

Children Learning English as a Foreign Language

21st Century Students and 21st Century Skills

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It's a familiar scene—one that takes place all around the world. An adult is having issues with his computer. He tries to resolve them, but after a couple of attempts he decides to call his adolescent son for help. The son takes his time in responding. He arrives slowly, almost silently, asking himself, "Now what's happened?" The father tries to hide his anxiety, as well as his own struggle with having to depend on technology, a struggle which has gradually become apparent to his son. He tries to calm down as he explains his technical problems to his son, who barely appears to listen to him. After a few seconds, without even looking at his father, the son says, "Let me sit down." The father abandons his chair, feeling even more humiliated and angry. The son sits down at the keyboard, and in less than three minutes—as his father watches him intently, never taking his eyes away from the fingers moving quickly over the keys—the issues are magically resolved. The son gets up, and as he makes his way back to his room, he says, "It's fixed."

But before he can get into his room, his father intercepts him, almost begging.

"How did you fix it?"

The son looks at his father with a certain degree of disdain, and says,

"I don't know, but I fixed it. Wasn't that what you wanted?"

"Yes, but . . . can you explain what you did?"

"No. Let me sit down and see what I did."

The son sits down again and makes mental notes of his movements, running over them as he repeats what he did the first time. He explains, somewhat reluctantly, what he did on the computer. Satisfied with the explanation, the now smiling father thanks him and is filled with pride at the skills of his son, a true "digital native."

This story, which is fictitious but is certainly representative of what goes on in many households, sheds light on some of the changes that we are witnessing in our relationships with the new generation and their technology. These are the sudden changes that present themselves to 21st century students, the "digital natives," as Prensky (2001) referred to them, who make such fluent and natural uses of technology. These are changes that produce differences that in turn have consequences. One of them is a *dependence on technology* that has generated in our children a new cultural phenomenon—a product of current technological developments. It's a reversal of roles that also carries over to the student-teacher relationship, and it thwarts the traditional hierarchies established within the world of education.

Another consequence is that the degree to which a household is equipped with and makes use of technology is directly related to the presence or absence of young people. There is a close and direct relationship between the presence of children in a home and the probability of the presence of a computer. Digital natives are those who introduce technology into the home, and are usually “early adopters” due to their marked tendency to acquire and adopt what’s new or innovative. Generally, they are the first to assimilate technology, and they go about disseminating it in a certain way: first, to those who are closest to them (to their peers), then to their younger siblings, and finally to their parents.

But while it’s also true that digital natives know what to do with technology, many times they don’t know how to explain how they manage to do what they do, as we saw in the father-and-son story at the beginning of this article. Written language isn’t their strong point; and *doing* takes precedence over *reflecting about what they are doing*. Their language is characterized more by action than by reflection. Digital natives have been born into a new era that, while affecting us all, molds and shapes them very strongly in the way in which they manage themselves in the world. In this sense, they are better described as doers and explorers than as reflective or thoughtful people — doers and explorers who also demonstrate the characteristic impulsiveness of youth. The DIY (Do It Yourself) and DIWO (Do It With Others) principles guide many of their actions.

This generation seeks out a sense of the practical in what it does, and prefers that what it learns can be explored and applied. Because of this, its learning is closer to the model of “just in time” than that of “just in case” that is typical of traditional education. This generation prefers to learn what is applicable in the present, and not what may be usable in the future. Do they find it difficult to wait? Yes, but they also dislike the traditional period of waiting that separates times of learning from times of applying knowledge. They have an intuitive sense that indicates that the useful life of knowledge grows increasingly shorter.

Things have also changed in the way in which information is accessed and exchanged. We have passed from a world characterized by *scarcity of information* into one that is *saturated with information*. This makes it necessary for us to reformulate some of our concepts about education. Today it doesn’t make much sense to ask students to look for information; it’s better to teach them to filter or screen it, to make use of criteria that help them to validate it. However, in order for this to happen, teachers need to be familiar with key sites on the Internet; and many of them lack that knowledge.

