Digital technologies and pedagogical practices in the information technology for internet technical course integrated to high school: usages and discourses

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Abstract
We start from the assumption that interactivity can potentialize pedagogical practices. In this way, this article presents the results of a research that sought to discuss the practices mediated by digital technologies and the discourses that have permeated their usages in the Information Technology for Internet Technical Course integrated to High School at the Federal Institute of Northern Minas Gerais (IFNMG), Januaria Campus. This text addresses the issue of discourse from the Bakhtinian perspective and dialogues with authors who consider digital technologies as interfaces that support the process of teaching-learning.
Keywords: Digital technologies; Discourse; Pedagogical practices.

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Tecnologías digitales y prácticas pedagógicas en el curso técnico em informática para internet integrado a la enseñanza media: usos y discursos

Resumen

Partímos del presupuesto de que la interactividad puede potenciar las prácticas pedagógicas y, de esta manera, este artículo presenta los resultados de una investigación que buscó discutir sobre las prácticas mediadas por las tecnologías digitales y los discursos que permean sus usos en el curso Técnico de informática para Internet Integrado a la Enseñanza Media, en el Instituto Federal del Norte de Minas Gerais (INFMG)/Campus de Januária. Para ello, este texto aborda la cuestión del discurso bajo la perspectiva de Bajtín y dialoga con autores que consideran las tecnologias digitales como interfaces que favorezcan el processo de enseñanza- aprendizaje.

Palabras clave: Tecnologías digitales; Discurso; Prácticas pedagógicas.

Tecnologias digitais e práticas pedagógicas no curso técnico em informática para internet integrado ao ensino médio: usos e discursos

Resumo

Partimos do pressuposto de que a interatividade pode potencializar as práticas pedagógicas e, desta forma, este artigo apresenta os resultados de uma pesquisa que buscou discutir sobre as práticas mediadas pelas tecnologias digitais e os discursos que permeiam seus usos no curso Técnico em Informática para Internet Integrado ao Ensino Médio, no Instituto Federal do Norte de Minas Gerais (IFNMG)/ Campus Januária. Para tanto, este texto aborda a questão do discurso sob a perspectiva bakhtiniana e dialoga com autores que consideram as tecnologias digitais como interfaces que favorecem o processo de ensino aprendizagem.

Palavras- chave: Tecnologias digitais; Discurso; Práticas pedagógicas.

1. Introduction

Technological innovations have been significantly modifying several areas such as work, commerce, leisure, as well as the very act of communicating. The media have modernized themselves in a way that one can rarely live in a disconnected world. All these transformations directly affect education, since learning involves a communicative process. The invention of the press by Johann Gutenberg in the fifteenth century sparked a revolution in the area of writing and reading and, from that moment on, we have witnessed significant changes in educational practices. Audiovisual resources have also reshaped ways of learning. Technological devices are not seen as mere tools; the usage of these resources makes possible the existence of a new way of life and understanding, a transformation in culture and creation of new identities.

The idea of conducting this research was based precisely on the observation of the digital technological expansion in society and on the apparent interest of young people in their interactive characteristics. It was motivated by these concerns as well the need to deepen the knowledge related to pedagogical practices mediated by digital technologies Information Technology for Internet Technical Course integrated to High School at the Federal Institute of Northern Minas Gerais (IFNMG), Januaria Campus. The choice of this course is related to its specificity in the area of information technology. Thus, the effectiveness of the potentialities of such technologies can be more evidenced than in other courses.

Nowadays, many available technological tools can be seen as the basis for more effective teaching-learning practices. Speaking about practices involving technologies goes beyond choosing a particular technological resource or having a structured computer lab at school. Despite living in an era with significant technological advances, this does not mean that schools follow this evolution. A more disturbing question is whether educators are prepared to deal with this new reality. In genderal, we observe the usage of technological media as a simple overhead projector. Based on all these aspects, we realized the need for a discussion about the usages of digital technologies in pedagogical practices and the discourses that involve such methods.

This research involved ten teachers and ten students from the third year of the Information Technology for Internet Technical Course integrated to High School. The students were chosen at random from those who were willing to participate and were interested in understanding the discourses that permeate these usages and how digital technologies have been used by these teachers. This study presents a mixed approach and, as instruments of data production, we use participant observation, written report (researcher's logbook), questionnaire and semi-structured interview.[1]

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1 Although this article has been written in the English Language, this research was performed in the Portuguese Language. All discourses used in this study were translated into the English Language by the researchers. It is worth to mention that it respected the theorists' and participant's discourses as well as their ideas. All transcripts were kept on the whole.

2. Discourse Analysis from Bakhtin perspective

According to Oliveira (2012), "language, as a socially constructed activity, materializes in utterances, assigning meaning to the acts practiced by human beings, allowing access to discursive positions present, explicitly or not, in dialogical relations" (OLIVEIRA, 2012, p. 276). The participants' discourses represent axiological and ideological positions since they are singular subjects, situated in a specific environment.

From the Bakhtinian view, the utterance can only be analyzed by taking into account its context, which means not limiting to the past or the future, but considering its historicity. Since Bakhtin and his circle did not develop a method of analysis, it becomes necessary to think about their concepts to understand what should be analyzed from this perspective. It is fundamental for the researcher to have a responsible/responsive attitude. There is no neutrality in research in Human Sciences, considering that it concerns a relation between subjects and the very act of understanding from the part of the researcher carries in itself a valuation. Amorim (2003) emphasizes that the production of knowledge involves a variety of discourses that confront each other.

