Bank, World Development indicators

In its most recent news release the International Telecommunication Union announced that the number of internet users has exceeded 2 billion globally. [2]
The growth rate of internet users is much higher in the developed countries than in the developing countries, indicating that the increase is uneven. (Fig. 2) Furthermore, the increase does not coincide with the general pattern of the economic growth. (Fig. 3)

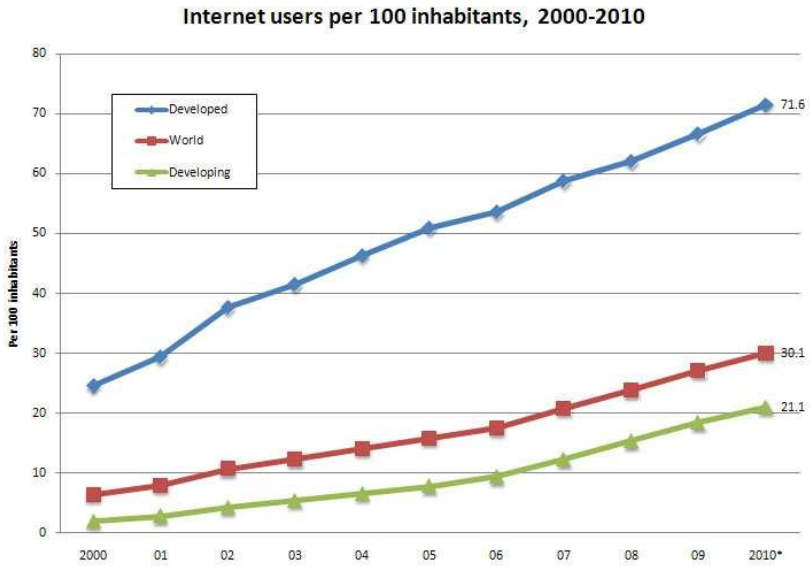

Figure 2: Internet Users per 100 inhabitants
Source: ITU World Telecommunication/ICT indicators database,*Estimates