On the other hand, in this sea of information, young people are used to collaborating and consulting with others, recalling Himanen’s “hacker ethic” (2001), a set of principles that is unique to the Information Age. The hacker ethic conflicts with the Protestant ethic, is more collective than individual and more collaborative than competitive, and it results in a way of living in the world that also questions assumptions, such as individualized assessment. All of this clashes with the traditional school model that is supremely individualistic in its ideas as well as in its ways of assessing students.

■ A highly “technified” generation

More than a decade ago, Don Tapscott (1998), who took a point of view that could be characterized as somewhat technophilic, referred to the emergence of the “Net Generation.” This new generation would function cognitively and socially in ways that are very different from those of its parents. Basing his findings on a Web site for young people, Tapscott referred to a series of differences that these adolescents demonstrated as compared to previous generations. Some years later, Boschma and Groen (2006), of the Keesie Agency, published a study, “Generation Einstein: Smart, Social and Superfast: Communicating with Young People in the 21st Century” in which the authors

proposed, based on ten years of interaction with young people born prior to 1988, that a new generation had arisen: a generation marked by characteristics that differentiated it from those that preceded it.

Some of the characteristics that they attributed to this new “Generation Einstein” were: *heightened sociability, collaboration, intelligence, involvement, speed, optimism, and different ways of thinking about learning and the concept of the family.*

In a subsequent book, *Growing Up Digital: The Rise of the Net Generation*, Tapscott turned his attention again to these issues. According to him, this generation would be more inclined toward the many kinds of activities offered onscreen than toward the passive state of watching television. In fact, watching television (on the TV screen) is one of the activities that has been the most affected by the advance of the digital world. Research conducted by Fundación Telefónica on the use of ICTs (information and communication technologies) throughout Ibero America shows that 63% of young people between the ages of 10 and 18 prefer the Internet to television. It really does seem as if they prefer interactivity to passivity and to viewing as they conduct activities as compared to simply viewing.

Preferring the Internet to television would seem to be based on an attitude that is more active. The emphasis on the major activity of young people (that of “lean back” to “lean forward” — someone who leans back on the sofa rather than someone who leans forward over the keyboard) — and on their capacity to multitask, has been reiterated in various attempts to deal with the phenomena associated with these new, interactive generations.

■ Cognitive rewiring

So then . . . we are faced with a new kind of young person who is emerging from new family and social contexts, but is this young person also emerging from environments that are predominantly saturated by technology, the visual image, and information? Do the young people of today definitely have ways of thinking and learning that are different from prior generations?

My response to that question is yes. We have known for a while that the human brain responds with exquisite plasticity to the context in which it finds itself. The brain changes its organization and function in order to be able to assimilate the stimuli to which it is exposed (Restak, 2005). The human mind is a product of social and historical factors. Therefore, it is to be expected that in the light of the contextual changes that recent decades have prompted, different cognitive, emotional, and connective forms of behaviors in young people may be appearing.

