

Icts Optimization and Informational Flow Increasing: Impacts on High School Daily Life

Otimização das Tecnologias da Informação e Comunicação e Aumento do Fluxo Informacional: Impactos no Cotidiano Escolar do Ensino Médio

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ABSTRACT

This study aims to evaluate how the advancement and empowerment of textual/hypertextual instance and reading media have changed reader and authorship profiles and what the implications in school life, specifically in high school. The advent of cyberspace and the digital world brings paradigm shifts, especially when it comes to reading and authorship, requiring collaborative readers and authors-readers following the dynamism, fluidity, speed and liquidity of the current era. Therefore, the school context of Instituto Federal Fluminense Campus Bom Jesus/RJ was observed, comprising teachers and students of high school. So, it was possible to evaluate the teaching-learning process of that Institute: students (digital natives) would be receiving appropriate care in the Institute? Have the teachers been training in their proper apparatus to deal with these guys? Has the school fulfilled its social role as citizens training? The study was guided in the light of theoretical contributions of scholars such as Pierre Lévy, Roger Chartier, Marcuschi, Santaella, Gilles Deleuze and Félix Guattari, among others about reading paths, hypertextuality, clash of generations (digital natives vs. digital immigrants) and reading media. The results show that the teachers did not receive (and still do not) in their academic education, teaching methods and strategies guided by the use of ICTs, meeting unprepared to deal with the new demands of the educational routine and therefore not meeting the students ones.

Key-words: Cyberspace. Hypertextuality. Reading Media.

RESUMO

Este estudo tem como objetivo avaliar a forma como o avanço e a potencialização da instância textual/hipertextual e dos suportes de leitura têm mudado os perfis de leitor e autoria e quais as implicações na vida escolar, especificamente no Ensino Médio. O advento do ciberespaço e do mundo digital traz mudanças de paradigma, especialmente quando se trata de leitura e autoria, exigindo leitores colaborativos e autores-leitores que acompanhem o dinamismo, fluidez, velocidade e liquidez da era atual. Para tal, observou-se o contexto escolar do Instituto Federal Fluminense Campus Bom Jesus/RJ, compreendendo professores e alunos do Ensino Médio. Assim, foi possível avaliar o processo de ensino-aprendizagem daquela instituição: os estudantes (nativos digitais) estariam recebendo os cuidados adequados na Instituição? Os professores têm em sua formação o aparato adequado para lidar com esses sujeitos? Será que a escola tem cumprido o seu papel social como formadora de cidadãos? O estudo foi norteado à luz das contribuições teóricas de estudiosos como Pierre Lévy, Roger Chartier, Marcuschi, Santaella, Deleuze e Guattari, entre outros, a respeito dos trajetos de leitura, hipertextualidade, conflito de gerações (nativos digitais contra imigrantes digitais) e suportes de leitura. Os resultados mostram que os professores não receberam (e continuam sem receber) em sua formação acadêmica, métodos de ensino e estratégias de utilização das TICs, encontrando-se despreparados para lidar com as novas demandas do cotidiano educacional e, portanto, dos alunos.

Palavras-chave: Ciberespaço. Hipertextualidade. Suporte De Leitura.

1 INTRODUCTION

This study aims to assess how the advancement and empowerment of textual/hypertext instance and reading supports have been changing reader and authorship profiles as well as to figure the implications in school life, specifically in High School. It is known that the advent of cyberspace and the digital world brings with paradigm shifts, especially in regard to reading and authorship requiring collaborative author-readers and readers who follow the dynamics, fluidity, speed and liquidity of the current era. For this end, the school context is observed, including teachers and students of High School of the Instituto Federal Fluminense *Campus Bom Jesus/RJ* in order to evaluate the teaching/learning moment: whether students (digital natives) have been receiving appropriate care in the institute, and if teachers have got along their training suitable mechanisms for dealing with these issues, and the last but not the least, if the school has fulfilled its social role of training citizens.

The present etude will be guided by the light of the theoretical contribution of intellectuals such as Pierre Lévy, Roger Chartier, Marcuschi, Santaella, Deleuze and Guattari, among others about reading paths, hypertextuality, the clash of generations (natives *versus* digital immigrants) and reading supports.

