Artigo Original

Didactic Continuum: the School in Digital Culture

Didática do Continuum: a Escola na Cultura Digital

Didáctica del Continuum: la Escuela en la Cultura Digital

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Abstract

With new technological advances in the area of Communication and Information, the knowledge gains mobility and continuous access. The dialogue between teacher and student takes another dimension, which extrapolates classroom's time and space. In this context, the didactic instrument of communication and dialogue, which transmits the knowledge, receives influence from the means of communication and information, especially regard to Digital Technologies of Information and Communication (DTIC). As it is technical and mediation, the didactic have been pressed for a new composition that can favor the interaction between knowledge, the student and the teacher, who live in the digital world today. In order to understand and point out ways for a new didactic, there is a need to examine the mediation activity of the teacher. Thus, as theoretical support for this article, the Theory of Activity is indicated, as well as the studies of Comenius, Peters, Daniels, Vygostsky and Floridi's "The onlife Manifesto", which collaborate to answer this present research. The methodology used was bibliographic, from books, articles and material made available on the internet, from

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a reliable source. Also, the inquiry interview was used as an instrument. Teachers of different levels were heard in order to raise the possibilities of using the didactic tools pointed out by this theoretical research for the use of DTIC in the classroom. Although a small sample of teachers has been heard, it is concluded that the results obtained and offered by the theoretical study, Didactic of the Continuum, can bring to the didactic innovative tools required for the dialogue between teacher, student and knowledge in the hyperconnected age, there being a need for the research to be put into practice with a greater number of teachers.

Keywords: Didactics. Education. Digital Culture. DICT.

Resumo

Com os avanços tecnológicos da área da Comunicação e Informação, o saber ganha mobilidade e acesso contínuo. O diálogo entre professor e aluno passa a ter outra dimensão, que extrapola o tempo e o espaço de sala de aula. Nesse contexto, a didática, por ser o instrumento de comunicação e diálogo, transmissora do saber, recebe influência dos meios de comunicação e informação, especialmente no que diz respeito às Tecnologias Digitais de Informação e Comunicação (TDICs). Por sua mediação e técnica, a didática vem sendo pressionada a uma nova composição, que possa favorecer a interação entre o saber, o aluno e o professor, que vivem, hoje, no mundo digital. Para entender e apontar caminhos para uma nova didática, surge a necessidade de examinar a atividade de mediação do professor. Assim, consta como sustentação teórica deste artigo, a Teoria da Atividade, bem como os estudos de Comenius, Peters, Daniels, Vygostsky e o "The onlife Manifesto", de Floridi, que colaboram para responder aos anseios desta pesquisa. A metodologia utilizada foi a bibliográfica, a partir de livros, artigos e material disponibilizado na internet, de fonte confiável. Também se utilizou da entrevista de averiguação como instrumento. Foram ouvidos professores de diversos níveis, a fim de levantar as possibilidades do uso das ferramentas didáticas apontadas por esta pesquisa teórica para o uso das TDICs em sala de aula. Apesar de uma pequena amostragem de professores ter sido ouvida, chega-se a concluir que os resultados obtidos e oferecidos pelo estudo teórico, a Didática do Continuum, podem

trazer à didática, na era hiperconectada, ferramentas inovadoras requeridas para o diálogo entre professor, aluno e saber, havendo necessidade de que a pesquisa seja colocada em prática com um maior número de professores.

Palavras-chave: Didática. Educação. Cultura Digital. TDIC.