> For example, between the subject's discourse to be analyzed and known and the researcher's own discourse he wants to investigate and understand, a wide range of conflicting and even paradoxical meanings will emerge. To assume this conflicted and problematic character of Human Sciences, research implies giving up all illusion of transparency: both in the other's discourse and his discourse. It means that only working the opacity of speeches and texts that contemporary research can make diversity a constituent element of thought and not just a secondary aspect (AMORIM, 2003, p. 12).

From the moment one is prepared to produce knowledge, the researcher must assume an ethical and exotopic position before this production and his interlocutors. It is in this context that Bakhtin highlights the issue of framing the other's word, emphasizing that there is a mutual influence in introducing this word to the discourse. "Therefore, in studying the different forms of transmission of the others' discourses, one cannot separate the procedures of elaboration of this discourse from the procedures of its contextual (dialogical) framework: one relates indissolubly to the other" (BAKHTIN, 2002, p. 141).

In this research, this framework was carried out by analyzing the teachers' discourses (made possible by the open questions of the mixed questionnaire in a digital version), the discourses of the students (through an architectural analysis of the interviews in view of participant observation), and the addressed theoretical references, which are the basis of the research.

Table 1: Methodological instruments used

Instruments	Data produced
Mixed questionnaire (digital version)	Mappings related to information about the teachers: initial and continuing training; time as a teacher; usage of technologies.
	Written reports related to the teachers' conceptions of the teaching-learning process; pedagogical practices mediated by digital technologies.
Semi-structured interview	Recorded and transcribed reports aimed at students to understand the meanings they attribute to the usage of digital technologies in their daily lives, as well as the usage of digital technologies in teaching practices.
Written report (researcher's logbook)	It is related to the observation of pedagogical practices in various educational spaces: classroom, virtual classroom, groups in social networks (e.g., Facebook and WhatsApp).
Written report (researcher's logbook)	It is related to observations of teaching practices.

Source: Produced by the researchers.

Choosing the most appropriate instruments for the type of research intended is not enough. According to Stake (2011), more important than this choice is the researcher's commitment while working on the data produced. It was established a relationship between the teachers' discourses and their respective students, selected to participate in this study. It has been done based on theorists who approach the question of the usage of digital technologies in pedagogical practices to understand how teachers have used these technologies and the discourses that permeate these practices.

The development of the interviews made it possible to see pedagogical practices through their interlocutors' point of view, i.e., the students. The mixed questionnaire sought interaction with the teachers to understand a little about their academic background, their teaching trajectory, and the usage they have made of digital technologies in their everyday life and in their pedagogical practices. We seek to know how teachers conceive the teaching-learning process and the meanings they attribute to the practices mediated by such technologies. The observations in the training environments (classrooms, groups in social networks, virtual classrooms) were of great importance for the research, representing the inherent otherness which we need to put ourselves in the position of the other to see what he sees and to return for the I-for-myself position. In this way, we can analyze the perceptions we would not know if we did not have this surplus vision.

In this way, through the exotopic position, which allows the researcher a surplus of vision, it was possible to perceive how these technologies have been used in pedagogical practices. According to Bakhtin (2006), nothing that is addressed, in this research, corresponds to a permanent end. It is something unstable since it corresponds to practices of human action in a given context, directed to a specific interlocutor; a unique event, with its historicity, which is in a constant process of resignification. The framework made through the instruments of data production sought, first of all, to present the subjects of this research. In this sense, both the first questions of the interview and the questionnaire were to clarify aspects related to the contexts of these subjects. We reiterate that the participants' identities were protected using codes for teachers (Teacher 1, Teacher 2, Teacher 2, Teacher 4, Teacher 5, Teacher 6, Teacher 7, Teacher 8, Teacher 9, Teacher 10) and for students (Student 1, Student 2, Student 3, Student 4, Student 5, Student 6, Student 7, Student 8, Student 9, Student 10).

3. Meeting the students

The students interviewed are aged from seventeen to eighteen. They are from Januaria (Northern region in Minas Gerais state) and surrounding cities. Regarding the usage of digital technologies, we observed that all the students stated that they have used their cell phones or computers/notebooks to access the Internet. They said they have used these technologies for communicative purposes as well as for socialization. Some social networks were mentioned, such as Facebook, WhatsApp, Twitter, Instagram, and Snapchat. We noticed a predominance of WhatsApp and Facebook networks. In addition to these usages, Student 1, Student 3, Student 5, Student 6, Student 7, Student 8, Student 9, and Student 10 reported that they use network-connected computers or cellphones/smartphones as advanced calculators, online encyclopedias, and online and offline dictionaries. The students also reported that they use these technologies to download materials that their teachers provide through e-mail, Facebook or WhatsApp.

Student 4 highlighted that, in addition to using these technologies for interaction and access to social networks, he uses them to watch videos on YouTube and many websites with subjects related to school courses, with the purpose of recovering lost content due to lack of classes or even to reinforce studied topics in the room. Student 2 did not mention using digital technologies for study purposes. He just pointed out that he uses them to socialize. There was a high usage of cell phones/smartphones. Everyone stated they use their cellphone/smartphones more than computers. Student 10 highlighted that it is easier to carry them everywhere. "I use my cell phone a lot. Now the phone is more convenient, and it does everything a computer does, and it is compact. I use it for both study and communication on social networks like Facebook, Skype, MySpace, Instagram, WhatsApp and Twitter" (Student 10).