It is undeniable the technological advancement in which humanity has been passing over along the time, mainly in recent decades. Increasingly, techniques have been improved and enhanced making the society tends to adapt to the constant changes which arise every moment in considerable speed. The new comes strong as a waterfall in an avalanche of potential, and without permission, will be allocating in our midst.

Communication and information becomes quick, fast and fluid. That is the era of Just-in-time and requires each of us to be as fast as the time flows. This affects the society at a whole, particularly the Education. New reader and author profiles are necessary because of the dynamics of the moment which requires the total absorption of information as fast as possible.

The advent of computers and the Internet which are Cyberspace drivers vehicles, has been causing the boom of the current scenery for being potentiating tools of information and communication, as well as setting new paradigms of writing and reading: infographics, hypertext and hypermedia, a potential breakthrough that causes the same impact as the Gutenberg press.

For these reasons, Education starts being rethought. There is a need for retraining teachers to meet the demands of digital natives and these, on their turn, must be oriented to

absorb as much as you can turning these absorptions to knowledge and make good use of it. Besides, it is also needed the Digital Literacy or Multiliteracy which transcends the ordinary rite of Literacy, demanding the school consciousness consisting with the lived reality, in order to be able to receive the present-day public who has been born inserted amid the new, the constant changes and above all, to enable them to act in this mutant and fast atmosphere in constant becoming.

2 THEORETICAL FRAMEWORK

2.1 (R)evolution of writing: author and authorship in focus

After the discovery of movable types, a stylistic shock is introduced: manuscript *versus* printed book, these being lightly undeserved by holders i.e. there is resistance as the acceptance of the new (printed) which represents the same impact figured out nowadays between print and digital. It is possible to establish a dialogue with Chartier (1998) about the revolution brought about by the advent of printing which causes a decrease in production costs. However, to the researcher, this revolution is not as absolute because both the manuscript and the post-Gutenberg book have been based on the same fundamental structures: the Codex. Aspects such as paging, abstract, contents are from handwritten phase that is inherited by Gutenberg and later by the modern book (CHARTIER, 1998, pp.7-8).

The modern reader is no longer seen as a passive and inert subject and the reading process itself has been undergoing a process of streamlining. Now reader and author can dialogue more openly and honestly and that one, according to Lévy (2011), update the text(s) at the time of reading ie "the reader's intelligence rises over the empty pages one mobile and rugged landscape semantics" (LÉVY, 2011, p.35) which means that the senses are not given initially, but when (re)read. And he continues,

First, the text is pitted, scratched, dotted with gaps. The words are members of phrases that we do not abstract (the perceptual but also intellectual sense). These are the text fragments we do not understand, put together, meet each other, and even neglect. So that, paradoxically, read, listen, is to begin to neglect, unread or turn the text off. At the same time we tear it by reading and listening, we crumple the text. We fold it on him. We match the passages which correspond each other. We sew the sparse, exposed and dispersed members up on the surface of the pages or the linearity of the speech: reading a text is reunited textiles gestures that gave it its name. (Ibid, pp.35-36, Translated).

The studies of Lévy (2011) are directly associated with the Zilberman (2001) thoughts which also allows us to infer the proactivity coming from the current reader as well as the self internal stripping caused by dialog (also proactive) between reader and author and this performs more assertively through the porosity of the paper or its hollows and depressions. In her own words,

The linearity the words are presented is misleading just because among each other there are many gaps hidden as if the voids could not be seen with the naked eye. The literary tissue is a thin and delicate, not solid: it contains too many holes mimicking the constitutive paper porosity, and throughout this surface leaning to the absorption of the other penetrates the reader. (Ibid, pp.118-119, Translated).

Whereas it is not hard or plastered, paper allows constant communication among discourse entities, in other words reader/writer and vice versa, so that both are mutually absorbed. The digital text is supported by the screen which consists in an object not directly handled by the reader. The structure, organization and distribution of this kind of text and images as well, are not the same as the reader of the ancient scrolls was confronted to by reading horizontally and linearly. The current reading process is fluid, malleable and there is no more commitment to the discursive linearity (CHARTIER, 1998, p.12).