Resumen

Con los nuevos avances tecnológicos en el área de Comunicación e Información, el conocimiento gana movilidad y acceso continuo. El diálogo entre profesor y alumno tiene otra dimensión que va más allá del tiempo y el espacio del aula. En este contexto, la didáctica, al ser el instrumento de comunicación y diálogo que transmite conocimiento, recibe influencia de los medios y la información, especialmente con respecto a las influencias causadas por las Tecnologías Digitales de Información y Comunicación (TDIC). Al ser técnica y de mediación, la didáctica ha sido presionada a una nueva composición que puede favorecer la interacción entre el conocimiento, el alumno y el profesor, ya que este profesional está a punto de incluir medios de comunicación adecuados al contexto del mundo digital relativo a la vida diaria del alumno. El soporte teórico de este artículo indica la Teoría de la Actividad para examinar la didáctica como una actividad de mediación docente, así como los estudios de Comenius, Peters, Daniels, Vygostsky y Floridi "El manifiesto de la vida", que contribuyen a la construcción del pensamiento expuesto. La metodología utilizada fue bibliográfica, de libros, artículos y material disponible en Internet, de una fuente confiable. Además, la entrevista se utilizó como herramienta. Se escucharon docentes de varios niveles para aumentar las posibilidades de utilizar las herramientas didácticas indicadas por esta investigación teórica para el uso de las TIC en el aula. Los resultados muestran que las indicaciones ofrecidas por el estudio teórico y didáctico continuo pueden aportar a las herramientas didácticas innovadoras necesarias para el diálogo entre profesor, alumno y conocimiento en la era hiperconectada.

Palabras clave: Didáctica. Educación. Cultura Digital. TDIC.

1. Introdução

This article[3], and its relationship with digital culture, aims to point out didactic resources that, theoretically, support and prepare the teacher for the use of Digital Information and Communication Technologies (DICTs) in the classroom.

In the current context, the subject and society are immersed in the use of DICTs. Information and knowledge can be accessed by anyone, at any time and space. Knowledge, previously coming from few sources, is now composed in plurality, influencing the subject's cognition, which opens up to the new sea of information. With this, the subject and society are transformed, and a new way of learning and teaching, more dynamic, more collective and more accessible, is evidenced.

The educational institution is part of the social structure through which the subject goes, while the didactics are technical and mediation between teacher, student, knowledge and context. Today, the school and didactics are challenged to incorporate the DICTs brought from the student's daily routine into the school routine, harmonizing life at school with life outside the school environment.

The construction and the didactic relationship are complex because they try to establish themselves in the connection between two subjects who forge their knowledge distinctly from culture and ways of seeing the world, influenced by the individual experiences of their context and time. This makes the didactic composition a mediating and visionary structure, which looks at the present and tries to see the future, anticipating changes and possible problems arising from these changes. Among the changes, the mode of access and the mobility of information and knowledge, provided by DICTs, stand out as necessary subsidies for the construction of knowledge. Therefore, it is ideal that, when building a didactic, its relationships can be examined. In this sense, the didactic used is questioned and an attempt is made to envision a didactic that can start a new path for the articulation between didactics, DICT and digital culture.

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[3] This article is from the doctoral thesis.

The article in question presents the qualitative approach, since it is intended to find plausible and well-founded versions based on theoretical material that helps to understand the researched reality. As for technical data collection procedures, bibliographic research was used, elaborated from books, periodical articles and material available on the internet, from a reliable source, which point out important definitions of the concepts used, such as didactics, mediation and DICT, generating the understanding of other concepts, such as education, communication, information, knowledge, student, teacher, context and culture. We sought to epistemologically understand the main object of the research, didactics, building knowledge, understanding its nature, limitations and the problems related to the problem pointed out. The field research was concerned with understanding the teacher and the use of mobile technologies and, in addition, the possibility of using a didactic framework related to DICTs in the classroom was investigated.

In order to understand the phenomenon, several authors were researched. The concept of didactics was anchored in Comenius (2001), to speak of Didactic Magna, and in Peters (2006), to understand the Didactics of Distance Education. The concept of mediation and developmental didactics was based on Activity Theory, with the vision of Vygotsky (1998), Engeström (1999) and Daniels (2003). For the concept of DICT and its applicability, the studies by Marinho (2004, 2007, 2014), McLuhan (1969), Robertson (1992 and 2000) and Floridi (2015) clarify the effect of digital culture in relation to education and, consequently , the innovation of the concepts that are supported by it.

