

STUDENTS - DIGITAL NATIVES OR NOT?

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Abstract

We are witnessing today a transformation of the roles of the educator and the educated: in order to surpass the unidirectional and transmissive model of the teacher-student relationship, there is need for a multidirectional model of educational communication. Students get and use information more easily, from various working environments, where the electronic space represents an effective modeling tool for learning. The concept of Digital Natives, applied to the students, uses descriptions of the current generation of young people who have grown up surrounded by technology. The promoters of the idea according to which young people intuitively know how to use technology have been disputed with arguments and studies which have highlighted that even if they have this living environment, pupils or students need digital training because they do not have natural digital skills that would allow them to use technology safely and proficiently.

Therefore, their informally acquired skills are susceptible of being incomplete. From the teachers' perspective in order to understand which are, after all, the changes that the specificities of the young people who are learning require their adhesion to the postmodern paradigm of constructivist training. That is based on the use of interactions and on the application of the New Technologies of Information and Communication (NTIC) in an expanded context. Such an environment is beyond the formal frameworks of academic training in a digital environment, with all the advantages and limitations that it creates. Our analyses capture the difference between the conceptions that take into account the perceptions or self-assessments of the students and the ones based on the results of the effective evaluations of their digital competence level.

Keywords: *Digital natives; Digital immigrants, NTIC; Digital competences; Digital citizenship.*

1. What is the digital generation?

Digitalization is the social transformation triggered by the massive adoption of technologies in order to generate, process and trade information. Digitalization capitalizes the collateral effects resulting from the use of certain platforms, applications, electronic services, social networks, starting from the availability of

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on-line information. Concerns about "digital natives" are multiple (Howe and Strauss, 1991; 2000; Tapscott, 1999; 2009; Prensky, 2001; 2009; 2010; Oblinger and Oblinger, 2005; Palfrey and Gasser, 2008, apud Jones și Shao, 2011), but the expression is attributed to the American author Marc Prensky (2001). He states that a digital environment dramatically changes the way people think and process information: it is even possible to modify their brain structure. Metaphorically speaking, "the digital natives" are different from "the digital immigrants", that is, those born before the widespread use of digital technology. The latter have used digital technologies later in life to a lesser extent, along the way, and therefore they do not fully adopt them but use them with an "accent". The attribute of „native” (Prensky, 2001) describes the innate ease with which young generations - people born after 1980 - use technology as a consequence of exposure to it from early ages. Through the systematic interaction with the digital environment, children, teenagers and young people have specific abilities, they better understand the concepts in the field than the others.

Alternatively, digital natives include people born after 2000, when the digital era began, but in most cases, the term focuses on people who grew up with the technology that became dominant in the last part of the 20th century and continues to evolve even today. There are also other similar expressions used: Net generation⁴, Net Generation, Y⁵ Generation, Y Generation, Google generation⁶ etc., but the definition of digital natives takes into account two factors: young age and exposure to new information and communication technologies. Some concepts identify digital natives among people who understand the value of digital technology and use it in educational contexts, in higher education (Jones and Shao, 2011).

In a chronological approach, Ceobanu (2016) synthesizes the paradigmatic changes regarding the evolution of e-learning:

- In the 1990s, when computers became economically accessible, the focus was on training through the Internet (constructivism insisting on the beneficial role that they have in learning);
- Between 1995-2005, e-learning came to the fore, which led to digital flexibility, adopted in academic education;
- Since 2005, we have talked about M-learning (mobile learning), which is closely related to the learning space and time (being able to learn anywhere, anytime).

Apart from belonging to a period of time (late 1990s and mid-2000s), digital natives are characterized by their behaviour: the tendency to form active communities, the use of social media pages to debate a variety of subjects, the desire to control their own life and the acceptance of information complexity, the predisposition to creative activities, the pleasure of generating communication content. The comparison between the old and new generations brings into focus the changes in learning styles: the older generation does not believe that the pupil/student, native digital, can learn while listening to music, although for students this style is efficient. The conception of teachers or people in an older generation comes from the fact that they did not use to do so. Also, the digital generation wants a funnier way to learn, they easily acquire a foreign language, and they do not have

the patience to listen to lectures or to work through traditional methods, through a logical approach, step by step. The processing of information by the new generation is based on a more rapid, distributive visual reception. There are multi-tasking skills to which young people are open, with the main inconvenience associated with their practice: stress, the poor quality of task execution. While teachers focus on general culture and aim at proficiency, students are preoccupied with efficiency and avoid redundancy, being more comfortable in applying the learning modalities that should be occurring here and now. For young people, information and communication technologies allow for the placement of courses, programs, bibliographic recommendations/ extensions on a web page as well as the use of evaluation tools, the creation of discussion groups, the management of administrative activities, that is the redundancy of the timetable, or planning exams.