This finding allows us to be restless regarding the digital book revolution: whether this is actually the revolution of revolutions. What can be seen is that every discovery brings together optimizations and improvements concerning what have been discovered, however would it be correct to say that the last stage of perfection is the greatest revolutions and transformations whereby a particular object or scenery has ever experienced?

2.2 New Reader and Authorship Profiles

Writing has been notably improving since its creation step by step and generates the need to (re)adaptation which originates new ways of reading and new kinds of readers as well. Inside the ancient rolls, ideas were disposed linear and horizontally, making reader to be positioned in the same way. This passive behavior is inherited by manuscript and later by the printed book of Gutenberg. In this new phase, reader and author forsake laziness, stillness and horizontality of the reading process and dip in the noise and tangle of information which intensify themselves by following the fluidity, speed and dynamics of the moment causing the same as witnessed when the forthcoming of the press.

According to Villaça (2002, p.17):

The complexity materialized in mediations is revisited at the time of press advent, at the time of acceleration of the process with the introduction of the rotary, and today, when the places of production and reproduction suffer new shock. (Translated).

The transition from print to electronic culture happens by opening a channel, as always, offered by art in general and literary creation as the place where one reads the inscriptions of subjectivity (Ibid). According to Martin-Barbero (1997) the crisis that constitutes us "is not only a social fact, but a reason for being, fabric temporalities and spaces, memories and imagined that so far only the reading voice heard." (VILLAÇA, 2002, *apud* MARTIN-BARBERO, p.259, Translated).

The constant and intense changes in the universe of writing led Marshall McLuhan predict the end of the "Gutenberg Galaxy" and the establishment of a "global electronic and planetary village", arising especially from the 60s as the wiring of TV signals, communications satellites networking, the emergence of a portable video and following the home recorder, a microcomputer, telematics, integrated digital networks, interactive TV, mobile phones, HDTV (High Definition TV). (VILLAÇA, 2002, pp.17-18).

It is obvious that by the transposition of each phase that the book goes from his invention, there is a growing concern with the improvement and achievement of a more efficiently designed which is the legacy of every discovery. And it is not so different when mankind sees and enters the phase of the digital book. In this perspective, Villaça (2002, p.18) comments,

The e-book can be evaluated from several angles: ease of compilation in spatial terms, multimedia enrichment, quality of interactive dimension, level of freedom afforded, qualities that are distributed on different supports. (Translated)

The e-book enhances all previous phases requiring new kinds of reader and author. It requires a dynamic and fluid reading far from the linearity and horizontality of yore. There is a rapprochement with the text dialogue or conversation due to his fluid, deterritorialized and dynamic character, after all the text loses its fixity and meets the player to be upgraded wrinkled and crumpled i.e., dipped in oceanic world of cyberspace. Nowadays, we can read on i-Pads, i-Phones, e-books, PCs, laptops, cell phones, etc. and not just in a single bracket. These considerations are linked to Lévy (2011, p.39) about the current text,

For the contemporary text, fuelling online correspondence and electronic conferences, running networks, fluid, deterritorialized, dipped in the ocean environment of cyberspace, this dynamic text reconstructs, but otherwise an infinitely greater scale and the co-presence of the message and its living context that characterizes oral communication. Again, the criteria change. Reapproximate from those dialogue or conversation: relevance depending on the time of readers and virtual places; brevity, by being able to immediately point out the references; efficiency by providing service to the reader (and in particular help you navigate) is the best way to be recognized under the informational flood. (Translated)

The advent of the digital age generates significant impacts in reading patterns. As seen previously, the current reading is deterritorialized as Villaça (2002, p.64) comments: “a departure from the traditional and individual lived body, and a shutdown of the place, the earth and nonverbal tasks.” Now, with the presence of the electronic media and its aggregative structure in which numerous innovative features come into play: moving images, animation's own words, the presence of voices, pages with multiple outputs, emerge the hypertext. The digital support, as Lévy (2011) states, allows new types of reading and writing team.

