TEACHERS AND STUDENTS IN VIRTUAL CLASSES: MAKING OUT THE CHALLENGES TO EDUCATE IN 21ST CENTURY SCHOOLS

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Abstract

This paper presents the results of research concerning student behavior and expectations regarding the use of digital technologies, and how they can contribute to their formal education. In order to develop this investigation, we studied authors like Prensky, Bauerlein, Gardner, and Thomas & Brown to compose our theoretical framework. To validate our hypothesis, we conducted interviews with a group of ninety high school students between 14 and 17 years of age, from the 10th to 12th grades in a Technical High School in Porto Alegre, Brazil. This interview aimed to identify the online environments and technological resources that were most used by this group. The quantitative data collection was carried out using an open, structured and objective interview with students from the first to third years of high school. In concluding this study, we identified some interesting student beliefs and behaviors: young teenagers who have access to digital technologies, especially those associated with the internet, consider virtual environments a part of themselves. This intense and daily relationship provides new ways of experiencing and exchanging information, creating a selective and investigative behavior strongly associated with students' immediate interests, and generally decoupled from their homework. Although it is not explicit to many students, this information represents an important part of the knowledge acquired and used by these teenagers over the course of their education and in their school activities. These digital teenagers perceive themselves as autonomous beings exercising their relationships with a high degree of commitment to the virtual communities where they spend time, demonstrating highly sociable and cooperative behavior. It is also important to highlight the importance of schools to consider implementing online activities, and preparing teachers to work with this opportunity offered by the Internet. We believe these online digital resources can be included as elements to bring these students together and stimulate them to make associations between their behavior outside of school and their formal education. We conclude from this study that, by using duly chosen and validated online information, teachers can help to motivate their students to take pleasure in studying and researching by engaging them in the demands of their formal education, thus establishing a critical and participatory learning environment.

Keywords: virtual classes, digital teenager behavior, online methodologies.

1. INTRODUCTION

The current generation, referred to by many authors as "Digital Students" due to their digital affinity for cyberculture, likes challenges, explores the unknown and feels free to choose their own path without parental control. This becomes clear when we look at a group of young students interacting with video games, and communicating on social networks. According to [2] teenagers are heavy users of a broad range of technology products including music download services and MP3 players, chat and instant messaging mail, mobile phones and SMS texting. The profile of today's digital generation of students is similar at all levels of primary education and the schools' methodologies are not adapted to how they relate to one another and work. Students

want to learn digitally. Today's school-age generation is willing to be active participants in their achievements and not merely passive observers.

Prensky [10] claims that our students have changed radically. Today's students are no longer the people our educational system was designed to teach and students today are all "native speakers" of the digital language of computers, video games and the internet. The discussion regarding the dichotomy he created in his proposal to classify students and teachers as Digital Natives and others as Digital Immigrants (those of us who were not born into the digital world but have, at some later point in our lives, become fascinated by and adopted many or most aspects of the new technology) has embroiled teachers' imagination and self-esteem.

Prensky criticizes the resistance to accept student behavior changes and the need to consider inventing Digital Native methodologies for all subjects, at all levels, using our students to guide us.

Prensky's first paper calls upon us to reflect on the need to pay attention to student behavior and teachers' "old-fashioned" methodologies. He was not the first to bring this to our attention. However, his taxonomy has made a big impact on educational communities because it exposes our inability to communicate with this new generation in an effective way.

Whereas in Veen and Wrakking [17] , Palfrey and Gasser [8], Thomas [15] and Prensky first work [9] the authors makes reference to *Homo Zappiens, igeneration* or *Digital Natives*, in the present paper we use the term *digital students*. They are the generation that recognizes ICTs in a friendly environment. They are curious and selective with respect to what to use and how to use it. These choices are made without fear; curiosity stimulates handling technology without the need for a manual. The social relationship defines what to use and when to use it. The interaction with the multiplicity of integrated media creates a new communication code. Digital choices can change from one moment to the next without necessarily affecting the relationships established in the groups and between peers within the environment. The digital teen is now integrated with online education, randomly and non-systematically. He sees web resources as the fastest way to build and stimulate their learning process. This study sought to identify which online resources are preferred by teenagers and how they would like to study with support from these technologies. The *next* generation was born in the 1980s, raised with electronic devices from infancy, and according to [14], their first toys were talking, flashing, and technological. No more simple stuffed bears for these children. These youngsters form the igeneration, which is the first generation of truly cyber-savvy children.

