
**THE EDUCATIONAL REALITY OF DIGITAL NATIVES.
RESILIENT DEVELOPMENT IMPLICATIONS**

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Abstract: In the context of a digital age that covers all sectors of modern life, access to and use of technology by „digital native” students has been an area of much speculation, though relatively little empirical research. After being popularised firstly by Prensky (2001), the term „digital natives” started to represent the generation born after 1980 having characteristics which can be outlined as: a high level of digital aptitude, the ability to multitask, literacy in multiple media, constant connectivity, the need for speed in delivery of information, a culture of sharing information and a unique attitude towards education (Barnes et. al., 2007; Prensky, 2004; Oblinger & Oblinger, 2005; Dede, 2005). Since then, it was noticed that these young people share a common global culture defined less by age than by their experience on digital technology. It is clear now that the new technologies have become an important dimension in education at all its levels, providing the opportunity to bring it closer and closer to our usual support. Access to and use of technology for different purposes is variable and all teachers and policymakers need to take this variability into account when making changes at the course or institution levels. What is also required is more in-depth investigation of the technology practices of these „digital natives” to understand how they are transforming their social and academic lives and, more importantly, how they are shaping technology to suit their lives and needs. This paper follows the characteristics of the „digital natives” in relation with the necessity to develop their digital resilience and skills through which they can seize better the opportunities of life while mitigating any challenges (Livingstone, 2011). The purpose is to highlight the technology access and practice both in everyday life and for academic study and to analyze how diverse stakeholders should collaborate to succeed in building digital resilience for today’s students – named „digital natives”.

Keywords: Digital Natives, Net Generation, Technology, Resilience, Education.

Introduction

An idea that has gained currency is that the generation born after 1980 grew up with access to new technologies and the Internet and is therefore inherently technology-savvy (Margaryan et al, 2009). This generation has been termed Digital Natives, Millennials or Net Generation and they have grown up surrounded by technology and are characterised by their ability for multitask, their dependence on technology to maintain social contact, their openness to share content, and their ability to rapidly understand and adopt new technologies (Oblinger, Oblinger, 2005; Prensky, 2001; Dede, 2005).

In Prensky’s definition, *digital natives* are those born in or after 1980, while *digital immigrants* are those born before 1980. The followers of this idea claim that, not only does this generation have sophisticated skills in using digital technologies, but also that, through their exposure to these technologies, they have developed radically new cognitive capacities and learning styles (Prensky, 2001).

Over the last 15 years the emergence of a new generation of students from all educational levels has been reported in the literature. Recent studies suggest that the homogeneity of this generation cannot be assumed, especially in relation to technology use as part of students’ academic study (Lang, 2007; Kennedy, 2006).

The spread of new technology and Internet services around the globe has occurred at a rapid pace. This expansion has changed lives for millions of people with new technology providing social media communication capabilities and instant access to a vast range of information and entertainment services. In this order, internet access is also quickly becoming part of life for children and young people. This fact brings with it, in the same time, substantial benefits and risks. There is not a rule that possible risks can always translate in to harm. Skills training, awareness raising and teacher/ parent support can help building resilience in children.

However, the degree of resilience, the exposure to the risks and how these develop will vary between countries, depending on factors such as the use of new technologies and internet services. It is important that attempts to protect children and young people should not come at the expense of children's privacy rights and the ability for young people to benefit from the rich seams of education and entertainment available on the web.

The Evolving Digital Natives Debate

The term "digital natives", popularised by Prensky (2001), represent the generation born after 1980 when a technological disparity between the youth of the time and their parent and teachers has emerged. It was noticed that these young people share a common global culture defined less by age than by their experience on digital technology. Additionally, Prensky introduced also the concept of „digital immigrants" defining those who were not born into the digital world and which will never be able to master the use of technology to support engaging education.

The variance of technological experience of digital natives (Prensky, 2007) has induced changes in the interaction with information technologies and has affected the ways they relate with one another, other people and institutions. In the academic environment, an attempt to bridge the supposed gap between digital natives and digital immigrants prompted arguments for radical changes in education teaching approaches and professional development. Some of these were criticized, as for example by Helsper and Eynon (2009, p.16): „We are not saying education should not change, but debates about change must be based on empirical evidence and not rhetoric".