Hypertext terminology emerges as the defining texts placed on the Web and which have hyperlinks that lead browsers readers to other enunciations and so on through points of convergence that Lévy (2011) calls knots and which Deleuze and Guattari (2011) call rhizomes: “oppose joint and segmentary lines to be lines of flight, movements of desterritorialization and destratification. According to the authors, the rhizome is an antigenealogy.”

Hypertext does not mimic reality according to Deleuze and Guattari (2011), but it is a mapping for the map to be open, connectable in all its dimensions, detachable, reversible, susceptible to receive constant changes, different from tracing which is fully enclosed and irreversible,

The rhizome proceeds by variation, expansion, conquest, capture, sting. Opposite to the graphics, drawing or photograph, and tracing, rhizome refers to a map that must be produced, constructed, always detachable, connectable, reversible, and modifiable, with multiple inputs and outputs, with their lines of flight. (Ibid, p.43, Translated).

The rhizome emerges with a strong positioning against hierarchical communication centered systems and pre-established connections. In other words, it is a non-hierarchical and non significant eccentric system without an organizing memory or general automaton only defined by organization states (Ibid).

The language evolution brings with it the advent of new communication technologies: Digital Media or Hypermedia. According to Coutinho and Silveira Jr. (2008), hypermedia along with their multicode resources, adds new possibilities to the communication scenery for gathering the three matrices of language: visual, voiced and oral. Finally, there is the notion of hypertext whose precursor Vannevar Bush claims that it reproduces the structure of the human mind. Lévy (1993, p.33) shares the idea of Bush and defines hypertext as follows,

set of knots connected by links. Knots can be words, pages, pictures, graphics or parts of graphics, sound sequences, complex documents that may themselves be hypertext. The items of information are not linked linearly as in a rope with knots, but each of them, or most of them, extends their connections such a star, in a reticular way. Surf the hypertext, therefore, means drawing a route on a network that can be as complicated as possible because each of them may hold a whole network. (Translated)

2.3 Reader-Book-Reading Relationships: What is new?

Reading was not the same always and even everywhere. As explained so far, it goes through many constant transformations applied to any support as it is possible reading a printed text, electronic, a picture, a photograph, etc., and it is done by different ways. The reading practice brings a history on itself, since Western men and women do not always read the same way. Uncountable transformations (and revolutions) metamorphosed their gestures, habits, preferences, conceptions, etc. According to Fachinetto (2005, p.11), the current revolution we are experiencing is the electronic transmission of texts and ways of reading it imposes. And he continues,

She redefines the "materiality" of works by breaking the physical link existed between the printed object and writing it conveys. The reader begins to dominate the appearance and layout of text that appears on the computer screen. The gestures change according to the times and places, objects and reasons to read. New attitudes are invented and others are extinguished.

For Lévy (2003) hypertext reader is more active than the printed one. He says that even before interpreting the meaning of a particular text, "read on screen" is to send a command to a computer so that it projects such a partial accomplishment of the text in the bright surface. The idea of partial underlies the assumption that the text editing is made differently from the printed version where contents are complete. Furthermore, the hypertextual reading allows speed besides being processed without limits due to its infinite

available links, and interbreeding infinite possibilities of non-sequential or non-linear manner as well.

We can notice that the great distinction between text and hypertext is the speed that the tools and information are accessed. A simple mouse click on the highlighted words on a website, called hotwords, is much faster than a search in the dictionary or if it is difficult to find what we search in a particular home page, we can immediately jump to another one. This redrawing of the processes of writing and reading is what Lévy (1993) calls navigation.

Nevertheless, if the hypertext consists in trails, possible paths of reading, so the text can be understood as a particular reading of a hypertext performed through the clippings produced. According to Levy (2003, p.45), "The browser thus participates in the writing, or at least editing the text read" reads "as he determines its final organization." (Translated).

Therefore, hypertext appears as a break from reading canonized sequential model exploding into different reading possibilities. Eco (2003) says the product of the machine is no longer linear, it is an explosion of firework semiotic artifices; their model is less a straight line than a real galaxy.