From this theoretical framework and the observation of the phenomenon, a didactic framework is constructed, in line with digital culture, contemplating the four views pointed out by Floridi (2015) in the search for the answer to the concerns of teachers, education and society.

It is hoped that the contributions of this research can bring benefits to the area of education, providing answers and paths to the challenges imposed by technology, proposing to expand the theoretical and practical formulations that affect the teacher's didactics.

2. Theoretical framework

In order to develop a theoretical framework consistent with the proposed research object and the phenomenon being analyzed, we sought to support theories that allow broadening the understanding of the educational reality, shedding light on the researched problem.

The concept of didactics used for this study requires an understanding of Activity Theory and also of mediation, according to Vygotsky (1998), Daniels (2003) and Engeström (1999). In this sense, it is understood that the didactics are organized based on tools and instruments, being built from the teacher's world view towards the understanding of the student's world and performed within a school space whose environment is of scientific dissemination, which influences student learning and global knowledge.

The investigation of the didactics proposed by this study has, in its reference, two consistent studies, that of Didactic Magna, by Comenius (2001), and that of Didactics at Distance Teaching, by Peters (2006), bringing, still, the vision other researchers, such as Brousseau (1986, 1998), Chevallard (1991) and Morin (2007).

Comenius '(2001) contributions brought didactic understandings related to modern education and the school structure and offered resources and rules that influence the teacher and the school that are part of the teachers' practice and automatic operations, which, according to Daniels (2003), in a way, they restrict innovative didactic movements.

The need for new technological instruments popularized in everyday life signals the path that education tries to take, adopting the opening to the new object of understanding of man and his relationship with knowledge, evidenced by Comenius (2001).

Comenius (2001) is a visionary who sees typography, the technology of the time, and the textbook, a product of typography, as a means of bringing teaching to as many people as possible. It mattered to him that society was formed guaranteeing the well-being of many. This view bets that the teacher should be offered the condition to multiply his didactic action and enhance his teaching with the use of technology.

In the view of Comenius (2001), innovating the classroom and the concept of teaching stimulates looks so that, today, one can see DICTs as innovative tools of a didactic that influences the subject and the social and economic contexts, organizing the school postmodern.

The same innovative process presented by Comenius (2001) is seen in Peters (2006), which indicates an opening for teaching and learning after Information and Communication Technologies. Education takes place in the perspective of globalization, influenced by the glocal (ROBERTSON, 2000) and the global village (MCLUHAN, 1964), innovating the way of thinking about the limits of time and space for education.

Peters (2006) emphasizes dialogue as essential for education: didactic dialogue, pedagogically structured technological study and autonomous study. It is noticed that the didactic construction of Peters (2006) suggests, to Distance Education (DE), the proximity between teacher and student in the perspective of Moore's transactional distance (1993), in which individuals and behaviors come together, softening the distance present in distance education.

The EaD challenge led Peters (2006) to bet on dialogue as a basic condition for this type of study, because without dialogue, criticism, argumentation, judgment and self-criticism cannot be made. These actions are necessary for the development of autonomy and of the essential capacities and skills for any subject, and cannot be apprehended by receptive learning, since reflection is not required from the student's intellect, therefore, there is loss of autonomy.

Like Peters (2006), Morin (2007), with his Theory of Complexity, proposes that students' capacities and aptitudes be stimulated in order to create complex thinking, which is also ensured within the didactics that are based on meaningful learning[4] and dialogical education. These researchers point out that these theories, when used by the teacher, elevate the student's thinking, since they demand from him the complexity

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[4] Term developed by Ausubel (1982) that refers to the construction of meanings made by significant anchors related to the learning subject.

that occurred in synapses and interconnections, resulting in an autonomous subject aware of his learning process.