The lack of empirical data and tests didn't impact the development of the literature describing the characteristics of digital natives. These characteristics can be outlined as: a high level of digital aptitude, the ability to multitask, literacy in multiple media, constant connectivity, the need for speed in delivery of information, a culture of sharing information and a unique attitude towards education (Barnes et. al., 2007; Prensky, 2004; Oblinger & Oblinger, 2005; Dede, 2005).

Therefore to realize the full promise of digital tools and new technologies firstly it is mandatory to have access to them and their related infrastructure. Although access to the Internet, mobile devices and digital media has increased at a rapid rate over the past decade, it remains highly inequitable between different countries (Petrovici, 2010). Besides the economic development efforts through investment in new technologies and Internet infrastructure, it is necessary to take into consideration also the digital literacy - the ability to navigate a digitally mediated world – and the participation gap between those with

sophisticated skills in using digital media and those without. So to be able to benefit from these new accessible technologies, there is a growing need to develop the required skills to use them.

Without the opportunity to become familiar with electronic media, young people who do not have access to the Internet or who lack the support that comes from teachers and parents equipped with strong digital skills, will not develop the necessary social, learning and technical skill sets for success in a wired global society. Newly emerged studies discovered that while ownership levels of technologies such as computers and mobile phones were increasing, as was students' participation in online activities such as writing blogs, using social networking sites or instant messaging with their friends (Oliver & Goerke, 2007). Additionally, a significant variance in the identified levels of digital activity across all ages led the authors of many research-based studies to advocate usage levels and experience with technology as measures of whether a person can be considered a digital native, rather than their age (Dede, 2005; Bullen et. al. 2009).

Last but not least it is necessary to expand the understanding of how young people navigate the online world and how they use the digital media across societies. Youth technology practices have only recently become subjects of research and there is still a lack of studies about how students have adapted technology to support their learning. Very often, the research studies on digital natives ignore the complexity and diversity in the ways young people use technology (Helsper & Eynon, 2009). Definitely, the engagement with digital technologies is transforming learning, communication and socializing among youth, so further research is needed to identify which technologies students are choosing to use in their everyday lives and how these technologies overlap with or can become 'learning technologies' (Kennedy et. al. 2007). Digital activities which are 'friendship-driven' like content generation, collaboration, remixing and sharing became important aspects of daily life, serving to maintain relationships with people already known offline. Other activities which are 'interest-driven', allow youth to develop expertise in specialized skill sets. In either context, these activities contribute to the development of technological and social skills.

Lately, a number of technology-specific classroom implementation studies have emerged from educational digital games, simulations, podcasting, to the use of blogs, wikis, social networking services and even virtual worlds. It is still unclear whether the motivation for these implementations of new technologies in the classroom stems from the needs and abilities of the students or simply the emergence or availability of the technology. Our challenge as a global society is to design and build online experiences for adolescents that help them seize the opportunities – while mitigating the challenges – of life that are partially mediated by digital technologies.

Growing access to internet services through new technology

The rapidity with which children and young people are gaining access to internet and new technologies is unprecedented in the history of technological innovation. This expansion of the internet services has changed the lives of millions of people at a rapid pace by providing a diversity of voice, video and social media communication capabilities and instant access to a vast range of information and entertainment sources. Parents, teachers and children

are acquiring, learning how to use and finding a purpose for the new technologies within their daily lives.

Nowadays, the mobile technology is also reaching everyone across the world, with a global market penetration approaching 100%. It was noticed that between 2000 and 2011, mobile subscriptions raised from a billion to some 6 billion worldwide and internet users expanded in number from half a billion to 2.3 billion. As many studies have shown, growing internet access through new technology has a positive impact not only on the economic growth of a country, but there are also achievements for society, with improved government transparency and freedom of expression, better education levels, earnings and lifestyles and increased access to healthcare and financial services (BCG, 2013).

An increasing number of internet users are young people and children who represent the world's "digital natives", growing up taking for granted the presence of new technology and mobile devices in their lives. There are study markets (Klopfer et al., 2012), who expect that the number of children online will reach some 176 million by 2017, a growth of 106 million from 2012. In addition, it is anticipated that most of these children will be using a mobile device when going online for the first time. Even though access to internet services creates new educational, economic and lifestyle opportunities for all digital natives, it also brings various risks. Therefore stakeholders – governments, industry, schools and families – must work closely together to seek and maximize the online opportunities while mitigating the risk of harm associated with internet use.