2.4 Hypertext and teaching-learning process

In recent times, according to Copelli and Motter (2010), technology has changed the way people interact, dialogue, live, and behave as well. As Lévy (In: COPELLI; MOTTER, 2010) asserts,

[...] In other words, we think together. We think through the languages of signs, images, and common tools, transmitted, shared systems. But do not just state that there is no human intelligence outside of culture. I speak of an event in progress, something immense, coming, it is there, light, quiet, almost imperceptible and brilliant: the thinking and the sharing of knowledge change community figure. The telephone connection terminals and computer memories, the reticulation of digital transmission, amplify each day a global "cyberspace" in which every piece of information is found in virtual contact with any other...This trend in action there more than 25 years, always make itself felt increasingly, their effects during the coming decades. Ongoing developments converge to form a new means of communication, thinking and working for human societies... (Translated)

This quotation points to a new way to feel the effects and employ digital technology in the educational environment that is where they feed modes of knowledge and perception of the world. According to Copelli and Motter (2010), man always establishes virtual relationships with partners, through images and objects from his imaginary world. However,

the technology has come to increase and materialize the activation process of bonds, links, knots, etc.

The great dilemma is how to organize hypertexts that set educational environments such a way that it does not limit the exploration and creativity of students and ensure the achievements of learning objectives. Thus, Pires and Veit (2006, *apud* SILVA, 2010, p.18) suggest that in an educational context, the hypertext should be organized in order to be a flexible content presentation model which can provide the link between different types of information to be displayed in a form of a text, image, sound, among others.

There are certain difficult scientific concepts to be learned by engaging a high degree of abstraction and concentration, according to Tavares (2008). Thus, Silva (2010) says that the use of computing resources, such as hypermedia, can enable the comprehension of these concepts since it allows flexibility of study and interaction between the content studied and the student. This interaction occurs through application of the concept of views in the form of animated images and sounds simulations. Such flexibility can avoid cognitive overload students with ages, abilities and levels of learning varied as each one follows its own pace of study.

In the opinion of Tavares (2006), hypertext becomes a comprehensive tool as it allows a greater number of people to view and understand natural phenomena which is a comprehension that once would be reserved only for those students with a great abstractive ability.

Silva (2010) argues that the access to contents in an ideal hypertext can be flexible, interactive and non-sequential among themselves and between them and the student as well. According to the author, this process is preferably carried out in accordance to the individual needs and learning styles of each student or group of students and not by a formal sequence established by the teacher. And he continues (Ibid, p.19), “this functional way of presenting the information in a hypertext implies the need to develop new skills of autonomy and critical use of the study material, allowing flexibility to the learning development.”

Silva (2010) asserts that hypertext can also facilitate the educational process by allowing students to become familiar with information technology we must increasingly come across in your daily life.

2.5 Information and communication technologies in school field

In the current era, due to the emergence of new communication environment and mediation of information, socio-cultural practices of reading/writing have suffered large and significant changes, sharpening the debate at the University concerning the docent training and practices. In this study, teachers of mother tongue in the setting of new cognitive ecology requires a constant dialogue, an intersection point between reading practices and moments of reflection of this process.

Thus, considering relevant to understand and discuss new teaching methods for teaching/learning process optimization in a hypertextual perspective by the insertion and good use of Information and Communication Technologies (ICTs), lies this research, as well as how to integrate investigative tools to bring these issues to a breakthrough efforts.

The school context suffers the most significant changes with the advent of Information and Communication Technologies (ICTs). This reality confirms, therefore, deep changes in reader and authorship profiles as well as the roles of teacher and student. The forms of study and knowledge acquisition occur more openly. According to Almeida & Menezes (2004, p.1, Translated),

Exploring the potential of ICTs during its daily life, particularly with the Internet, the school opens for new relationships with knowledge, experiencing the shared communication and the information exchange with other areas of knowledge which have the same interests.

Enhanced by new technological resources, education can bring improvements, transformations, although it is challenging for both teachers and school as a whole. Among the vast difficulties of the pedagogical practices reconfiguration is the need of Digital Literacy (or Multiliteracies). There is urgency in detecting the needs of Multiliteracies so that the insertion of new information and communication technologies can be effective in school ambience fulfilling its true role of the teaching-learning process optimizer. In this breakdown, Marques (1993, p.109) states, “[...] learning is collective construction assumed by specific groups in the broader dynamics of society, which, in turn, is built from the individual and group learning.”