Student 10's statement dialogues with what Santaella (2013) calls hypermobility. According to the author, mobile devices, besides presenting the possibility of being transported to any place, can access networks due to their innovations. These devices expand the training spaces since the knowledge available in cyberspace can be easily obtained.

4. Meeting the teachers

For the production of information about teachers, the mixed questionnaire (digital version) was sent to the thirteen teachers who work in the third year of the Information Technology for Internet Technical Course integrated to High School. We noted, however, that only ten of them answered the questionnaire, thus accounting for only ten teachers participating in this study. Before this survey, the researchers talked individually with all the teachers involved. We set out the problem in question, explained the objectives, and made ourselves available for further clarification. The closed questions in the questionnaire aimed to clarify information related to the teachers' training and the usage that they make of technologies in their daily life.

Although most of these teachers have graduated or have participated in continuing education, specialization, or master's degree, only 20% (Teacher 5 and Teacher 6) affir-

med that the training provided them with conditions for diversified pedagogical work. It is important to note that most teachers completed their last level of education from 2003 to 2016 when Web 2.0 was expanding, as it was officially defined in 2004. Even in the face of the success of it (considered as a participative web due to its interactive characteristics), there was no concern regarding the training for the use of digital technologies, according to 80% of the teachers (Teacher 1, Teacher 2, Teacher 2, Teacher 4, Teacher 6, Teacher 7, Teacher 8 and Teacher 9). Only two of them (Teacher 5 and Teacher 10) stated that they were trained to use digital technologies for the educational area. However, Teacher 5 pointed out that this formation happened in the form of very superficial, sporadic training. Teacher 10 mentioned having taken a postgraduate course in Computer Science and Education, which provided conditions for the use of digital technologies for pedagogical practices. It is important to note that this teacher has also graduated in Systems Analysis and Development, and he teaches Web 2.0 classes in this course. Concerning the usage of digital technologies in the educational area, 80% of the teachers surveyed (Teacher 1, Teacher 2, Teacher 4, Teacher 6, Teacher 7, Teacher 8, Teacher 9, Teacher 10) believe that the training for the use of digital technologies should be included in the curriculum of teaching courses. Finally, 20% of these teachers did not express themselves in this regard.

The teachers reported that there is no offer of courses aimed at training teachers to use digital technologies at the Januaria Campus. As for the existing and available technologies in the institution for the pedagogical work, we realized that the projector was the only item checked by all teachers. We also noticed a predominance of textbooks, whiteboards, photocopiers, network-connected computers (90%); sound system and interactive computers (80%). The other related items were dictionaries, TV sets (60%), books for research (50%), tablets (30%) and free software (10%). This last one was marked by Teacher 7 only. These data lead us to understand that the projector is a widely used technology.

Concerning to the usage of technologies used in their pedagogical practices, we observed the predominance of textbooks (90%, Teacher 1, Teacher 2, Teacher 3, Teacher 4, Teacher 5, Teacher 6, Teacher 7, Teacher 8, Teacher 9); projector (80%, Teacher 1, Teacher 2, Teacher 2, Teacher 4, Teacher 7, Teacher 8, Teacher 9, Teacher 10); whiteboard (80%, Teacher 1, Teacher 2, Teacher 4, Teacher 5, Teacher 6, Teacher 7, Teacher 8, Teacher 9); photocopier (70%, Teacher 1, Teacher 2, Teacher 5, Teacher 6, Teacher 7, Teacher 8, Teacher 9); sound system (60%, Teacher 1, Teacher 2, Teacher 4, Teacher 7, Teacher 8, Teacher 10); network-connected computers (40%, Teacher 5, Teacher 7, Teacher 8, Teacher 10); free software (30%, Teacher 7, Teacher 8, Teacher 10); TV sets (30%, Teacher 1, Teacher 2, Teacher 5); interactive computer (20%, Teacher 4, Teacher 6); dictionaries (20%, Teacher 1, Teacher 5); smartphones (20%, Teacher 4, Teacher 10); tablets (10%, Teacher 10). It is important to clarify that although teachers received a tablet in 2013/2014, only Teacher 10 teacher mentioned using it.

According to information from the Coordination of High School courses, ten interactive screens were available to this sector along 2013 and 2014. Nowadays, only five of them are working to attend to the demand of the technical courses integrated to high school: Environment, Agriculture, Information Technology, and Buildings. They are in-

teractive computers that contain a keyboard, a mouse, USB ports, wireless network port, a DVD reader unit, and a multimedia projector. This device can present digital content stored on the school server, in addition to an open source operating system. It can turn the projection surface into an interactive whiteboard. Tablets were distributed to all teachers at Januaria Campus along 2013 and 2014. The availability of this technology was a set of actions from Proinfo [2]. We emphasize, however, that these were isolated actions. Teachers were not trained to use these devices properly. At the beginning of the school year in 2014, during the Pedagogical Week (an event that happens every year on this campus) a computer technician spent two hours explaining to teachers how to use these interactive projectors and it was the only training the teachers had. The tablets were given to the teachers without much instruction. Only the site and the password to get them registered on the school server were indicated to them.

We highlight that there are only five working projectors in the classrooms, but according to the Coordination of High School and Coordination of the School Property Sector, there are more fifteen projectors ready to be installed in the rooms. The Coordinators also emphasized that six projectors and four interactive boards will be available to teachers use them in their classes. It is important to point out that none of them have been installed so far.

