Repositório ISCTE-IUL

Looking through landscapes of technology - impact of virtual worlds in children's lives

Abílio Oliveira, Ricardo Dias and Bráulio Alturas

Abstract

The new technologies are becoming more crucial in many areas of our lives. Everything that relates to technologies, telecommunications and information systems, may give us benefits, facilitating and speeding up many tasks, in a convenient way. Here, we highlight the impact of the virtual worlds in children's lives and experiences, particularly, the role of computers in learning - as an essential tool that also facilitates interactivity between teachers and students. (The technological innovations can also be poorly used, due to ignorance or perversity, for instance, to disseminate misleading information or private images, online). We conducted an exploratory study, with a population of boys and girls, between 9 and 11 years old, attending the fourth year of schooling. We intended to verify the importance that children give to the computer in their personal, social and cognitive development - and how they use this technology, daily. The main goal was to identify the perceptions of children in relation to the importance of the computer in their learning, and in their lives. Most children said that can't live without the computer, emphasizing the help it gives them, mainly by the possibility to research on the internet, where they can learn, find help for their homework, and access (so often with no control) to information previously unknown. They also like to feel connected to friends. Children associate the use of computer with intelligence, because through it they can answer to questions and have access to information about everything happening on the world. Girls use the computer especially to perform research or homework, and to talk with friends, while boys use the computer mainly for entertainment and gaming (including online games). Children surf in the virtual worlds with ease and practical sense, searching for knowledge, emotions and experience. Yet, they run risks, especially in social networks (like Facebook).

Key-words: Children, youngsters, computer, information, communication, technologies, internet, social networks, knowledge, learning.

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1. Introduction

Much is said about the use of information and communication technologies (ICT), whether at school, home or at any factory or company. In fact, the new technologies are becoming essential in mostly all areas and domains of our living. The contemporary societies revolve around the new information technologies, through the most diverse computing devices.

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All that relates to technologies, telecommunications and information systems may facilitate or speed up many of our tasks.[1] Every day we have the opportunity to discover amazing news about informatics and the virtual worlds, and find an increasing offer, in terms of automation of processes through the most different devices, and fantastic apps, that may serve us in our routines, but making us gradually more dependent from computers.[2]

In fact, we always lived with techniques of information and communication, being oral language our main way to communicate with each other.[3] Now we are continuously connected by virtual links, and we can chat or exchange instant multimedia messages through the most various means. These incredible resources contribute to the rapprochement between people, communities and countries.[4] The information is easily shared, and with only few clicks any person may have access to an ocean of free knowledge. This electronic revolution generates changes in customs and social practices, including at level of education.[5]

Here, we highlight the impact of the virtual worlds in children's lives and experiences, particularly, the role of computers in learning - as an essential tool that also facilitates the interactivity between teachers and students.[6]

Constant innovation in 'Information and Communication Technologies' (ICT), with the creation of audiovisual and online materials, increasingly integrated (with multimedia options and applications), has aroused the interest of many teachers and educators, who believe that using these, in their classes, correspond to deploying 'educational technologies' in school.[7]

However, these means, alone, are not real 'educational technologies', since education is far from being limited or determined by the use of new technologies. Education depends on many factors, resulting from a good interaction between educators and students - as children in development, which must be understood and accompanied, at different levels (e.g., cognitive, emotional, moral, family, and social level).[8]

In any case, the inclusion of digital media is a reality very important in the learning, promoting the reasoning, attention and other qualities, having an appreciable effect in the development of child's identity.[9]

If in the field of sciences, changes occur through rupture and not by accumulation of knowledge, in school is not quite so.[10] Teachers should arise not only as transmitters of knowledge, but also as people with scientific, pedagogical and practical experience in a given subject area, able to teach in a refreshing way, by stimulating the will to learn, in interaction with their young students, encouraging them to use the computer and explore the virtual worlds, in a useful way. Even playing is important and some games reveal to be very constructive.[11]

Children and adolescents are increasingly awakened to the use of the recent technologies and electronic devices in their day-to-day. So, they don't feel strange when challenged to use these means in the domains of education. It is something they face very naturally, with enthusiasm, discovering, easily, new applications and features on the technological resources they have access to.