The teaching practices renewal can be detected by the time such equipment significantly modify the look of the teacher in front of his practice, his conceptions of education, based on Sacristan (1999, p.74, Translated), “[...] the teacher is responsible for shaping the practice, but this is the intersection of different contexts.”

School must change its conception of literacy so that offers real opportunities for individuals and communities who are on the margins of global society. School needs to engage in other social literate practices in order to insert the multimodal ways of making meaning at the present moment; aware students the discursive battles and power relations and thus form active agents and participants in future society changing.

3 RESULTS AND DISCUSSIONS

This research results from Master's Thesis presented to Universidade Estadual do Norte Fluminense Darcy Ribeiro – Brazil in March, 2014, comprising Instituto Federal Fluminense (*Fluminense Federal Institute*) professors and students from Agribusiness, Computing, Agriculture and Cattle Raising courses. This section starts presenting data concerning the professors and their dealing with NICTs, and later, concerning students.

3.1 Teachers

In order to settle a viewpoint of the scenery surrounding the Institute where the survey took place, participants answered a structured electronic questionnaire. It was 136 students and 27 professors in total. It is noteworthy that the school where the work happened is both secondary and technical. In other words, students from high school have the opportunity to have a profession even before the graduation.

Analysing the questionnaires it is possible to conclude that 88% professors are masters or doctors or even have a kind of specialization course which is not common in other teaching segments of education in Brazil, for example, municipal and state. It shows the federal segment of education leads Brazilian educational ranking so that invests in professional training.

The study aims to analyse how digital immigrant teachers deal with ICTs advent and how they have been using them in the daily school to form the digital natives students, considering the definition of Presnky (2001) who considers immigrants the ones born before the last decades of the twentieth century and, at some point, adopted many or most aspects of the new technology and digital the ones born after the last decades of the twentieth century. This way, it would be appropriate to analyse the participant ages in order to define if they are digital natives or immigrants. In this case, the professors of the Institution observed are 100% digital immigrants having few or none experience regarding education technologies so that

37% assert holding refresher courses in digital environment against 63% that assert the opposite. This is worrisome for revealing a lack of incentives and even investments to this kind of training to form teachers and critics prepared to deal with new technologies, as shown by Street (2012).

It is curious to notice that the same percentage that claim to have training focused on the use of ICTs claim to have training along these lines, i.e. less than half of the individuals (37%) was motivated to look for ways to suit the new demands of society, of students. This cut reflects Hermont (2012) thoughts which states that allowing students to have their classes taught in old forms, is the same as allow the sacrifice of their Multiliteracies, is to deprive them of a learning by making significant knowledge and usage of this rudimentary compared to those who could improve their multimodal skills.

The following table shows the location where the participants had technical training or practice for using ICTs as teaching tools:

Table 1 – Location of the training course in ICTs as teaching tools

Location of the training course	Occurrences	Percentage
Job	5	50%
Online specific course	4	40%
Computer school	2	20%
University	2	20%
Congress, Meetings, Seminars	2	20%
Others	1	10%

In order to be possible an objective analysis, it was important consider the real number of occurrences rather than only percentage. Among the twenty-seven participants only sixteen answered this question. So, we considered the remaining eleven non-holders of the training course since they do not comment about this. The worrying fact is that only two professors had this kind of improvement at the University. This shows that there is still much to do about teacher professional suitability to the current period marked by the presence of ICTs. And even the academic events are still lacking considering that only two have acquired this kind of knowledge in an academic event.

Brazilian Universities (at a whole) perhaps have not assumed the responsibility of providing this type of training yet in different degree courses and neither the schools have encouraged their communities to search this kind of knowledge, causing teachers discouragement, reflecting what Esteve (1999, In ALONSO, Educ. Soc., Campinas, vol. 29, Nº. 104 – Special, pp.747-768, may. 2008) calls the materialization of the feeling of

uneasiness that are "[...] the reactions of all the teachers as a professional group "misfit", as a result of social, political and economic changes of our time [...]."