[14] also describes the igeneration as children born in the 1990s, who, according to the author, are even more involved with technology than their older brothers and sisters. They grow up with many technological resources in their bedrooms. They are surrounded by technology. They are technologically immersed. So, it is natural that they have created and redefined communication in order to express their highly social

abilities. It seems odd, but they are very social using their virtual tools in their virtual social communities.

To make this teacher-student interaction possible, a new pedagogical design is necessary, where teachers must be aware of new technologies (hardware and software), to stimulate their students, organize classrooms in order to democratize knowledge, learning to relearn with new educational attitudes, including the student in planning this construction of knowledge and involving them in the responsibilities and commitments to their skills and knowledge.

Students' digital teachers have the biggest challenge to face: to understand how the union of all the elements that characterize this generation can form a different type of instruction that make the most of these perceived abilities and stimulate the students' activities in classrooms. However, to do so, new questions need to be asked. It is necessary to increasingly listen to the student to ensure that we are teaching what they need to know.

The school should be a pleasant space for learning, where the curriculum contemplates the objectives and desires of this generation and does not shun them. . Teenagers today form a large portion of the population of internet users who have elected the web as their primary communication channel. There are some doubts among educators and parents regarding the effects caused by this lifestyle, as well as possible changes in students' behavior and minds.

According to [12]:"The network is the space for the beginning of the relationship among teenagers ..." (p.104). We believe that nowadays the virtual relationship is the strong point of adolescence. In social environments, groups can recognize their possible partners identifying common habits and preferences, approaching peers and creating a virtual social life that can be extended to a face-to-face relationship. This transfer is a reflection of these informal and growing virtually movements. We specifically present in this paper some reflections regarding students' online digital information acquisition and its benefit to their education.

It is very common to associate the word "crisis" to adolescent behavior, which presupposes the existence of pathological aspects. Though representing a critical period of development [1], [3], [4], [7], adolescence is essential and highly significant for one's growth.

As for the relationship between adolescents and technology, the focus of this research, [5] says that technology, which fills their lives, has a decisive influence on adolescent life (p.136) . According to the author, the media enable youths to be emotionally involved in the events of the world, though geographically distant from them.

At the same time, [7] on p.246 claims that young people learn from and identify with the ingenuity of invention, with the improvement of producing and caring for machines, applying their young skills. When youths do not feel comfortable with a certain technology, they will feel dislocated in the world, until they are able to dominate

this technology, thus acquiring technical intelligence and feeling a part of the world again.

In this maturation process, adolescents begin to rehearse a break from dependence on their parents, often seeking autonomy in the management of knowledge and technology available in their time. The technologies available to them are extremely easy to understand [16]. This range of technological interest requires for adults an effort to understand and control teen behavior. In the hands of a teenager, the resources are fun and trivial to use because they have an intrinsic affinity with technology at their age and in this day and age.

Prensky emphasizes that in the twenty–first century, humans need better minds and we are getting them. His 2012 book presents a thesis that human culture and context are changing exponentially for almost everyone. In order to adapt and thrive in that context, we all need to expand our abilities. Our technology will continue to make us freer and better but only if we develop and use it wisely ([11], p.2).

Prensky also claims that technology has always improved humans in the long run, despite occasional setbacks. Technology has always done this by enhancing our human capabilities. Today, more and more of the capabilities that technology enhances are in our minds.

For Prensky, we have entered a period of intense "brain gain" due to the incorporation of these external technologies into our brains and minds. A host of technologies are freeing our minds to know more, to do more, and to interact with more of the people that we want to in more ways. ([11], p.3)

The Brazilian reality is quite different from the United States educational system and infrastructure regarding the technology available. Even Europe has better technological conditions than our educational system. However, Brazil has adopted the Cyberculture very quickly.