The online content influences the users' decisions and activity, therefore a critical, selective attitude is required. In order to answer the educational needs, teaching and learning through games would be useful. In fact, the materials and means of younger generations are diversified. Children, teenagers and young people use computers, the Internet, email, video games, digital players, camcorders, mobile phones, and other communication tools. The ubiquity created by the existence of the New Information and Communications Technologies better explains the above mentioned features.

It means unlimited communication in the digital system, given by:

- celerity and efficiency of information, by reporting to the most different types of content;
- the principled connection to a multitude of sources;
- reduction of information communication costs;
- the removal of spatial determinations, the receiver being able to obtain the information from anywhere possible, as long as it possess the appropriate technical instruments;
- fast, real-time request;
- the use of multiple types of learning environments (written text, sound background, imagistic support, static and dynamic sequences, virtual space-time structures, etc.).

The most important feature is the informational correlation, by involving various sources in generating or maintaining ideas, theses, opinions.

The consequences on the profile of children, teenagers, young people are the changes in presence/ participation and social identity, strongly activated through Facebook, Internet networks. As Prenski (2009) shows, this generation is open to sharing, to mutual learning, while teachers tend to preserve their status as experts.

2. Paradigmatic changes and digital skills formation

The profile of the digital natives falls within the scope of postmodernism, constructivism, and, methodologically, there is the desire to strengthen young people's relationships with important actors on the labour market, through acquiring digital competences. Basically, digital competences mean the efficient use of online

information for access, storage, reuse, presentation; the critical analysis of online content, risks associated with improper use, digital content creation in an efficient, effective and responsible way. According to the European Commission Recommendation (2014), digital competence implies the confident and critical use of NTIC for work, learning, self-development and participation in social life.

Digital competences refer to:

- 1) Information and data literacy
- 2) Communication and collaboration
- 3) Digital content creation
- 4) Safety
- 5) Problem solving.

ECDL - European Computer Driving License - the most widely recognized digital competence certification program assess the following domains: computer use, online tools, texts editing and table calculation.

Concerned with the development of digital competences, ECDL Foundation (2016) shows that the lack of formal education leads to a gap between the use of technologies in everyday life as part of our lifestyle and the need to use digital skills at work or as a person who studies. The ineffectiveness of today's labour market integration mechanisms proves that people are not able to fully reach their potential of using digital technologies, as students or future employees, entrepreneurs or citizens.

The most popular applications used in this training area are the ones about drawing or presenting, organizing, spreading, web browsing, applications for computer training, e-mail, social networking sites.

Thus:

- The E-mail - allows for communication between two or several people who have an e-mail address.
- The discussion forums - give the opportunity to interact, debate, and share experiences with other users without having to be connected at the same time or in the same place.
- The chat - is useful to chat with people who are connected to the network at the same time and who are using the same program.
- The videoconference is useful for communicating remotely through a webcam.
- Wikis are collections of web pages through which you can access and modify content by using a simplified markup language.
- The blog contains descriptions of events, including text, other materials (pictures, video clips, for example) and comments.
- Social networks allow for information exchanges between people interested in exploring the interests and activities of others.
- News feeds provide users with up-to-date Web content.
- Photo/graphic/video content sharing services allow users to upload images, presentations or videos to a website.

3. How prepared are young people to use technology?

Critics have called the perspective on digital natives "Prensky's error," dismantling some of his arguments. Later, by changing the discourse on digital natives, the author himself confirmed the fact that in order to use technology effectively and efficiently, young people must have digital skills. He reviewed the approach by adding a new concept, "digital wisdom". A digitally wise person not only knows how to use digital technology, but also has the ability to critically evaluate it, to make ethical choices, and pragmatic decisions.

The dismantled premise was that the mere fact of being contemporary with the development of NTIC/technological means does not automatically provide expertise or a high level of application.

Other objections:

- The level of computer literacy is uneven, sometimes relatively limited. Kennedy *et al.* (2008, pp. 485-488) observe that digital natives speak various computer languages. Following their studies, they find that the extent of the differences between the new generation and the old generation is relatively small. For certain technology-based activities, the gender and the role are significant. To these we also add the mention that students in higher education are not all young, but also include adults from older generations.