Another point we consider relevant in this analysis is about how participants use internet and computer (and if they use them) and how often as well as shown in the following table:

Table 2 – Use of PC and internet

Place	Nº	%	Goal	Nº	%	Access (h)	Nº	%
At home	16	59%	Entertainment	11	41%	Less an hour per week	0	0
At work	14	52%	School researchers	13	48%	1 to 2 hours	0	0
Cybercafé/Lan houses	0	0	Update/Information	20	74%	2 to 4 hours	1	3%
Others	0	0	Contact family, friends and professionals	16	59%	5 to 6 hours	4	15%
			Typing texts	12	44%	8 to 10 hours	4	15%
			Work	21	77%	More than 10 hours	15	55%
			Others	0	0			

It is notable the professors use the PC and consider it an important tool on their daily life, so that 100% use it to many goals. The place of greatest use of the computer by professors is at home and at work, 59% and 52% respectively. Regarding the goals, most of them use the tool (PC) to update or getting information (74%), contact friends, relatives and professionals (59%) and for labour purposes (77%). Concerning hours of access, 85% claim spend 5 to 10 hours a week, highlighting that among these, 55% spend more than 10 hours a week using PC and internet. This is a group that recognizes the importance of new features and tools in the acquisition and enhancement of knowledge, fact revealed in the amount of time spent on PC and the Internet, confirming the definition of Prensky (2001) about digital immigrants as already previously detailed.

However, there is an intriguing detail. When asked about the use of NICTs by the professors of different disciplines, students reveal contradictory data: 66% of students from the total 136 participants state that NICTs are used only by the Computing professors as they

compose a specific technical area. This discrepancy has become more marked over the years in the Institution for allocating the use of new technologies only to Computing professors, excluding Agricultural and Agribusiness courses. For the remaining 34% who state the contrary, using NICTs is the fact that some teachers make use of features like slides presentations via Power Point or Prezi. Actually, these resources are used to avoid the whiteboard.

Multiliteracies practicing and training courses for the professors must be installed urgently. According to Kenski (2007), there is a direct relationship between education and technology as they both are present all the time during the educational process, since disciplines planning until the development of curriculum proposal to certificate students who have completed a course. Belloni (2001) states the school challenge is to enhance the technical virtues of ICTs putting them at the service of meaningful and more suitable learning for young and childhood culture.

3.2 Students

Most of the students from Instituto Federal Fluminense Campus Bom Jesus do Itabapoana (Fluminense Federal Institute) are male (61%) because of the kind of courses the Institution offers such as Computing and Agriculture and Cattle Raising. It does not mean absence of girls, but they are minority considering these two areas. Ages vary from 15 to 16 years old which shows they are digital natives at a whole, i.e. have innate ability to use virtual technologies.

Students from secondary school, or high school, experience a period of time in which individuals start maturing the intellect. This educational segment is a strategic period to analyse the kind of formation students have had and if school and professors are prepared to deal with a community who demand new pedagogical practices.

After identification, students talked about their habits during time off as the following table shows:

Table 3 – Activities during time off

Answers	Occurrences	Percentage
TV, films, TV series	14	10%
Reading	23	17%
Studying	29	21%
Internet/Social networks	50	37%
Leisure and social activities	21	15%
Total	137	100%

Observing these data it is possible to say that 37% of students spend part of their time off accessing internet/social networks as they are digital natives. There was a moment during the research professors were asked about the possible major difficulties faced during the insertion of the NICTs and they attributed it to students. According to the professors, students do not have previous knowledge of this issue and do not have access to internet either. Nevertheless, the table shows it is a wrong theory. And it could not be different since 100% of students state internet plays an important role on their lives so that they access it all the day-long at home, at school, on the phone, etc.