According to a Media Survey[1] , there are 94.2 million internet users in Brazil (December 2012), and Brazil is the 5th most wired country. According to a Business Association from Rio de Janeiro, the percentage of Brazilians connected to the internet increased from 27% to 48% between 2007 and 2011. The main point of access is the lan house (31%), followed by the home (27%) and the homes of relatives or friends, at 25% (April 2010). 50.7 million of Brazilian users regularly access the internet. 38% of Brazilians access the web daily, 10% four to six times per week, 21% two to three times per week; 18% once a week. Additionally, 87% of Brazilian internet users go on the internet weekly.

Brazil is definitely now a cyber-country. Despite our problems in offering a better education due to the country's geographical and cultural diversity, we believe that the

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[1] http://www.ibope.com.br/: The Brazilian Institute of Public Opinion and Statistics

greatest challenge is in changing the way we teach. To do this, we need to change the way we train our teachers.

In order to develop this study, it was necessary to categorize environments and web resources used by students. To understand this context, we carried out a quantitative survey. The quantitative studies are best suited to determine respondents' explicit and conscious opinions and attitudes, because structured instruments (questionnaires) were used. They should also be representative of a particular universe so that the data can be generalized and designed for that universe. Their goal is to measure and test hypotheses, since the results are more concrete and therefore less likely to be misinterpreted. In many cases, the generated indices can be compared over time, in order to track information (IBOPE)[2]. According to [13], a case study can facilitate the understanding of something greater, since it can serve to provide insights on the subject or challenge widely accepted generalizations. [18] states that a case study is suitable for investigations that intend to examine the complexity of a specific instance and discover new relationships and new concepts about a particular phenomenon. The subjects involved in this study were 92 high school students of both genders, from 14 to 17 years of age.

2. DIGITAL STUDENTS: BEHAVIOR AND IDENTITY

To understand a little more about the routines of digital adolescents, it was necessary to carry out an investigation to categorize virtual environments and software currently used by this group in order of preference. The questionnaire with six objective questions was applied in high school classes, from 10th to 12th grade, featuring a group of teenagers aged between 14 and 17.

We present our previous hypotheses regarding student behavior based on our teaching experience and observations:

- Students prefer to communicate using technology rather than talking face-to-face. They seem to organize their thoughts/feelings better when they write instead of speak;
- Students want to study using technology but they do not know how, and their teachers are still far from being able to help them do this.
- Students use the same technology chosen by their teachers to study even though they know of more sophisticated and powerful resources than their teachers do.
- Students do not feel comfortable interfering with teacher planning regarding technology.

The results confirmed our previous hypotheses. We highlight some interesting findings:

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[2] http://www.ibope.com.br/calandraWeb/BDarquivos/sobre_pesquisas/metodologia_pesquisa.html

- 100% of the group use some internet-connected technology on a daily basis;
- 100% feel the internet is a very important tool today;
- 59% use Facebook as a primary virtual environment;
- 42% use MSN for communication with friends and colleagues;
- 34% follow someone on Twitter.

Analyzing the three environments that we have classified as online relationship environments (social networks) and communication via chat, we observed that they have asynchronous and synchronous communication mechanisms, the latter of which allows for contact in real time, and perhaps these environments can reproduce the feeling of being present in the group. Online access to information is widespread among all groups and classes. However, for digital teenagers, this communication gives them access to all sorts of content without parent and teacher control.

Asked about the primary use of their computer, 69% said they use the computer to perform school activities. When this group was asked about their preferred tool to do schoolwork, the results are: Google (31%), followed by Word with 24% of the preferences, while PowerPoint and YouTube have 14% of the preferences. The other 31% uses a mix of different tools saying they have no preference, as it depends on the task. Perhaps the most elementary analysis we can present is that these teenagers use resources for their learning process and share information online with each other, because most of their contacts are classmates.

When asked if they would like to study classroom subjects using technology, 88% answered yes. Regarding the tools they want to use in class, the students chose Word as the main software (42%), followed by Power Point (25%) and Google with 19% of the choices. How is it possible that the students selected such trivial software to support the teaching and learning process instead of the more sophisticated tools they use to play? Perhaps the students were "teaching conditioned". They understand that most of the teachers merely use Word and PowerPoint to organize their classes. Despite the effort made by teachers, the choices made regarding technology impacts student perceptions.