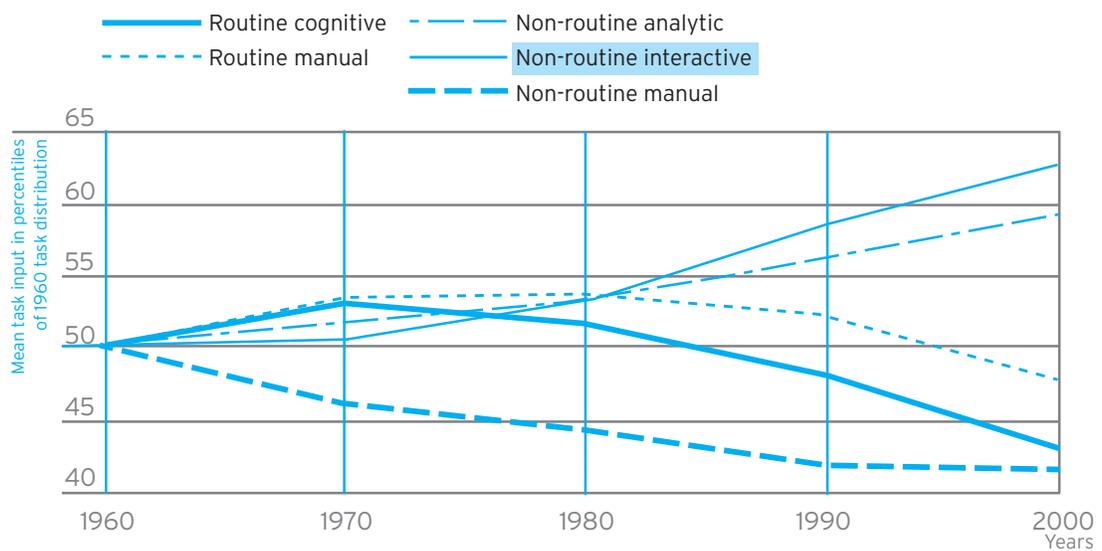
One of the theses that has been central to our work over the last ten years is that we find ourselves within a *new cultural matrix* in which the elements of technology (the Internet and all of its interactive components — chats; Web pages; e-mail; blogs; photo logs; video games; wikis; social networks; and micro blogging, such as Twitter) — are all new environments, technological contexts that are leaving their imprint on human cognition. If we further take into account Web 2.0 and the changes that it has effected in participation, expression, and sharing (for example, the paradigmatic examples of social networks), the cognitive impact on our society, and particularly on young people, is even more pronounced. Societies mold and form their tools and are at the same time molded and formed by technologies by means of a spiral process that continually provides feedback to itself. It is sometimes difficult to remember what the world was like before Google (or, at least, what the world was like more than ten years ago). For those of us who are “digital natives,” who have been born into a world with a well-established digital culture, these changes are even more important, since they are the only matrix we have been exposed to.

The *new cultural matrix* in which we find ourselves is flooded with technology shapes us and sets forth certain cognitive requirements that are unique to this new culture: for example, the ability to multitask, to divide rather than focus our attention, to be fast, to be ubiquitous, etc. The new culture sets standards for ways of being, of living, of confronting the days of our lives. In this sense, we find ourselves face to face with young people who are cast into the 21st century, and have been strongly shaped by technology. These are young people who are exploratory by nature, who connect, live, and manage themselves better in a short-term, episodic format. They explore in the present, and it is enormously difficult for them to imagine themselves in the future. Because of this, “just in case” learning does not appeal to them at all. Navigating and zapping are two of the privileged ways that young people have of exploring the multimedia universe and the technified world in which we live; they are also the ways in which they tackle books: by hypertext — opening several windows simultaneously, and having different devices at hand. They know *how* to do, but many times they don’t know *how to explain* how they are were able to pull off what they do or create. Digital natives have been born in a new era that, while it has affected all of us, has molded them very strongly.

■ Skills developed onscreen

Let’s look at a chart that illustrates some of the issues relating to the skills that are necessary in today’s workforce, and at routine and non-routine task input in the 21st century. Jobs that were routine, lasted a lifetime, and required stability and the capacity to tolerate repetition have receded into the past. Most 21st century jobs require creativity, the ability to solve problems, leadership, teamwork, and persuasive communication skills.

Box 2.1 How skill demands in the job market have changed - trends in routine and nonroutine task input in the United States since 1960



Many of the skills required in today’s workforce could eventually be developed onscreen, which in itself is interesting. And in many cases, they are enhanced in environments that seem to have nothing to do with the workforce. A paradigmatic example: video games.

Most ludic environments enhance exploration, searches, and challenges; the possibility of surpassing what has previously been achieved and overcoming barriers are made available at every level, on every screen. Video game screens present problems to young people, and challenge them to find creative solutions. Video games give “guided problems” (Rheingold, 1991) that prompt children to search, investigate, consult, and try things out until they find the appropriate solution. Where do they look for these solutions? On Yahoo Answers and in Twitter, forums, online YouTube tutorials and specialized forums, and in the future, on Quora; but above all, they look for them by exploring, supporting their searches through the findings of others, and by trying out responses.

Most of our information and knowledge are “out there,” abundantly available, and in a continual state of change, so that what is most relevant is having access to that information and knowledge; what is not relevant is internalizing them. Students quickly learn and unlearn. This is another blow to traditional education, which is based on memorizing and internalizing knowledge.