This contextualization is necessary since, from the Bakhtinian point of view, every statement can only be analyzed through a context, taking into account its historicity. Fiorin (2011) points out Bakhtin's concept of consciousness as a social construction. The subject builds his awareness in society. In this way, it is seen as socio-semiotic, as it is formed from the language, which is ideological by nature, hence the statement that:

> The apprehension of the world is always situated historically because the subject is always related to the other. The subject constitutes itself discursively seizing the social voices that integrate the reality in which it is inserted, and, at the same time, seizing its dialogical interrelations. As reality is heterogeneous, the subject absorbs several social voices (FIORIN, 2011, p. 44).

Barros (2005) states that, for Bakhtin, the subjects are dialogical, once it is the incorporations of the voices present in the society that will form the individual conscience. In this perspective, not all voices are assimilated in the same way. Bakhtin addresses the question that some views are embodied as the voice of authority, while others are assimilated as internally persuasive voices. Voices of authority are, according to the author, those who exercise dominion over the others. Persuasive voices, on the other hand, are permeable voices that coexist with others, do not have a dominant tendency, and are reabsorbed and resignified. Situating the subject is essential so that one can understand the historicity of its discourses. "Each one has a particular history of constructing his inner world, for it results from the clash and the interrelations of these two types of voices"

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2 National Program of Educational Technology (ProInfo). The program aims to introduce digital technologies to basic education, equip schools with computers, digital resources, and educational content. The states, Federal District, and municipalities are considered partners of this initiative, having the responsibility: to guarantee the adequate structure to receive the laboratories; training for the use of digital technologies in pedagogical practices. Available at: <http://portal.mec.gov.br/proinfo/proinfo>. Accessed on: 16 Jan. 2017.

(FIORIN, 2011, p. 44). In this sense, discourses are deemed as ideological, because they are responses to these voices. In this way, they are always social. There is no individual consciousness, but singular, once the other becomes part of our identity, what means that the discourse is constitutively heterogeneous as well the subject, who responds responsibly, and incorporates voices, based on its socio-historical context. It makes the dialogues social and unique. After being situated, having presented who are the participant teachers in this research, we move on to analyze their discourses.

5. *The intertwining of discourses*

The open questions of the mixed questionnaire (digital version) discussed the conceptions of learning, how the teachers understand the teaching-learning process, the insertion of digital technologies in the school curriculum and the pedagogical practices. They mainly aimed to respond to the purpose of this study of knowing how digital technologies have been used in pedagogical practices.

Analysis from the Bakhtinian perspective is not a description of an epoch or about an subject's life, but it looks forward to understand the meaning of the utterances. It is a "semantic analysis that shows approvals or disapprovals, adhesions or refusals, controversies and contracts, disconnections of meaning, deletions, etc." (FIORIN, 2010, p. 41). In this conception, people communicate through genres, whether they are primary (related to informal conversations of everyday life, jokes, e-mail, chat) or secondary (formal texts, cultural communication involving various fields: journalistic, legal, school, religious, etc.). Faraco (2009), Sobral (2009) and Fiorin (2011) points out that Bakhtin refers to genres in the sense of process and not about the product. Genres as relatively stable types of utterances, which are characterized by standard features such as composition, content, and style. Lack of mastery of a kind implies, according to him, a lack of success in a specific area or field. For Bakhtin (2011), the statements, when reflecting the specificities and ends of a given field, do so not only regarding its thematic content, its grammatical structure, but mainly, its compositional construction, which is linked to the statement as a whole.

Considering that communication happens through genres, we seek to understand teachers' and students' discourses related to the usage of digital technologies in pedagogical practices through the interview and mixed questionnaire genres (digital version). These types are considered as secondary genres since they do not refer to simple texts of everyday life, but cultural texts that are used to know the discourse of the other and endowed with a specific purpose. We further emphasize that these were the formal genres selected to begin the data production process, but that does not mean that they were the only ones used. Primary genres such as informal conversations and chats, discussions in groups on social networks, were also the basis for the dialogical discursive construction of this research.

The Federal Institute Of Northern Minas Gerais - Januaria Campus is understood as the dialogical field of this research, considering that the school institution represents a human field of action. It is considered as a socio-historical institution, where a variety of relatively stable genres circulates. According to Bakhtin (2006), since the form of language is ideologi-

cal, the genres are consequently ideological. They influence the actions of a particular group in society, which leads one to understand that "'no verbalized utterance can be attributed exclusively to the one who enunciated it: it is a product of the interaction among speakers' and, in broader terms, of the whole social context of the annunciation" (BEZERRA, 2001, p.11). The Januaria Campus is a chronotope in the macro sense, which involves several micro-chronotopes, which, in a way, influence the teachers' and the students' discourses.