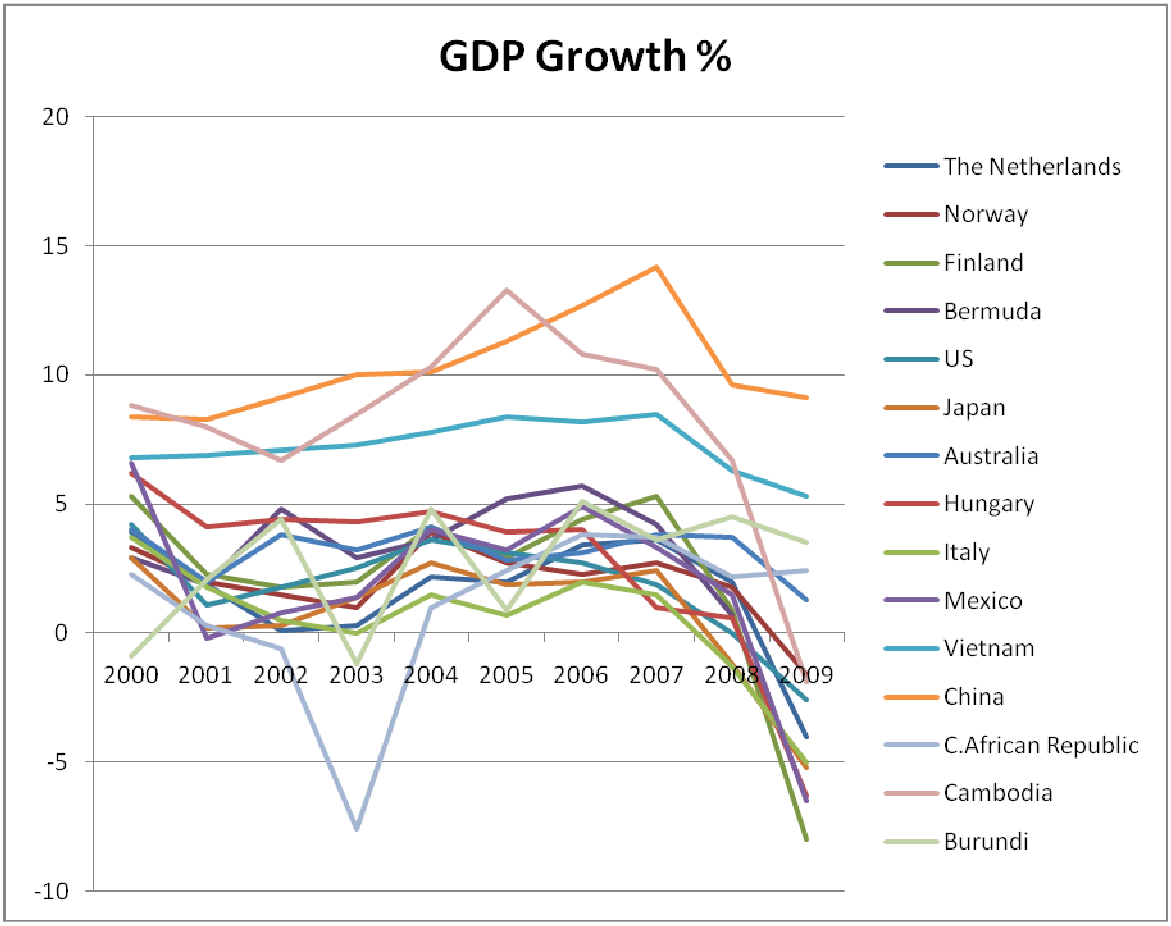

Figure 3: GDP growth by country
Source: World Bank, World Development indicators

If Gartner's prediction is fair, soon approximately 1.5 billion people will be present in one way or another in virtual worlds, which can be considered a global presence. This fact has been supported by KZero, a British analytics company, that specializes in the virtual worlds and virtual goods market, which reported last year that the number of users registered for virtual world sites broke the 1 billion mark. [3]

Virtual Worlds (VWs) conquering in education

The world lives through technologically exponential times. Technology and ICT penetrates tremendously, and new generations, net generations, the digital natives perform their social communication and collaboration "in a digital fashion". They create new demands towards education, the field they are immensely exposed to. Traditional teaching carries many features that do not meet the requirements established by new generations. It is bound in space and time, restricting interactions, rather inducing a passive, observational behaviour, this way representing an instructivist approach as opposed to a constructivist approach to knowledge transfer.
Educational technology started to handle - at least partially - the challenges traditional education has had to face for at least the past two decades. It has become one of the dominant issues in learning activities, changing dramatically the scenery in the educational arena, out/replacing the traditional face-to-face set-up with e-learning formats and different delivery modes, e.g. open learning, flexible

learning, technology supported learning, on-line study, etc. These were considered to be effective products in the 1990s, but failed to create the most ideal world for education, the “educational utopia”. The curve went down, and by the beginning of 21st century it became obvious that in order to build the most effective education strategy, traditional methods need to be intertwined with technological achievements along with new conceptual approaches. Tutor-lead and computer-lead, face-to-face and online, synchronous and asynchronous education – all needed to blend to maximise the learning experience and the output. [4] By 2000 the concept of blended learning started to prevail in education opening the way to integrate basically any technology that can contribute to the success of the educational mission.

Parallel to these trends and processes the world of technology has been undergoing “a major historical transition when video games and computer games are in the process of evolving into something much richer, namely virtual world”. [5]

It takes only one step further for education in its efforts to increase effectiveness and efficiency to meet and integrate virtual environments into its array of options.

One of the most prominent representatives of the virtual worlds that constitute virtual learning environment is Second Life (SL), keeping approximately 6.5 million accounts. SL is probably the best example of how virtualisation in education conquers. SL was founded in 2003, and the first research conducted in 2007 showed that in four years approximately 170 accredited educational institutions were present and occupied a virtual location in SL. [6] By the end of 2010 this number was close to 400. Education-related activities offered range from academic courses to social gatherings, facilities include classrooms, research labs, libraries and public areas. Among many others Harvard University have already offered courses in SL for academic credits.