The new work environments require certain competencies and skills that are developed online; these are the skills that are unique to the 21st century. New media literacies have shifted the focus from the individual to the community. Many of them find their potential through collaboration and networking. Based on traditional literacies, these new skills have been broken down in different ways.

As we will see, these skills are uniquely related to the digital world, to exploring and being immersed in it. One of the biggest challenges that lies ahead for education is the ability to put into practice the development of these skills in ways that make sense, in the context of the classroom. Social networks and online gaming communities can provide opportunities for young people to develop their skills relating to teamwork, community building, and creative problem solving.

Without going too far, video games use knowledge as their fundamental raw material. They exchange, redistribute, and build knowledge collaboratively. There is much to be learned about the virtues of video games as a part of the teaching process. Ideally, some of these guiding principles could be transferred to the classroom.

The ability to manage unwritten knowledge in contexts that are evolving, and to use it creatively, are crucial if one is to integrate himself or herself into the knowledge society; the digital world offers different ways to develop these competencies. In order to live appropriately in the 21st century, we must develop a list of true **e-competencies**.

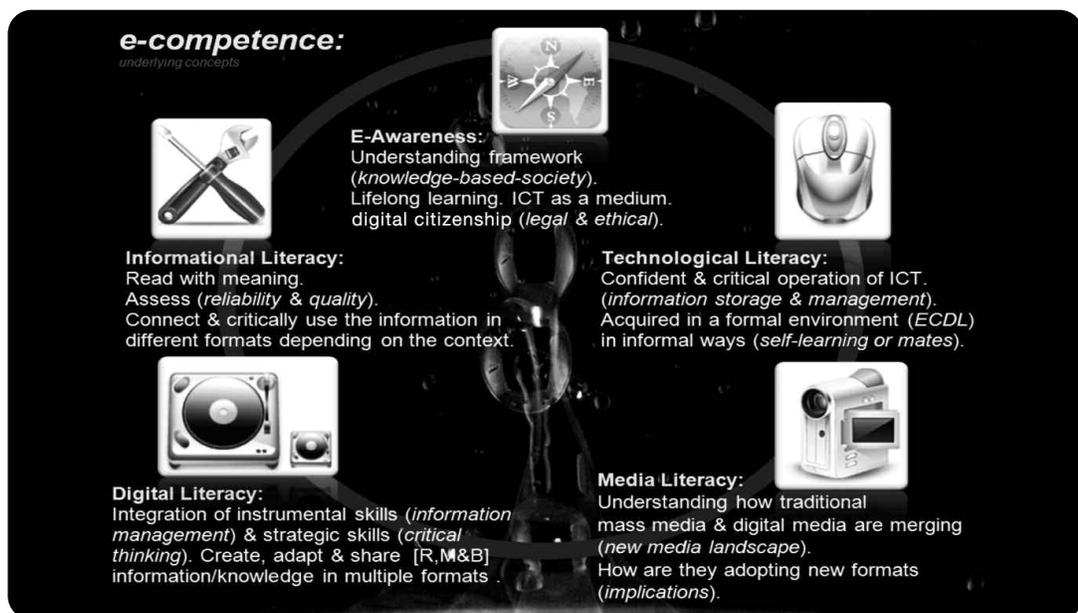
Following are two outlines, similar but different, that help us to understand these **e-competencies**.

(i) The first outline, developed by Henry Jenkins and his colleagues,¹ appears below in the form of an interesting list of skills for this new century.