To demonstrate the differences between simple thinking, which is evidenced in receptive education, and complex thinking, which is stimulated by dialogical education, imperative to the hyperconnected world, Chart 1 was constructed, which specifies the difference between these two types of thinking.

Chart 1 - Simple versus complex thinking

Simple thinking	Complex thinking
Linear	Not linear
Certainty	Uncertainty
Disciplinary	Transdisciplinary
Homogeneous	Heterogeneous
Ready and finished	In permanent composition
Mechanic	Always re-elaborated
Positivist	No established standard

Source: Prepared by the authors based on studies by Morin (2007).

These references to complex thinking are in line with the concepts developed by Comenius (2001), Peters (2006) and Daniels (2003), which are also used by Floridi (2015), to innovate the instruments and techniques used so far for education that will collaborate to rethink education by proposing a contemporary and hyperconnected teaching. Because

> this (re) thinking will articulate to a necessary reframing of what it would be like to teach and learn in a 21st century school. This should be incorporated in the revision of political-pedagogical projects, necessary to make the contemporary school of the current society (MARINHO, 2009, p. 19).

In "*The Manifest Onlife*", Floridi (2015) clarifies that society and culture have been affected by new mobile and digital technologies. According to the way in which we relate to them, ethical and philosophical issues emerge that interfere in education, shifting our gaze towards the collective and the renewed relationship between man, machine and technology.

For Floridi (2015), the *onlife*[5] life and the use of DICTs in the classroom, if they are not part of teaching and learning in the present, they will certainly integrate the future of classrooms and didactics.

Floridi's (2015) four visions: 1) the tenuous border between real and virtual; 2) the blurring of the boundaries between man, machine and nature; 3) the scarcity of information for the superabundance of this and 4) the valorization of the interaction to the detriment of the subject who interacts resulted in the new didactic framework proposed by this article: the path that we are reflexively trying to find, pointing out innovative teaching tools and techniques that collaborated with the digital moment lived by humanity and the school.

It is clarified that the sense of innovation proposed here arises as a result of a transformative process, with a valuing character and that, in a way, breaks the conventional structures previously placed in an object or in a concept, giving rise to new looks and uses that contribute positively for human development.

Floridi (2015), from studies and research, comes to the conclusion that the "limit between real and virtual" becomes tenuous, requiring students to develop intellectually to determine ways to conduct themselves in the wide space of the network. Therefore, it is also up to the teacher to propose tools and techniques that raise the student's level of autonomy and criticism.

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[5] Term taken from Floridi (2015) to explain the use of mobile technologies in everyday life and in the here and now. In a way, the term alters online and offline, interpreting that we are no longer on or offline, but that we are in life, that is, onlife, surpassing the previous discussion of methodologies that divide time into online and offline.

According to what was seen and taking as an example the contemporary teacher, he uses digital technological resources to stimulate the intellectual maturity of the student; makes use of various media that penetrate the student's senses and also presents the views of several authors, offering the student a diversity of opinions, necessary for the construction of criticism and meaningful learning[6], because, in the connected world, the fading of the "limits" between man, machine and nature" (FLORIDI, 2015) causes the intellectual loss that is deposited in artificial memory mechanisms, making the learning built in "ubiquitous time"[7] (DOURADO, 2015).

The loss of intellectual identity to the detriment of the identity of the global whole is an increasingly evident process, in which the construction of knowledge ceases to have names and authors to simply be present in the information network, gradually deconstructing the value current scientific. According to Peters (2006), according to Floridi (2015), student interaction and the new way of collaboratively building group content should be one of the hallmarks of groups such as communities of practice.

In addition, with the evolution of Science and Technology and the phenomenon of DICTs, concepts have changed, giving them other meanings and innovating the way of seeing teaching, learning, communication, knowledge, the teacher, the student, time, space, school and education.