For those who follow the trends and preferences for online environments, it was observed in the study that the social networking site Orkut was mentioned by only two of the respondents, and they know that this site was what successfully initiated the culture of social networking and in recent years is rapidly being replaced by Facebook. We believe that this is a trend, and that these choices occur in larger groups. Perhaps the more advanced features of Facebook, with endless possibilities for communication, displaying information and other forms of relationships, all gathered in a single platform, has been the reason for this migration.

When we asked students how they would like to be taught lessons using technology, the highest percentage of choices was that there should be computers in the classroom for all students (29%). The use of videos (14%), research on the internet

(13%) and Facebook (12%) were also relevant, showing that the students see that these resources stimulate learning. Moreover, five students mentioned that many teachers should be more relaxed, which in some ways may lead one to think that some teachers are not comfortable with the use of technological resources in the classroom.

When we asked the group the class subjects in which technology (computers, smartphones and others) can be used as a support for studying, the answer was unanimous: all disciplines except for physics and mathematics. This leads us to believe that the disciplines relying on texts are more appropriate for online study while those involving formulas and theorems and which require demonstrated problem solving are not appropriate for online study. The results indicate that conceptual and textual information are in high demand on the internet, perhaps because it is easier to find since they are ready to use. This reveals a problem that is highly discussed by teachers today: plagiarism. The action of copying and pasting has caused numerous problems, not only with respect to authorship, but because it does not encourage reading and results in textual difficulties in the education of these students.

Teenagers know that there is a lot of digital information available on the web. Taking ownership of this content by copying and pasting ensures speed but encourages laziness and a lack of reading comprehension. This is another problem with which teachers need to learn how to cope. The first reaction, when it happens in class, is to ban virtual research. This is a mistake. Teachers need to stimulate reading information online with complementary activities, proposing dynamic activities. When students collect digital information, it can induce them to take ownership of the contents through understanding and a more critical analysis. Otherwise, they will need to rewrite the information for a specific purpose.

3. FINAL REFLECTIONS

Understanding the behavior of digital adolescents when using online information can bring benefits to their formal education.

It will require a dissociation of teacher concepts about what teaching and learning are today. Information and Communication Technologies emerged naturally with the evolution of mankind, and today we can no longer deny their importance and use. The habits of using portable resources which allow for mobile communication are also extending to parents and teachers. Teachers can clarify doubts in a virtual class without being face-to-face with students, and it can also be done in an asynchronous way. Parents can talk with their kids from the office or from the airport. There are no longer any physical boundaries.

But how do we rationalize this use and make it so that the students enjoy using online information for their education? It is the teacher's mission to be aware of this advantage. When we talk about communication in cyberculture, web 2.0, we understand it offers a range of features and possibilities for manipulating the receiver. According to [6], the message is not "sent" to a closed, frozen, unchangeable, untouchable, and

sacred world. It is an open world, modifiable as it responds to whoever made the request. This leads us to believe that the recipient is no longer receiving a response in the classic sense. He is invited to create freely. The message makes sense in his speech. We see this as a great opportunity for teachers to use online information and positively influence their students' learning. . Participating is much more than answering "yes" or "no". Participating is changing, interfering with the message. Thus, the work that is intercontextualized by the connection created between websites and documents (hyperstructure), also allows for teaching in an interconnected manner such that various associations can be established based on a document. By working in collaborative groups, we can create learning scenarios which enable the students to participate freely. And, through dialogue, exchanges of experiences, simulations, learning objects, games and a connection made with mobile devices, we can make a difference in the education of adolescents because we are using resources that are part of their daily lives. .

Proposing digital learning and knowledge to adolescents with free navigation, collaboration and creation, enables them to be proactive and autonomous.

Teachers need to develop activities that provide not only free speech, contrasting ideas and collaboration among digital teenagers, but they also allow for acute observation and interpretation of attitudes. When we delegate to the student the responsibility for their studying, allowing them to plan learning situations considering their previous experiences, perhaps students' knowledge and expectations can be fulfilled.

The behavior of these informal adolescents is a precious resource for the teacher today. Accepting this challenge with its multiple interpretations and opportunities will enable us to create new ways of teaching and learning that will make all the difference in the teacher-student relationship for the following generations.

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