Technologies have a strong impact on their personal and social development, particularly between six and twelve years old.[12] Sometimes the children come to seem obsessed or fascinated, and with an extra motivation to use computers, consoles, cell phones, tablets and other various technological devices. Virtual worlds, media, multimedia, and social networks, offer an irresistible appeal.

In general, teachers have shown a growing commitment to integrate ICT in the traditional way of teaching, exploring new means to facilitate teaching and learning, but this process has not been easy.[13] Apart from the conditions available, teachers need to continuously update their knowledge and skills, in theoretical and practical terms, to deal with many different techniques and work situations in order to achieve, with each pupil, a better form of communication and learning.

ICT should be integrated correctly in the usual methods and practice, particularly in the teaching of young people, so that they can acquire the skills and knowledge in order to use them properly.

2. Main Objective

In the present research, we aimed to identify the perceptions of children in relation to the importance of the computer in their learning, and in their lives.

3. Method

An exploratory study was developed with a sample of young boys and girls, between nine and eleven years old, attending the fourth year of schooling (N=52). The school allowed the survey to take place, with the participation of the students, and the students were informed that their participation in the study was voluntary, confidential and anonymous. All participants answered to a questionnaire - with several open questions -, applied in the classroom. We intended to verify the importance that children give to the computer in their lives and how they use it, more frequently. Here are some of the questions that integrated the questionnaire:

For you the computer means...

What do you usually consult/do on the computer?

Do you usually use the computer alone or accompanied by someone else?

How much time do you spend on the computer daily?

What kind of computer do you have?

At school, is it usual your teacher presenting lessons with computer assistance?

Do you think the use of computers in the classroom may help you?

Each of these questions corresponds to a certain category or dimension of signification. Given the answers of the participants, the data obtained was summarized and analysed, considering the categories as dependent variables, and the gender of participants as the main variable in the present research.[14]

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4. Results

The following tables (cf. Tables 1 to 6) represent the categories or dimensions considered, with the corresponding items found in each case. The results obtained were compared in terms of gender (girls ⚲ and boys ♂). The more an item is relevant to a particular gender, then more signs + (in a maximum of five)[15] are linked to that gender.

For the majority of the participants, the computer is, above all, a synonymous of fun, but, for almost half of them, it also means an important technological resource for doing their work - particularly the homework (cf. Table 1).

In what concerns to the use of the computer for fun or entertainment, we verify that children, especially the boys, love to play, as well as they appreciate to watch videos online (although this feature is not as important as playing).

Regarding the use of the computer as an important tool for studying or working, and although boys show more enthusiasm in browsing, seeking for information, or simply in looking for things online, girls, much more clearly than boys, use the computer as a means to work, considering it an important help in the achievement of their learning goals. Only some children relate the computer, above all, as an object, a concept or technological device (cf. Table 1).

Table 1
Dimension: *For you the computer means...*
Sub-dimensions: *Fun, Work, Technology*

Sub-Dimension	Item	⚲	♂
Fun	Playing	+++	++++
	Surfing the net or Watching videos	+	++
Work	Browsing or Searching for information	++	+++
	Studying or Working	+++	+
Technology	Learning technologies	+	+++

These findings reveal much of what children think and feel about the computer. On the one hand, the computer is an object that facilitates their studies and allows them to carry out any type of research or work (no matter how difficult the work may be), on the other hand, is an instrument that they use in a playful way, for their entertainment. Children and adolescents can play offline or online, individually or in groups, and may compete with each other, regardless the physical place they are. For them, this is a magic view of the internet, a way to feel connected or in 'real' communication.

In fact, we notice, every day, in our practice as professors, that most students use the computer, and the virtual worlds, essentially to glide across internet, even through inadequate pages and contents for their age, and to play, as long as possible.

Girls, in general, reveal to be more applied in school and in studies than boys, preferring to use the computer to discover information that is relevant to do their duties and homework, and to their learning. Girls also recognize, more than boys, the computer as a good way to maintain relationships through social networks, particularly with Facebook.[16] Instead, boys do not care so much about their scholar duties, preferring to use the virtual landscapes, besides play and explore games, to enjoy the multimedia offerings, like watching videos, clips and movies, especially on YouTube (cf. Table 2).