6. Digital technologies: usages that enhance teaching-learning

When asked about how digital technologies can enhance the development of more effective pedagogical practices, both teachers and students have confirmed the advantages derived from the usage of these technologies. We note, however, that the answers to this question are vague and imprecise. Teacher 2, who presents a teaching-learning vision as a transmission of knowledge, does not state how they can be used, but supposes that digital technologies can contribute to learning: "I suppose digital technologies can be a way to enhance the effectiveness of learning." This discourse demonstrates that it is just assumptions, which is indicative that the teacher has no idea how these technologies can enhance pedagogical practices. This apparent lack of mastery was noted in the discourses of Student 1 and Student 6:

> A bigger usage of computers in the classroom (by the teachers). And it could be a tablet, because I see that, as technologies are already present in the students' life, and this is impossible to be taken from the students, I see that it can be used in favor of the teachers, such as cellphone, tablet. I think there are countless possibilities, but the teacher has to enter the technological environment to use it in their favor and not against them. (Student 1)

> It's necessary a training for teachers to have a mastery of the tool he is using [...], but I think it should be for both teachers and students. I mean teach them how to handle those tools. (Student 6)

When asked about how teachers use such technologies in their practices, Teacher 2 answered: "I use them through activities that enable students to abstract, explore, and mainly build their knowledge." This discourse is representative of the voices present around education today. All the orientations and theories state that one must explore the students' potential, that students must build their knowledge. We observe, however, that in practice this is not effective, we do not know what to do and how to do it. Thus, under a new discourse, the same transmissive methods are repeated, only made available by new technological means.

Teacher 1 and Teacher 2's answers are entirely vague. They do not present any indication of how the usage of these technologies could be useful in practice. Teacher 1 goes on saying that students are currently involved in a new culture that demands the utilization of digital technologies but also does not say how they should be used.

> The present generation demands for the use of technologies. They are an inexhaustible source of possibilities and therefore reach all kinds of students in their in-

dividuality. They indeed create a greater empathy between student and content, favoring the development of learning. (P1)

They should be used on the daily routine to discuss relevant topics in a discipline. (Teacher 2)

Among the teachers' discourses, there are those that present examples of activities that can be developed. Some teachers emphasized that technologies can be considered as mediators and facilitators of the learning process, facilitating the interaction among teachers and students. They noted that interactive usage of videos, quizzes, digital books, discussion forums, real applications, and software to simulate activities contribute to the improvement of learning. "They can be mediators between teacher-student, student-student, student-knowledge and sources of research, observation, and analysis" (Teacher 4).

> Digital technologies are tools that facilitate the teaching-learning process since the teacher has several ways of contributing not only to the explanation of contents but also to various means of interaction between the students and him, and among classmates themselves. (Teacher 5)

> We can use the digital technologies to improve students' interaction with contents, offering the possibilities for improvement in learning through interactive content such as videos, quizzes, digital books, discussion forums, etc. (Teacher 10)

> We can use them putting into practice a content seen in the classroom and showing, in fact, to students a real application of specific knowledge. (Teacher 6)

> We can use them to streamline calculations for better visualization and generalization. (Teacher 7)

> Educational software can simulate experimental activities and phenomena that would help the student to visualize better and understand the application of theories taught in the classroom. Thus, under the guidance of the teacher, these simulations would aid in the consolidation of student learning. (Teacher 9)

It is worth mentioning the Teacher 8's discourse: "The digital technologies extend to the classroom. It facilitates communication, allowing the student to practice more and in various places, not needing to be inside the school environment". This speech dialogues with what Santaella (2010) conceptualizes as ubiquitous learning. That is a spontaneous process that is not confused with m-learning, despite having great similarities. E-learning is characterized as online education while m-learning is online education plus mobility. "M-learning is facilitated by the convergence of the internet, wireless networks, mobile equipment, and e-learning systems. It is understood as resources to facilitate education that can make learning reach everywhere." (SANTAELLA, 2013, p. 31). With the ease of access and connections to the internet, one can learn at any time and place. It is important to highlight that all these forms are considered as formal education, as they are presented as systematic processes and pre-established by institutional curricula. M-learning is considered as an extension of the classroom, as systematic methods and resources are developed and pre-established by the educational planning of a particular educational institution.

Ubiquitous learning, on the other hand, does not follow a pre-established system, as it occurs spontaneously, informally. With the expansion of digital technologies and networking, one can "quench their curiosity about any subject at any time and in any place" (SANTAELLA, 2013, p. 40), without necessarily being in an educational institution, or even performing a particular task. It is characterized as open, free, and ubiquitous learning.

For more interactive practices mediated by digital technologies to take place, it is necessary that fragmented curricular structures to be restructured. According to Demo (2009), there is no way to talk about knowledge reconstruction linearly. We must look for changes in educational systems. Despite the curriculum does not offer any practical guidance and the institution does not offer adequate training, we emphasize that some teachers look for a work beyond specific knowledge and technical training in the area of information technology, such as Teacher 4.

> In 2015, I developed a project with students to encourage reading. They created channels on Youtube and shared the reviews of books read in the period, following the trend of booktubers. As an example, follow the link of one of the created channels: <https://www.youtube.com/channel/UC7k8B9swvJ-06oyxsZQawoA>. We also have a closed group on Facebook to post information, questions, texts, notes, doubts, besides keeping a constant contact with them via Messenger, with sending and correction of essays, clarifications, etc. (Teacher 4)

Through the questionnaire, the students' interview, the observations made in the classroom and the groups of Facebook and WhatsApp, we verified that the Teacher 4 Teacher's practices extend to the classroom and allow to the students ubiquitous learning. These practices dialogue with what Santaella (2013) advocates: learning, in time of cyberculture, includes considering the modifications related to the student profile, take advantage of the potential of digital technologies for the development of activities that go beyond the lecture in the classroom. It, however, does not disqualify this exposure teaching strategy, but it shows how other forms of teaching-learning can be added to it to make teaching something more dynamic and interactive.