1. **Play** — the capacity to experiment with one’s surroundings as a form of problem-solving
2. **Performance** — the ability to adopt alternative identities for the purpose of improvisation and discovery
3. **Simulation** — the ability to interpret and construct dynamic models of real-world processes
4. **Appropriation** — the ability to meaningfully sample and remix media content
5. **Multitasking** — the ability to scan one’s environment and shift focus as needed to salient details
6. **Distributed Cognition** — the ability to interact meaningfully with tools that expand mental capacities
7. **Collective Intelligence** — the ability to pool knowledge and compare notes with others toward a common goal

8. **Judgment** — the ability to evaluate the reliability and credibility of different information sources
9. **Transmedia Navigation** — the ability to follow the flow of stories and information across multiple modalities
10. **Networking** — the ability to search for, synthesize, and disseminate information
11. **Negotiation** — the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms
12. **Visualization** — the ability to interpret and create data representations for the purposes of expressing ideas, finding patterns, and identifying trends

(II) **The second outline** of e-competencies comes from the work of Cristóbal Cobo (2009). It presents the different literacies in chart form.



These **e-competencies** or **digital competencies** are based upon certain skills that are related to an understanding of, and the tasks related to, the digital universe; they are intersected by knowledge, and we can break them down so that they are better understood as follows:

1. Understanding the digital universe (e-awareness)

... and the knowledge-based society, its laws, and its ethics. Concepts such as learning over the period of a lifetime and digital citizenship are related to the awareness that one is living in a new era in which digital natives seem to move along so easily.

2. Technological literacy

The abilities to appropriately filter, manage, and store information, be aware of the value of knowledge within society in its broadest sense; and recognize the value of formal and informal learning.

3. Media literacy

A complete understanding of the ways in which traditional and current media function, and an ongoing understanding of how current media is constantly evolving in its content and format.

4. Digital literacy

Involves instrumental skills as well as the ability to think critically; also involves the creation, adaptation and sharing of knowledge and resources, taking advantage of all of the possibilities offered by the digital world.

5. Informational literacy

The ability to understand what one reads in order to appropriately connect information and use it, depending on the context at hand.

I hope that these two outlines, with their respective descriptions of 21st century literacies and skills, can serve as a starting point for reflection. These are the onscreen skills and digital competencies that teachers in this new century must begin to approach in order to better reach their students, as well as to avoid being left behind in the inherent logic of the knowledge society.

■ Notes

(1) *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*, by Henry Jenkins with Ravi Purushotma, Katherine Clinton, Margaret Weigel, and Alice J. Robison.

(2) Cobo Romani, C. (2009), "Strategies to Promote the Development of e-competencies in the Next Generation of Professionals: European and International Trends," available at: http://www.flacso.edu.mx/competencias/index.php?option=com_docman&task=doc_download&gid=169&Itemid=21

■ Bibliography

1. Balaguer, R. (2005) *vidasconnect@das.com. La Pantalla, lugar de encuentro, juego y educación en el siglo XXI*, Montevideo: Ed. Frontera
2. Balaguer, R. (2009) (compil.) "Los ojos del mundo en el Plan Ceibal" en *Plan Ceibal. Los ojos del mundo en el primer programa OLPC a escala nacional*, Montevideo: Pearson Ed.
3. Balaguer, R.; Canoura, C. (2010) *Hiperconectados. Guía para la educación de nativos digitales*, Montevideo: Santillana
4. Balaguer, R (2010) "Leer, memorizar, interiorizar y aprender hoy" ULAPSI Magazine, available at: <http://psicolatina.org/20/leer.html>
5. Boschma, J. & Groen, I. (2006). *Generation Einstein: smart, social and superfast. Communicating with Young People in the 21st Century*, Pearson Education Benelux, Schiedam
6. Himanen, P (2001) *La ética hacker y el espíritu de la era de la información*, Barcelona: Ed. Destino
7. Prensky, M. (2001) "Digital Natives, Digital Immigrants" From *On the Horizon* (MCB University Press, Vol. 9 No. 5, October 2001)

8. Restak, R (2003) *Nuestro nuevo cerebro. Como la era moderna ha modificado nuestra mente*, Barcelona: Ed. Urano, 2005
9. Rheingold, H. (1991) *Realidad Virtual Los mundos artificiales generados por ordenador que modificarán nuestras vidas*, Barcelona: Ed. Gedisa, 1994
10. Small, G; Vorgan, G. (2009), *iBrain. Surviving the technological alteration of the modern mind*, New York: Harper
11. Tapscott, D. (1998) *Creciendo en un entorno Digital*, McGraw-Hill, 1999

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