Table 2
Dimension: *What do you usually consult/do on the computer?*

Category/Dimension	Unit of analysis / Item	♀	♂
The computer is generally used to...	Playing	++	+++++
	Facebook…	++	+
	Watching videos or films	+	++
	Working	++	+
	Searching for information	+++++	+++

It is not so surprising that almost all students - more than 75% in our sample - uses the computer alone and without help (cf. Table 3).[17] However, the mother is the most frequent companion in the case of girls. A girl is not usually accompanied by her father, as a boy is not usually accompanied by his mother. Sometimes, a brother or a sister may help a child, in the computer. Anyway, the fact that children stay most of the time alone on the computer, can be dangerous, in case they contact with strangers or have access to sites with inadequate content for their age, and which may affect their personal, social and cognitive development, (with or) without awareness of what they should not do.

Table 3
Dimension: *Do you usually use the computer alone or accompanied by someone else?*[18]

Category/Dimension	Unit of analysis / Item	♀	♂
The computer is frequently used...	Alone	+++++	+++++
	With the father	-	+
	With the mother	++	+
	With a brother	+	+
	With a sister	+	-

About two-thirds of the total of participants - 80% of boys and 44% of girls - spends around 30 minutes per day sitting on the computer. What, overall and

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according to the results referred before, leads us to think that boys have greater dependence on computers, in particular, to play (cf. Table 4).

Table 4
Dimension: *How much time do you spend on the computer daily?*

Category/Dimension	Unit of analysis / Item	♂	♀
Daily I usually spend... on the computer...	30 minutes	+++	+++++
	60 minutes	++	+
	90 minutes	+	+
	120 minutes	+	+
	… don't know…	+	-

We found that, among the 52 pupils, just one does not have a computer at home. Almost 80% acquired the so-called 'Magalhães', according to the implementation of the Technology Plan[19] in Portuguese schools, in the previous Legislature in Portugal, which facilitated its acquisition at a symbolic price (Table 5).[20]

Table 5
Dimension: *What kind of computer do you have?*

Category/Dimension	Unit of analysis / Item	♂	♀
The computer I have...	Netbook ('Magalhães')	+++++	+++++
	Notebook	++	+
	Desktop	+	++
	- (no computer)	+	-

All pupils report that teachers use the computer to present lessons or, at least, some of the subjects covered in a curricular unit. This reality reveals that teachers are interested in using new technologies, in order to, as far as they can, capture the students' attention in the classroom and give more interesting and interactive lessons, hence contributing to a better learning process. With so many stimuli and audiovisual media around the children (and, in fact, all of us), permanently at our disposal, it is easier to capture the attention of students through technological means, because children can hardly maintain concentration when listening and participating on classes that are merely theoretical (cf. Table 6).

We also asked the kids if the use of computers could really help them in the context of school, and particularly in the classroom.

Just one of them did not answered, all the others recognized, peremptorily, the importance of computers in their learning, stimulating their curiosity and interest in the subjects discussed in classes, enhancing that the lessons with computer assistance are, indeed, much more interesting.

Table 6
Dimension: *At school, is it usual your teacher presenting lessons with computer assistance?*

Category/Dimension	Unit of analysis / Item	♀	♂
At school...	Most times	+	+
	Frequently	+++++	+++++
	Some times	++	+
	Never	-	-

Furthermore, all children associate the computer with intelligence - and good grades -, considering that it helps them to answer to all sorts of questions, having access to information about everything happening on the world.

5. Discussion and Conclusion

Nowadays it is almost banal the exploit of various technological means in our day-to-day. In the XXI century the use of computers became widespread and something with which we all live, in all situations and contexts. Technology, telecommunications and internet allowed a close approach between all of us. Even when we cannot be in personal contact... we are virtually connected.[21]

We can talk without leaving home, write messages with animation, work together, share photos, drawings, videos... at the same time we may listen to music, go shopping, participate in meetings or communication channels, consult the bank statement, pay bills, read the latest news, or simply browse the net for the pleasure of 'travelling' or learning, anytime, in real time. Business and pleasure join together in cyberspace.