According to Silva (2010), when inviting students to a website, the teacher is contributing to their inclusion in cyberspace. In this way, teachers must provide practices consistent with the culture that permeates this space, the cyberculture. The author emphasizes that

> Cyberculture means ways of life and behaviors assimilated and transmitted in the historical and daily experience marked by computer technologies, mediating communication and information via internet. This mediation takes place from a communication environment no longer defined by the centrality of the issue, as in the traditional media (radio, press, television) based on the logic of distribution that presupposes concentration of media, uniformity of flows, an institution of legitimacy (SILVA, 2010, p. 38).

Thus, the author dialogues with Lemos (2002) and Lévy (1999) when he emphasizes that it is a new communication logic in which the interactivity prevails due to the "release of the emission pole" (SANTOS, 2016, p. 5). When using social networks and websites, created for the pedagogical work, it is necessary to take into account the possibility of exchanges, of dialogues that allow interactive practices; the new reader profile that

originates with the advance of digital technologies, with the growth of social networks, with the expansion of smartphones. Santaella (2013) emphasizes that we a before a new reality that presents significant changes in the way of learning.

Analyzing Teacher 4's practices, we note that he presents an innovative trait by incorporating Facebook to his pedagogical work to complement formal education and promote ubiquitous learning. In conversations with the researcher during the participant observation period, Teacher 4 pointed out that his students had made considerable progress concerning the activities that involved working with digital technologies. This teacher develops several actions involving digital technologies, like the production of videos for publication on Facebook, blogs, and channels on YouTube. In this sense, we observed that students, through the language of digital technologies, began to produce and to become more involved in such activities.

It is important to clarify that Teacher 4 has been teaching these students since the first year of high school when he created a Facebook group. According to him, he found this strategy of using social networks as allies because students are always connected to them. As the students have been approving for the following year, the group's name has been changing. Nowadays, the group is named "IFNMG - Portuguese 3rd A / B - Info". It was created to share information related to the Portuguese Language contents. Teacher 4 uses the group to give warnings, attach slides and texts discussed in classroom, keeping the students updated on many topics. The data produced, based on the participant's analysis of the activities carried out on the Facebook group, were added to this study under the form of screen prints[3]. Teacher 4 takes the opportunity to post humorous texts related to the colloquial language and uses them to work the standard form of the language. There are moments for relaxation and challenges. He opens discussions on grammatical inadequacies and motivates students to find and correct them.

In addition to these activities, Teacher 4 posts videos and links about cultural issues, music, art, and literature. He uses the group on Facebook as a way to complement his work in the classroom. Sometimes he uses the group to start a thematic unit, a content by posting comments, videos, and links; other times after working and discussing an issue, he continues the debate on Facebook.

Figure 1 - Videos as pedagogical resources

While teaching Literature, Teacher 4 organizes the Week of Modern Art with his students. It is a modern art event on Januaria Campus. He uses posted miniseries videos on the Facebook group for the work in the classroom. When the planned content for the classroom runs out of time, he uses the group to extend the discussion online. He also asks students to read books and post critical phrases related to what they are reading. Students then prepare videos with reviews and post them on the group, on blogs created by the students and on their YouTube channels. "Literary Overdose", quoted by Teacher 4, is one of the channels. On the Facebook group, we notice that the students comment on their actions in the proposed activities. We observe that they correct themselves simultaneously when they make a mistake and praise each other. During the participant observation period, the Teacher 4 emphasized that the activities related to the reviews involve working with several textual genres. This teacher reiterated that, initially, the students searched for online videos reviews.

They watched the video reviews and, after that, the teacher allowed the students to choose which book they wanted to read. After reading, they should produce two different genres: one piece of writing for blog posting and an oral text to be recorded on video. Students were divided into groups to create a channel on YouTube. Teacher 4 pointed out that he was surprised at the students' development concerning several aspects such as commitment, posture before the cameras, voice intonation, and development of oral and written languages. This teacher emphasized that he also noticed a great advance regarding students who, despite being very quiet in the classroom, did participate. According to him, students' growth was remarkable, and he emphasized that it intends to extend this practice in order to improve it. He plans to work like booktubers, which are Youtube channels focused on literary discussion.

The Facebook group is also used to post photos and videos about activities developed by the group such as drama, presentations, competitions, among other activities. The Teacher 4 has developed the Spelling Project, in which he uses to work on issues related to spelling, and the Solidarity Competition, which involves several contents worked in the classroom. In addition to participating and learning a scientific topic, students learn to be supportive, both through activities that require group work to reach the solution and in events involving the acquisition of non-perishable food, toys, clothes, shoes, and diapers for donation to nonprofit entities.

Teacher 4 also uses the Facebook group to offer students access to various links that can contribute to complement and reinforce the contents worked in class. He takes advantage of the Facebook group to provide guidance about evaluative activities. The work regarding the creation of YouTube channels, blogs, and booktubers are considered as a form of collective intelligence, where virtual communities will enable young people to produce literary knowledge using a language closer to them. Some time ago, it was done only by experts in an elaborated discourse. Practices like those complement formal education with ubiquitous learning and make students the producers of culture in a network. They take advantage of the potential of the open emission pole to exchange ideas in the cyberspace. It is an interactive and a participatory practice that goes beyond the simple transmission of content through digital technologies. Students learn to produce knowledge, reorganize information, use and produce diversified genres, select relevant information, and develop argumentative skills.