In many countries substantial and diverse efforts are underway to promote digital technologies in schools, e-governance initiatives, digital participation and digital literacy. New benefits and opportunities for learning, participation, creativity and communication are being explored by children, parents, schools, and public and private sector organizations (Livingstone et al., 2011). While children communicate with friends, engage with each other through social media, and gain access to instant entertainment, they are also developing useful skills. These skills will upgrade their lifestyles, whether they are building their ability to research and access essential services or they are improving their powers of self-expression and imagination. The specialized literature and even Unesco lay stress on the major role of digital literacy in the children lives, being as relevant as reading and writing, the management of social behavior or mathematics.

Some of the digital skills children and young people develop online through new technologies relate directly to their future economic prospects. It becomes clear that digital literacy is required and valued by most of the employers. Tomorrow's employees will be expected to have extensive experience in using online tools, since in the workplace, research, data, lectures, training, debates and collaboration between teams are all moving online. Moreover, young people, as they start to create lives for themselves, will need to know also how to get access and benefit by various public online services. By 2017, some study markets (Livingstone et al., 2012) anticipate that approximately 450 million children will benefit from internet use, due to the fact that the advantages brought by accessing the internet services through new technologies tend to spread beyond the direct users.

Risk posed to students by new technology and internet access

The increase in children's access to online services is usually overwhelmingly positive, and it brings many educational and developmental benefits as well as security. However, it was noticed that along with the opportunities, some serious risks also come with the new technology. Reports on the internet services use suggest that more children are taking advantage of the possibilities they find online, even if they are related to a number of online risks. There is a wide range of worries covered by these risks starting from children spending unwisely big amounts of money on in-app purchases, the ability of advertisers to target young people with ads for inappropriate products, and ending with sexual predators, who can disguise their identify to contact their targets.

Children and young people can be passive victims of harm, but the new technology enables them to become also active participants engaged in undesirable behavior. As active culprit, their bad behavior can be outlined as: cheating on school tests, intrude copyrights as downloading digital media, hacking into private computers, engaging in cyber-bullying of their schoolmates or distributing inappropriate content about their peers via their social media networks. This lead many times to tragic events which were presented in the news media, such as suicides of teenagers as a result of online bullying or youth riots instigated by online harassment. Furthermore specialty studies have identified that the resulting harm can take various forms – social, financial, legal, physical or psychological – and can be inflicted via a number of channels – through content, contact, commercial transactions or security breaches. Based on concrete examples, this can be translated for victims into exposure to undesirable or dangerous content which is violent or racist or promotes harmful behavior through websites encouraging anorexia or suicide. Secondly, most often commercial risks include approaches from marketers promoting age-inappropriate or illegal products to young people or persuading them to enter into purchase agreements unknowingly. In addition, children face online multiple security risks from installing malicious programs on their devices to falling victim to phishing, identity theft or fraud. (BCG, 2012).

In general, the concerns about these cases usually lead to initiatives for new digital legislation that clearly outlaws undesirable behavior, misdemeanors and online crimes. Definitely, thoughtful legislation is a necessary step towards a better digital society. Legislative frameworks should be used to encourage industry participation and reduce the amount of harmful online content. Nevertheless, because risks do not necessarily always translate into harm and since there are complex issues regarding the use of the new technologies and internet services by the digital natives, regulation alone cannot represent a viable solution. Citizens and governments in all countries must collaborate and take continuously measures to reduce risks and increase digital resilience. Ultimately, parents are the most critical stakeholders who must balance the use of digital tools that minimize risk with the need to respect their child's right to privacy and his or her ability to benefit from online access.

It is clear however, that as long as the uptake by digital natives of new technologies grows, the potential risks will still increase. A range of studies on online risks suggest that among the 67 million online children, approximately 20% could have been subject of potentially harmful user-generated content, up to 50% could have faced cyber-bullying and

25% could have communicated online with a stranger. Additionally, up to 10% of the online children have been exposed to some type of personal data misuse.