- A study by the organizers of the ECDL program (2016, p. 4) showed that the greatest gap between perceived and real competences is constant among young people (more precisely, in the 15-29 age group). The young, supposedly digital natives, have a fake native status: they underperform in practical tests, there being a discrepancy between the self-esteemed competences and the real ones, most of the time overestimated by the youngsters.

- The cognitive mechanisms do not change radically from one generation to another.

- The advanced digital competences do not automatically result from the ability to use ICT tools (Ala-Mutka, 2008), as it was found that the levels of creativity, ethics, safe use, problem solving are held by a small percentage of young people evaluated through practical tests.

- Margaryan *et al.* (2011) object to evidence of the existence of young people endowed with highly sophisticated technological skills, and Janssen *et al.* (2013) suggest that the easy use of technology depends more on competence than on age.

- Response to technology also depends on: demographic factors, gender, mode of study (distance or on the spot), international or native status of the student.

- Students persistently report that they prefer the moderate use of information and communication technologies (ICT) in their courses.

So, the concept of "digital inequality" (Ceobanu, 2016) would be much better both in terms of knowledge and access to NTIC.

More than being a digital native, there is the idea of "digital citizenship" (Cassells *et al.*, 2016). If, for a long time, digital citizens were considered technology users (simple recipients, consumers), now they can become active participants in building the virtual environment. Digital citizens' projects focus on various areas:

socialization, values (peace, democracy and civic involvement), solving problems such as migration, environmental issues, including online safety.

Participation in the digital environment depends on access and use, but besides these, to a large extent, it is conditioned by attitudes. Participation can vary in degrees, from a simple navigation to a militant attitude. You can participate by simply browsing the internet or claiming a cause.

It is true that young people are prolific digital content creators: they make and exchange photos, videos, multimedia, texts and opinions. The position of creators, and to a lesser extent, of consumers, enable digital citizens to contribute to the digital society landscape and to better understand it. Programming allows pupils/ students to create computer products, not only to use them. By participating in programming courses, they also learn how the digital society they have daily incursions in works, they have the opportunity to capture the rationale behind the algorithms underlying the search engine and other online tools that they use.

Participating in the digital environment can mean:

- observation, tracking, for those who use the digital world as consumers and spectators;
- active involvement for those who exchange information and content, establishing connections between people, who disseminate ideas that deserve to be disseminated;
- creating new content, practices and tools;
- exploiting the potential of technology to build a better society.

For the students who are preparing to be teachers, digital skills are "meta-valorizational" because they will have to be clearly shared by their constant involvement in educational innovation actions, together with colleagues and experts, in order to develop new content and situations related to teaching, learning, evaluating.

Thus, a framework for their possibilities of use is provided by Brut (2006), who indicates the situations in which the modern teacher in Romania demonstrates his own digital competences, namely:

- Locating educational information on the Web;
- Creating the Web site of a discipline;
- Making Power Point presentations;
- Developing an on-line course;
- Building on-line test methods and tools;
- Developing a virtual community;
- Accessing Web sites that provide free educational materials and courses, portals;
- Managing learning platforms;
- Participating in European programs and projects in the field of education, etc.

Our study, involving students who are preparing to be teachers, who are in their first year of study, specializing in Socio-humanities or in Exact Sciences, was thought as a predominantly qualitative panel study. It is premised on the idea that there is a gap between the level of digital competence that needs to be applied and the effectiveness of the students in applying these skills. By *effectiveness* we

understand the relationship between efficiency and the usefulness of our work. Our findings are as follows:

- The students unanimously use the mobile phone more than the computer, but multi-tasking during formal activities makes them unattentive, tired, inefficient, superficial in attendance.
- As per our discussions with them, it results that in non-formal or informal contexts, there is a great deal of time spent on activities involving NTIC, especially for communication/ information, but not for serious learning.
- Not all students have laptops, and their use for training activities is incidental, for computer use components, text editing, and spreadsheet calculation. Teachers do not request enough academic work so as to determine them to improve text editing skills or spreadsheet, for example.
- Micro-experimentally, following a simple demonstration during which the students were required to use the Internet resource to identify official curriculum documents, they achieved different levels of effectiveness and efficiency: from extremely highly to highly, average, little/very little and not at all. The criteria were correctness, ease and speed. Most of these indicators were poorly accomplished (little/ very little), given the fact that they have the formal certification of acquiring the skills required by ECDL by passing the Baccalaureate exam.
- The level of self-assessment of NTIC use for academic education is a realistic one for our students, who appreciated from the beginning that they use technological resources for the purpose of learning incidentally.