In addition to this group, the Teacher 4 is an administrator of another group: Writing Tips, in which he presents weekly essay tips and links to video lessons. This group was initially created to meet the students' interests who attend the third year of the high school courses. According to this teacher, this group was so successful that it currently consists of 843 members. It involves all those who have shown an interest in participating, regardless of whether they are students from the campus. He publishes weekly information about the production of argumentative texts of likely topics required in the Composition module of ENEM[4]. He develops a reading club where students comment on the books they read, and he organizes text-making workshops. Analyzing all these activities, we observed that Teacher 4 is concerned with learning beyond the classroom. When he make students engaged in other environments and offers multiple resources including a multimodal language and the usage of digital technologies, he takes advantage of ubiquitous learning to help his students learn better.

Considering the Web 2.0 potential to interactivity, we verified, during participant observation, how the Web 2.0 teacher works. These classes happen in the computer lab. We noted the use of slides for the presentation of the content. After the explanations, the students developed activities using computers. They received guidelines for the construction of sites. We reiterate that this activity was individual, one student per computer. Although this activity was individual, we noticed that some students circulated through the laboratory to get help or help their colleagues. Teacher 10 kept all the time available to help with possible doubts that arose.

Through the semi-structured interview with the students and the participant observation, it was possible to verify the use of the Moodle Platform as an extension of the room. In the interview, there were discourses that considered the Teacher 4's practices as something innovative, since this allows students to access the content on cyberspace, as well clear their doubts at any time, without necessarily being in the classroom.

> This part of the site is a major breakthrough. Before it, we used to do some activities. It's each one on a computer. After finishing them, we showed them to our teacher. Now, we have access to the internet and we used to work with it. We exchange information with colleagues (via chat). I think that's interesting. (Student 8)

> [...] in the Web 2.0 classes, the teacher has a website in which he posts some guidelines to help us. After classes, he uses to post all the files related to things that we work in the class. Then, when we are at home, we can upload and download materials. (Student 6)

> We use the computer because we are always trying to make websites and every class is a different practice. We try to make a new effect, a new way of putting some use on the site, something like that. (Student 9)

> [...] then, we go to the site to get information. I think it's cool because it's available on the internet on the site itself. So it makes the students' and teacher's lives easier because it's not so difficult to find information later. In practical classes, we set up

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4 ENEM (Exane Nacional do Ensino Médio, or High School National Examination) is the largest university selection process in Brazil.

our sites by ourselves with the teacher's help. I think it's interesting and it is also a way to prepare the student to the job market. [...] Students chat with the teacher and we usually use the chat when we have doubts. When we study at home, we send the doubt via chat and the teacher answers it. I think it's a way of interacting with the teacher outside the classroom, talking about topics related to what we study in the classroom. And we do not have to wait for the next lesson to clear a doubt. (Student 10)

Student 7 did not consider this practice as innovative, nor attractive. For him, this practice is like in the classroom. According to this student, the Teacher 10 uses the platform only as an information vehicle: sending slides and texts, information related to the course and videos. He criticized assessments because they are not practical, as well the teacher's absence concerning to give them a feedback. The other students (Student 1, Student 2, Student 3, Student 4, and Student 5) did not express themselves regarding the use of this platform.

I think that Web 2.0 classes are very superficial. They do not help us with setting up the site; we don't know how to let it dynamic and interactive. The assessments are written. They are not practical assessments using the computer. And the teacher allows us to enter in the site, where he puts the slides and the exercises. And unfortunately he is a very absent teacher, he doesn't answer our questions, he doesn't help us to solve the exercises. (Student 7)

By having access to this virtual room on the Platform Moodle, authorized by Teacher 10, we verified that what occurs in the face-to-face classroom is transported to this platform. The activities, work, and assessments carried out in the classroom are posted on this platform. This space is used as an information vehicle. On the home page, there is a welcome message. As for the spaces destined for the news and warnings, we do not observe any record.

In the virtual room blog, Web Development II, we did not observe the discussions among students/students and students/teachers. The blog presented only an informative text regarding a programming language used to generate content for the web. We note that the Moodle Platform is used to continue the logic of transmission and exposure. There are no discussions, neither in the space destined to the blog, nor in the chat. The teacher stated that because of lack of time, not all platform resources were used.

Although he has specialized in the area of Computer Science and Education and believes that digital technologies can "improve student interaction with content, offering you possibilities for improvement in learning through interactive content such as videos, quizzes, digital books, discussion forum, etc.", he stated that it is difficult to do a different work. We realized that the interactive potential of these technologies has not been used in the classroom to enhance learning. The fragmentation of school time has implications for the process of teaching-learning. There is a predominance of technical activities in relation to activities aimed at cyberculture education.

When analyzing the curricular proposals for the Web 2.0 Development discipline, we verified that they did not concern about education for the cyberculture. There is no work focused on the changes regarding the Web 2.0, but a predominance of technical

activities related to website development. We observed that there was no concern with the development of activities that integrate the technologies as learning enhancers. It did not take into account the abilities of a ubiquitous reader: multifocal attention, being able to respond simultaneously to several foci. Fava (2014) emphasizes that the teacher who only transmits knowledge will be replaced by digital technologies, as well the teacher who considers himself up to date just because he uses slides to present the content. Nowadays, as stated by Demo (2009), Sancho and Hernández (2006), the teacher's role as holder of knowledge no longer remains. Demo (ibid) also defends the need for a qualitative education aimed at the emancipation of the learner as a political being. Thus, no longer a mere spectator, but someone capable of analyzing, questioning, and reconstructing his own knowledge, as a dynamic process.