Awareness campaigns for the technologies and for facilitate the acquisition of equipment, even to deprived families, have widespread the access to the computer and software tools, for most children and adolescents. Ideally, the introduction to informatics should happen as early as possible, in kindergarten, with simple proceedings presented in an interactive and amused way, according to the stage of development of each child, giving her the time to imagine and discover new worlds, in a simple way and in order to promote contact and practice with new technologies, regardless of family context from which the children come.[22]

Initially the child sees the computer as an object that allows her to play and enjoy herself. With the passage of time and the maturation of identity, the youngster begins to see the computer as a valuable resource in their learning and in

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the future. Everything that goes around the child and interacts with her, contributes in some way to their development and identity construction.[23]

The new information and communication technologies have been gradually implemented in recent years in all schools, in Portugal, becoming forms of language with which many children have a frequent contact. The use of informatics from pre-school may trigger a better learning allowing the knowing of an informatics code and the development of a logical reasoning, increasingly necessary - this may be used not only in an approach to written code and mathematics but also to any artistic expression or musical expression.[24]

Some studies show that computers can facilitate the process of teaching and learning. The use of computers in the classroom aid teachers in imparting knowledge and in interacting with their students, captivating their attention and encouraging their predisposition to think, learn and participate in classes.[25] A qualitative change in the learning process happens when it is possible to integrate different technologies (e.g., telematics, audio, textual, oral, musical, entertaining).[26]

So, as a major challenge the teacher must understand that he is not a mere transmitter of knowledge, but rather one that encourages learning. A teacher must be an expert in the learning process, giving priority to the development of skills, skills, intelligence, attitudes and values.[27]

The technical capacity to use ICT is essential but more than knowing how to do something to achieve success, the use of ICT should be in accordance with ethnic and cultural values, and also, pedagogical and methodological principles.[28]

In fact, most kids feel more motivated to learn when the computer is part of their training and tracks their progress.[29] They use it with some frequency, for various purposes, in particular to play - especially boys - but also to search for information, watch photos and videos, do homework, study or stay in touch with friends through Facebook - particularly girls that proved to be more engaged in studying and in social relationships.

Anyway, children associate the computer with intelligence - and good grades -, because, as an inexhaustible source of knowledge, it gives them access to information about everything happening, everywhere and at any time. The computer and internet access helps them with their homework, but also offers games, fun and distraction. In fact, most students use especially the playful aspect of the computer. We admit that some children spend too much time at the computer, alone[30], accessing contents or games that are not advisable for their age, which can affect their development and their good social relationship.

With so many stimuli and audiovisual media at our disposal, it is easier to capture the attention of children through technology, because they do not focus so much on teachers that just teach theoretical classes. The technologies may make them more susceptible to better learning, to participate actively and enthusiastically in their own learning, and to achieve educational success.[31]

So, it is expected that the potential of information technologies is increasingly exploited in an educational context, helping to improve the quality of education and the preparation for active life.

In sum, children glide in the virtual worlds with ease and practical sense, searching for knowledge, emotions and experience.[32] They look to and through landscapes of technology, feeling excited with the experience, as well as we, adults, feel delighted looking to wonderful natural scenes - and we also hope that children also appreciate nature and all the things that should be done without a computer. Technologies became very familiar to them and whatever we may think, as parents or teachers, children's world is evolving through an intimate contact with virtual worlds. There is no turning back. A 'brave new world' rises. Our kids will rule in a near future... but the future, in some way, is happening now.[33]

Notes

[1] James Gleick, *Cada Vez Mais Rápido* (Lisboa: Temas & Debates, 2003).

[2] Abílio Oliveira, *O Desafio da Vida* (Lisboa: Coisas de Ler, 2011); Daniel Sampaio, *Vozes e Ruídos* (Lisboa: Caminho, 1993).

[3] Of course vision, hearing - and even smell and touch - also facilitate us the process of acquiring and sharing information.

[4] James Gleick, *Cada Vez Mais Rápido*.

[5] Roldão, Maria, 'Que educação queremos para a infância?' In *A educação das crianças dos 0 aos 12 anos*, edited by Manuel Miguéns (Lisboa: Conselho Nacional de Educação. 2008), 176-196.

[6] The technological innovations can also be poorly used, due to ignorance or perversity (e.g., to disseminate misleading information or private images).