The described empirical results make us believe that there is a disproportionality between the advanced level from which the theory of digitization emerges at international or national level and the concrete reality as practice in terms of learning environments and materials used. Declaratively, changing the conception of the student's role and ways of learning is not enough to apply the modernization of training, which is, in a way, delayed from a procedural point of view and is conditioned by several factors: conception, competences and demands of the teachers, competences and learning styles of the students, the roles assumed, the time assigned, requirements, expectations regarding their own training, access to resources, awareness of the existing competition at a professional level, and so on.

4. What are the positive effects of digitization?

a) The development of critical thinking is inherent to the new media applied in education, the differences in valorisation and content by comparison with traditional education, providing a model of non-standardized education. Cucos (2006) points out to the contribution of virtual environments to promoting the heterogeneity of information, but also the globalization of education.

b) The learning process is accessible and interactive, depending on the requirements of the accepted social models. Virtual online education provides useful skills for young people in the process of schooling. The tools developed by the applied programs, marked by specialized design, concern an accessible and global

standard of presentation of specialized knowledge, simulation/ practice of skills and attitudes. E-learning is a necessary variable because it offers interactive accessibility and usefulness, facilitating the transformation and reconstruction of information.

c) For the students who are accused of having low tolerance to reading, the active way of approaching activities and tasks is a solution because it develops interactions by these means.

Istrate (2011) highlights the positive impact on the economic level, on the quality of life and also on the socio-professional environment: "As far as continuous professional development through information and independent study in the field of specialization is concerned, the benefits of quick and convenient access to up-to-date materials is unbeatable."(idem, p. 61).

NTIC learning shows some advantages compared to classical educational approaches: easy multi-domain and multi-task accessibility, longitudinal and transversal use of information by using databases, search engines, specialized sites and portals. It leads to diversified learning through the use of more specialized tasks. By the interactive computer-person/other people communication, you can achieve social shaping: specialized forum, virtual networks, specific communities. Thus, Clarkson (1991, apud Ceobanu, 2016) argues that restructuring and facilitating understanding of problems through visualization techniques, with the help of graphical systems, frees up the human brain's ability to compute and increases the speed of thought.

Young people are delighted with the increase in the speed of access to information, in their accessibility in the locations where they are in. The various educational software available in the virtual space provides the necessary means for competitive education, appropriate to an informational society. The categories of graphical programs aim at developing specialized skills among young people, beyond the language or other barriers. Teachers no longer have the monopoly of knowledge, and this kind of education develops learning and self-disciplinary learning skills; s/he develops the practice of individualized or collaborative learning, according to the contemporary educational requirements.

5. What precautions do we need to take?

The Internet and new media-based education build an educational model corresponding to the needs of younger generations and offer an alternative to traditional education, but the introduction of NTIC into training also raises a number of obstacles such as:

- Reluctance and even denial on the part of representatives of an educational tradition that remain anchored in classical mentalities or pedagogical practices.

Moreover, if teachers maintain conservative attitudes, an abstract language with a high degree of difficulty, the conceptual and behavioral differences towards the new generation deepen.

- An informational lack of experience in the field, which does not ensure transfer in similar educational contexts.

- Difficulty in establishing clear criteria of evaluation and certification of educational paths backed by NTIC.

- A lack of adequate equipment or maintenance costs (computers, servers, programs, technicians, administrators); they remain expensive, even inaccessible to many categories of educators and trainees, hindering individual work but, above all, group interaction. The relatively high wear of equipment calls for a regular change of computers and other computer parts.

- A major inconvenience is the fact that joint sharing of digital content raises the issue of intellectual property, which is de-individualized, de-personalized; curriculum content becomes the result of collective design.

- In general, differences between intentions and practices create discrepancies. For example, Ceobanu (2016) signals the gap between the evolution of information technology and the foundation/implementation of training models.

Conclusions

In the case of student training, information processing is supported by technology, which can be viewed from several perspectives: as a source of information, as an environment, as a partner, as an instrument for rethinking learning.

Studies conducted in recent years at a global level show that the use of NTIC in education contributes greatly to improving the outcomes of young people. That is why the training of both students and teachers in this field is absolutely necessary, NTIC extending its usefulness beyond formal academic activities.

In the future, it is necessary to calibrate between several institutions providing virtual education and mutual recognition of formative pathways at a national or international level. Making joint decisions can be a viable solution in understanding and harmonizing the concepts favourable to digital natives without neglecting the existing objections.

On a theoretical and practical level, knowledge must be understood as a mental, but temporary construct, always subject to development and influenced from a socio-cultural point of view.

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