According to Sancho and Hernández (ibid., 88), "the use of new technologies has been seen as a way to strengthen a more personal style of learning in which students are actively involved in building knowledge and in seeking answers to their specific problems." The significant challenge that emerges with the advance of digital technologies, in agreement with Santaella (2013), concerns the ubiquitous learning, the new reader, the ubiquitous reader. According to Fava (2014), it is necessary for the teacher to become a strategist, someone who takes advantage of the diversity of language made possible by digital technologies for the improvement of pedagogical work; someone who understands the teaching-learning process, how digital natives learn, and how they are motivated and challenged. In this sense, a teacher is someone who understands the changes provided by technological innovations and comprehends the influences of technologies on the educational environment. Silva (2010) corroborates this idea when he affirms that there is no more space for a teacher who is stuck in the past, who does not incorporate technological innovations into his practices. He also points out that educating in cyberculture implies understanding that digital technologies inaugurate a new way of structuring learning, which involves challenges such as the need for understanding the change related to the transition from the classic media to the online press - the hypermedia, which requires interactive practices, in which students become knowledgeable co-producers. Santos (2016) points out that the release of the emission pole made possible co-authorship and the building of virtual communities of learning. As Contreras (2002) states, a critical intellectual teacher, who is an autonomous individual and capable of seeking means for his training, is as important as the provision of policies aimed at such training. It is crucial to be aware of opportunities to improve our practices.

7. Final Remarks

When analyzing the conditions in which teachers develop their pedagogical practices, we realized that, although it is a specific course in the area of computer science, i.e., a technical course focused on the internet, the teachers who work in this course have not received training aimed at the use of digital technologies. Its worth mentioning that from 2013 to 2014, tablets were given for all teachers in this institution. There was, however, no training course for the usage of these technologies. Besides the Web 2.0 teacher, who mentioned using it in his practices, we did not verify the use of tablets in the clas-

sroom. We observed that despite this institute is a technological institution that offers specific courses in the information technology area, both at the middle and higher levels, there is no concern with the teachers' qualification for the use of digital technologies. It is necessary to invest in teacher education policies in line with the demands related to the new cyberculture. There is a lag in this sense; most of the teachers surveyed have not been prepared for the incorporation of these technologies into their practices.

As for the resources available for teachers' usages, we verified that most of the time the computer laboratories have been used by teachers in the technical / computer area; other teachers rarely use them. The only classes that took place in the laboratories, during the participant observation period, were the Web 2.0 classes and Programming classes. We observed that there are a few numbers of technologies such as projectors and interactive boards available for teachers. We verified the existence of a multimedia room equipped with TV, DVD player, projector, whiteboard, and a sound system, but we did not note the use of this room.

It is crucial that the schedule is more flexible concerning space and school time. It is impossible to think about practices that involve the structuring of knowledge in networks using the same logic that we do when working on textbook-centered activities. In consonance with the theorists who support this research, it is necessary for the teachers to become well qualified so they will have enough conditions and knowledge to produce the curricular changes required for their school reality.

It is essential, according to Santos (2016) and Santaella (2013) that teachers understand and live the cyberculture in order to comprehend what are the real influences of digital technologies and their potentialities for the improvement of pedagogical practices compatible with the current youth.

Analyzing the teachers' pedagogical practices in the Technical Course in Information Technology for Internet Integrated to High school, we observed that most of these practices turn to the linear logic of knowledge transmission. This same logic has been noticed in the virtual classroom created on the Moodle Platform, the Web 2.0 Development class. According to the students' discourses and the participant observation, we verify that the teaching practices are more focused on the exhibition of contents via projectors or interactive boards. Once these technologies are not available in enough quantity for the users' demand, when teachers do not find any of these technologies, they use the textbooks and the whiteboard, following the same expository and transmissive methodologies.

Other practices including the use of software, online maps, video production, social networks, virtual classroom, cellular phones, and tablets were also evidenced. However, these are less frequent and isolated actions, that is, they are performed by a particular teacher. Regarding the use of social networks for the improvement of pedagogical practices, we noticed that the students consider these uses as something that favors a more significant interaction between students/students and teachers/students. As for the groups in these networks, formed by the teachers and students, we verified that the group in WhatsApp is more directed to the informal conversations, updated topics, some discussions involving political parties, and teachers' warning messages while the Facebook group, managed by Teacher 4, is focused on the production, dissemination, and information of school activities.

The practices developed on the Facebook group have shown a significant advance in offering more dynamic, interactive, and participative activities since these present themselves in a substantial way for the students. Such practices involve questions related to the culture lived by the students, to the languages proper of digital technologies. Considering that students are connected all the time, expanding the classroom to social networks is a way to take advantages of the potential of technologies to ensure that students learn through the connection between formal education and ubiquitous learning. Based on the students' and the Teacher 4's discourses, as well on the participant observation, we verified that the activities on Facebook group arouse the students' interests and contribute to the learning mediated by digital technologies. This diversity of training spaces is what Santos (2004) denominates by multi-referential spaces, which can contribute to the creation of new knowledge networks. Using social networks and incorporating their diversity of languages equals to take advantage of digital technologies for a differentiated work that gives students not only access to new knowledge, but also the possibility of making them constructors, co-authors of their learning.

It is crucial that educational institutions invest in the production of culture and knowledge and not in the transmission and accumulation of information. It is remarkable the need for a restructuring in the way digital technologies have been inserted in the teachers' pedagogical practices who work at the Federal Institute of Northern Minas Gerais - Januaria Campus.

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