Another point to consider is about the use of internet. As shown in the following table, students opinions are vary:

Table 4 – Use of internet

Utility	Occurrences	%
Entertainment	130	95%
Information	122	89%
Learning	137	100%
Social networks	122	89%
Communication	120	87%

The options listed above are valid concerning internet so that are many other occurrences. Participants could choose more than one option. However, notable is the fact that all the students associate learning to internet. It shows students have remarkable potential for using the new technologies even though they do not have suitable guidance of professors to do it right. Regarding the other options, it is clear internet is an important resource in students' daily lives whether at school or outside it.

This research approaches the relationship between pressed and electronic holders. Therefore, it was necessary investigate students reading habits, their preferences, as listed in the table below:

Table 5 – Reading habits

Material	%	Frequency	%	Holder	%
Newspaper	16%	Everyday	74%	Pressed	74%
Magazines	19%	Once a week	10%	Electronic	26%
Books	48%	Once a quarter	8%		
Others	17%	Once every 6 months	4%		
		Once a year	4%		
		Never	0		

Data listed on table 5 allows us to realize 74% of the students read for pleasure and prefer pressed reading in order to be more comfortable. According to them, electronic holders have disadvantages such as brightness, appliance heater, and in case of blackout there are time restrictions. The ones who assert reading in low frequencies (26%), consider reading only if there is a manipulation of an object, newspapers, books, magazines, for instance. These ones read for a specific purpose: studying, so they prefer electronic reading because it is more flexible, non-linear, and they have the possibility to change the topic or issue if they feel bored as well. It shows pressed and electronic readings coexist peacefully because each one plays a distinct role depending on the individual needs.

Finishing this talking, students had a space to express their opinion about how and if NICTs insertion could help along the teaching-learning process as listed below:

Table 6 – NICTs and teaching-learning process

Contributions (Yes/No)	%	How	%
Yes	85%	Dynamic classes	14%
No	15%	Teaching-learning innovations	19%
		Motivation	14%
		Closer to students interests	1%
		No comments	52%

At first it is necessary to point a discrepancy out: 85% of students agree to the importance of using NICTs along teaching-learning process whereas 15% do not agree with this. Based on other sections of the questionnaire students answered, we can ensure 75% of them do not know how to define this concept. Such contradiction is due to the fact that, even though they cannot define, they understand the importance of settling new practices enabling a meaningful and enjoyable learning.

Regarding the contributions by inserting NICTs in school ambience, specifically, along the teaching-learning process, 48% of students presented relevant opinions such as

dynamic classes, teaching-learning innovations, motivations and a chance to have a studying closer to their interests. These considerations reinforce Skiba (2010) thought which says that the greatest impact of using new technological practices in classroom will lead students to a new level of knowledge which will allow them to use the available digital tools to communicate and share experiences in such a multimodal and wide way. Choices more and more will base on technological tools and the idea of building and sharing knowledge itself will also base on the use of technologies.

4 CONCLUSION

This study shows that professors did not receive guidance concerning the adoption of new methods and teaching strategies during their formation and keep on far away from it. So, they are unprepared to feedback the constant and growing new educational demands which require innovations so that learning can be meaningful, enjoyable, flexible and more horizontal as well.

We could observe along the present research that education have been coping with many problems, and perhaps the current generation shock between native and digital immigrants is the greatest of all. For example we can realize in Brazilian education a gap which remains static for ages: school from nineteenth century, professors from twentieth and students from twenty-first. This situation does not change because professors without notice propagate traditional models and practices they experienced along their formation.

Far from their true role, professors tie themselves to self-indulgence, and as time goes by become more and more difficult to leave the comfort zone they are placed. When they are asked about this the answers are unanimous: Institution responsibility, lack of material, low intellectual level of students when, actually, it is a sense of free will, evolution, world conception and the need to make an important part of a process, of a reality.

So that the use of NICTs plays its educational role to promote a learning in such an incidental way, by discovering, collaborative, meaningful and enjoyable, there must be significant investments in theoretical and practical teacher training concerning the use of digital environment. It means the practice of continuing formation to promote these professionals in order to permit the access to current reading as well as discussions and reflections which lead to the improvement of their practices. There also must be a practical training such as a course focusing on using NICTs in teaching-learning process. Furthermore, it is important to introduce new curriculum purposes in graduation courses which prepare

education professionals. This way, both in initial and in continuing formation professors will be prepared.

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