[7] Bárbara Wong, *A escola ideal* (Lisboa: Sebenta, 2008); Juana Sancho, *Para uma Tecnologia Educacional* (Porto Alegre: Artmed, 1998).

[8] Soraia Borralho, Abílio Oliveira and Alejandra Freitas, 'Feeling, Learning, Growing: Children's Feelings about Their Teachers'. In *Children and Childhood: Practices and Perspectives*, edited by Chandni Basu and Vicky Anderson-Patton (Oxford: Inter-Disciplinary Press, 2013), 129-140.

[9] Abílio Oliveira, *O Desafio da Vida*; Rios, Terezinha, *Ética e competência. Coleção Questões da nossa época* (São Paulo: Cortez, 1999).

[10] Thomas Kuhn, *A revolução das estruturas científicas* (São Paulo: Perspectiva, 1978).

[11] Mário Cordeiro, *O Grande Livro do Adolescente* (Lisboa: Esfera dos Livros, 2012); Pedro Strecht, *Interiores* (Lisboa: Assírio & Alvim, 2002).

[12] Abílio Oliveira, *Ilusões na Idade das Emoções* (Lisboa: F.C.T./Fundação Calouste Gulbenkian, 2008).

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[13] Maria Moraes, *Paradigma educacional emergente* (São Paulo: Papirus, 2006); Raquel Moraes, *Informática na educação* (Rio de Janeiro: DPA, 2000).

[14] Abílio Oliveira, *O Desafio da Vida*; Abílio Oliveira and Ana Leão, 'Perceptions of Joy and Sadness in Childhood'. In *Children and Childhood: Practices and Perspectives*, edited by Chandni Basu and Vicky Anderson-Patton (Oxford: Inter-Disciplinary Press, 2013), 229-238.

[15] When an item is not relevant, is indicated a symbol '-' instead of a '+'.

[16] Raquel Recuero, *Redes sociais na internet* (Porto Alegre: Sulina, 2009); Tara Hunt, *O poder das redes sociais* (São Paulo: Gente editora, 2010).

[17] We should also consider that many parents, being busy or at work, while children study (frequently in workshops for study or leisure time) cannot stand beside their children as much as wished.

[18] With whom you usually stay on the computer?

[19] Livro Verde para a Sociedade da Informação em Portugal, 1997.

[20] Computer that was sponsored by the government of Portugal (and assembled in Portugal), since 2008, accessible to all students in elementary school; the students/parents just had to pay a symbolic value for the acquisition of this netbook - entitled 'Magalhães' - for study at home or use in classroom; in fact, it was sold for much lower values than those that existed in the market, by the time - for students with less economic resources, the computer was given.

[21] Abílio Oliveira, *O Desafio da Vida.*

[22] Jorge Miranda, *Teoria do Estado e da Constituição* (Coimbra: Coimbra Editora, 2002); Maria Moraes, *Paradigma educacional emergente.*

[23] Maria Serrão and Carolina Carvalho, 'O que dizem os educadores de infância sobre o jogo', *Revista Iberoamericana de Educación / Revista Ibero-americana de Educação*, 55/5 (2011): 1-15.

[24] Livro Verde para a Sociedade da Informação em Portugal, 1997.

[25] Maria Almeida, *Informática e Formação de Professores* (Brasília: Ministério da Educação, 2000); Luís Mercado, *Novas tecnologias na educação: refelexão sobre a prática* (Maceió: Edufal, 2002); Raquel Moraes, *Informática na educação.*

[26] Luís Mercado, *Novas tecnologias na educação: refelexão sobre a prática.*

[27] Maria Almeida, *Informática e Formação de Professores.*

[28] Mercado, Luís. *Experiências com tecnologias de informação e comunicação em educação.* Maceió: UFAL, 2006.

[29] Children said that cannot live without the computer, emphasizing the help it gives them.

[30] With no supervision or adult help.

[31] Daniel Sampaio, 'Diversificar meios e conteúdos educativos para melhorar o sucesso, In *A escola face à diversidade: Percepções, práticas e perspectivas*,

edited by Manuel Miguéns (Lisboa: Conselho Nacional de Educação, 2008), 69-100.

[32] Yet, children run several risks, especially in social networks.

[33] Abílio Oliveira, *Ilusões na Idade das Emoções*.

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