Utopistic opportunities for educational purposes

The concept of virtual learning environment being the ideal learning environment has been introduced by Ivan Tomek who tested virtual environments against a set of technical and contential features. Tomek claims that in our times a learning environment needs to be “dynamic and unpredictable” in nature, it must be networked, and include several communication tools, while it has to be “easy and fun to use”. Therefore the software environment needs to be “easily and drastically customizable and extendible”. Furthermore to ensure the collaboration aspect of education the ideal software environment has to be able to integrate sophisticated software tools that have already been used by education (e-mail, chat forum, learning management system, etc.) Finally, “as computing increasingly pervades physical reality, the software environment will increasingly require seamless integration with the physical world”. It is concluded that virtual environments carry the properties that an ideal learning environment requires. [7]

Educational principles that can make programmes in VWs successful are best characterized by the NDSU World Wide Web Instructional Committee (WWWIC) [8] and include:

- role-based learning, learning by doing, practice-oriented approach
- goal-oriented practice and repetition in problem solving
- spatially oriented set-up
- exploratory in nature, enabling students to control their experience and pursue their own interests
- game-like: engaging, entertaining, attractive
- highly interactive
- unintrusive tutoring: tutor as agent unintrusive but proactive, visit, when needed

Nearly all literature on virtual worlds claim that opportunities present an unprecedented range for education and research. From a methodology point of view the WWWIC [9] provides the best summary of affordances provided by VEs:

- control virtual time and collapse virtual distance
- create shared spaces that physical or practical impossibilities
- support shared experiences for participants in different physical locations
- implement shared agents and artifacts according to specific pedagogical goals

- support multi-user collaborations and competitive play

When it comes to research advantages of VWs seem to be huge, and at the same time expectations are high. In addition to real time simulations, extended time dimensions, crossing of sociocultural boundaries, reaching and engaging larger numbers of subjects are all to be achieved and exploited. The most challenging opportunity for research might be experimenting under alternative conditions that are impossible in real life.

Who gains?

Education needs to handle an increasingly diverse student body, which in addition have a rather practical than theoretical approach to their own education. The first generation of net-based – now called flat web - social settings have already overcome most of the shortcomings of traditional teaching modes, offering the advantages of low cost and easy accessibility, unlimitedness in terms of geography, time flexibility, and the possibilities of asynchronous communication giving space to synthetic and constructivist learning environments.
With virtual environments emerging further capacities can be utilized opening the way to new perspectives in education and research. A new way of socialization will find its way through. Who benefits? The target group of education will gain. Generations will benefit that feel more at home in a computerized media, people/students who prefer online collaboration and depersonalised communication channels. This audience which proves to be disadvantageous in traditional social settings will be supported to interact, encouraged by VWs to be active and engaged.

Limitations

The major boundary with virtual worlds is that they are available only for those with access to high-end technology. As it has already been pointed out, the number of the potential and actual participants rapidly grow, learning in virtual environment is still not an alternative to economically disadvantageous countries or layers of societies.
Limitations appear at the usage level, too. Certain important aspects of the physical co-presence are definitely lost in virtual environments, much of the human perspective suffers negligence. Human interaction turns into digital interaction, making a negative effect on conventional communication skills. The uniqueness of a real live communication, featured by the body language, gestures, mimics and facial expressions, and the tone of voices, is completely lost. “The prevalence of how it is said over the what is said is evaporates in the realm of cyberspace”. [10] Personal acquaintance and interaction play indispensible role in m types of social collaboration, which cannot be substituted by virtual features. Generally dealing with people is at loss to a large extent.

Conclusion: Predicting the future

Forecasts regarding the future applications of VLEs and VWs tend to be extreme. Those in favour go as far as stating that traditional education soon will come to an end:
“By 2025 traditional universities may be a thing of the past replaced by a consortia of course providers with delivery system that simply bypass the classroom.” [11]
“Eventually virtual worlds will permeate into every aspect of education. They (virtual worlds and education) will be one - inseparable, impossible to distinguish or differentiate. People will be able to attend a school solely in virtual worlds. Classes, from kindergarten to college, will be able to go inside a whale's stomach or visit ancient Rome, even design entire cities. The possibilities are endless and available.”
Many scientists though recognising and appreciating the opportunities warn of severe dangers.
There is a threat that those “graduating” from virtual universities may include many future engineers, natural scientists and social scientists who are ready to remake the real world in the image of the virtual worlds. [12]

While utilizing the unprecedented advantages of VWs in education, attempting to create an educational utopia, education as such need to be careful and soundly proportionate with VWs not to find itself in a dystopia.
Virtual environments can provide grand opportunities for educational purposes, both in a technical and in a social sense, and this should be exploited to a larger extent when building educational strategies. Although VEs, VWs are being increasingly used in education, their use does not seem to show the same dynamism as other VE usages reflect. The design and employment of VWs will create not only technical but also social challenges, which is to be analyzed and handle with special care. There is no way to build limits to the spread of VW participation, educators' real challenge is to channel this immense participation into a beneficial direction.

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