Risk and resilience across the world

While it is possible to take action to prevent and to reduce risk exposure especially at the end-user level, it is highly recommended and even mandatory to focus on building and constantly increasing the resilience that minimize online harm. Teacher and parent support, awareness raising and sophisticated skills training in using digital media all help build resilience in children. These consolidating actions can be supplemented with filtering or blocking technology and the creation of appealing positive online content.

Even if digital natives share many of the same fears and hopes, their resilience to either avoid online risks or recover from harm vary across the world. This is because the degree of resilience depends on the differences in the amount and the characteristics of new technologies usage, and also on the proficiency level in digital literacy among both parents and children. The more children are accessing the internet services through new technologies, the more they are likely to encounter potentially harmful situations. Additionally, every time personal devices are used to find and consult online content, children are at greater risk since any personal device is less easy to control than one from a school or an institution. Of course, all attempts to protect children should not come at the expense of children's privacy rights and the ability for young people to benefit from the rich seams of education and social activities available online. Studies revealed also that the percentage of digital natives which are able to access potentially harmful content is varying from country to country. In some countries such as Denmark, Sweden and Hungary the risk is higher, a medium risk can be found in India, Russia, and Serbia, while low risk countries are for example Bangladesh, Thailand and Pakistan.

In the same way, the ability to stand up against harm from online risks varies across the world based on the correlation between higher levels of resilience with strong digital skills and higher educational levels. When children have enough digital experience, they are more able to handle any kind of risks. Following the same logic, countries must consolidate the strength of their institutions to be able to help and better protect their citizens from online risks arisen in a permanently changing global environment. With respect to this aspect Sweden, Norway and Denmark have high levels of resilience, Malaysia, Hungary and Russia stay at medium levels, while India and Pakistan are at the lowest levels.

Last but not least, no country should be at ease on this problem, even if it is very well prepared and equipped to manage online risks relating to children and young people. Every country must always take further initiative and develop new policies which will increase digital resilience and mitigate the effects of any possible risks.

Building resilience and reducing risk to minimize harm

There is much to be done to diminish the odds of young people encountering potentially harmful content or individuals online, because the dangers children can be exposed to through new technologies are very real. Measures of risk-mitigation can lower the odds of digital natives being subject of harmful online content. For example, more high-quality

content that will be appealing to young people can be created and additionally, the use of clean content labeling can facilitate children and parents to identify age- and child-appropriate material.

Thoughtful legislation is the first critical pre-requisite for reducing the risks. Legislative frameworks must clearly define and outlaw harmful online content, minimize and ban the exposure to inappropriate materials, and prosecute all perpetrators of crimes such as cyber-grooming. Nevertheless, legal measures alone will never be sufficient, so there is a vital need for other complementary solutions. One such lever is monitoring and moderating of online activities. This implies providing parents with the means to check and control their child's use of new technologies such as social media and chat rooms.

Studies established a very important role that technology is playing in bearing up teachers and parents' challenges with ease through antivirus software or software programs which can filter out specific applications, websites or content. Additionally, installing such programs can be useful for verifying the age of users and for moderating the amount of time a child spends online. For all stakeholders it is necessary to remember to keep a balance between the child's right to privacy and the harm prevention actions.

It becomes clear that the more powerful strategy than risk reduction through technology or legislation is building resilience among young. Therefore developing and improving their digital skills, helping them to either learn how to avoid harmful online encounters or how to seek help when they do, and how to recover more quickly after coming across dangerous or inappropriate web content, represent major requirements for a strong digital resilience.

Resilience building varies as form, starting with raising awareness of the risks and continuing with developing digital sophisticated skills. So, in accordance with the digital resilience requirements, schools must promote the distribution of awareness information targeting both parents and their children, and also learn students about the safety guidelines for the new technologies use.

The support from a wide variety of stakeholders, along with industry collaboration and self-regulation, is necessary to effectively build resilience and mitigate risk. Because of so many dangers and complex issues facing society today, no one can reduce the risks only by them self.

In conclusion, since in many cases the digital online content breaks trough parental, technological, educational, governmental and corporate responsibility, the entire society must bring its energy in reducing the potential for harm, using all their capabilities and strengths.

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