In this sense, communication, information and, consequently, education become without physical and temporal boundaries. The limits of the classroom are broken, establishing a continuous dialogue between teacher, student and knowledge. Teaching and learning become uninterrupted, so the entire universe is a space and a place for teaching and learning. In this context, the teacher's didactics are altered and deserve to be contemplated in order to build a current and desirable dialogue with knowledge and with the student, as Marinho quotes (2009, p. 27).

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[6] Term developed by Ausubel (1982) that refers to the construction of meanings made by significant anchors related to the learning subject.

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[7] Neologism created by Canevacci (2015), apud Dourado (2015), to define "the decentralized and non--linear experiences of space-time" that derive from contemporary digital communication.

"There would be a lack, then, of a desirable approach to innovative pedagogical practices, including those that incorporate technologies, necessary for teachers to update their way of doing school in the 21st century.".

Didactics, being technical, require instruments and processes, as well as need to accompany technical and scientific developments. Thus, whenever a technical or technological instrument appears, didactics are seen, or should be seen, impelled to its use in order to benefit as a tool in the teaching and learning process.

Based on Floridi's (2015) four visions for the hyperconnected world, the following are identified the didactic instruments and techniques related to the Continuum Didactic framework that can contribute to the use of TDICs in the classroom.

3. New didactic framework - Didactic of the Continuum

The connection between knowledge, teacher and student, based on TDICs, is established in continuous dialogue, in which time and space become relative, breaking down concepts such as place and presence used in the education of the so-called traditional school. The breaking of these concepts, which structured education within a linear logic, brought about a change in the educational world, which was revised under the new scientific paradigms and the "emerging educational" (MORAES, 2010).

The relationship between student, teacher and knowledge, mediated by didactics, which uses TDICs as a tool, must be recognized in collaborative approaches; in the use of multimedia resources; in education with an open system; greater student control, to direct their knowledge; in communities of practice; in learning in any space, at any time, with any size; in the new forms of assessment and in mixed learning, a new didactic dialogic potential that emerges innovating the teacher's practice.

Floridi (2015) suggests that the scope of digital culture, given its influence, becomes an "autonomous force", indicating its transformative potential that moves away from man's will and, thus, suggests that digital culture is a living organism , as the knowledge seen by Daniels (2003) in Activity Theory.

Didactics are established in the connection of teacher, student and knowledge, with the understanding that knowledge acts as a living organism. As knowledge is an element of the didactic triad, how should the other elements behave, which will possibly be dialectically modified by him?

Changes in knowledge and context redesign the Vygotskyan triangle of Activity Theory, causing an impact on the teacher's activity, new situations, with potentials that destabilize their practice, since knowledge and context no longer behave as before, but point out for the new paradigm that changes concepts until recently, putting the era of hyperconnectivity under discussion.

3.1. First technique and instrument of Didactic of Continuum

The framework of Didactics of Continuum makes use of Floridi's first view (2015) regarding the hyperconnected or digital era, in which "the border between real and virtual is blurred with ICTs" (FLORIDI, 2015), the look is directed with the purpose of building a didactic understanding and an instrument to soften the tenuous border between the real and the virtual that is presented today.

The digital and hyperconnected world approaches the limits of reality and virtuality. However, the lives represented in social networks often do not correspond to the reality of the subjects. You allow yourself to dream, but you forget to live. One acts as if what is built in the clouds is more important than what is built in everyday life. The hyperconnected generation that enters the school has no time to waste. Life always seems to be in the future, in the absence, in the distant time that one tries to reach while the present is lost.

In the classroom, these subjects feel apathy in dealing with school knowledge and the lack of limits when living in the real world. How to deal with these difficulties? How to limit the subject hyperconnected to the virtual and disconnected from reality?

Brousseau (1982) and Peters (2006) suggest a "contract", which presents itself as an important instrument in the relationship between student, teacher and knowledge in digital culture. When dealing with DICTs, the teacher needs to establish a dialogue that is a point of construction of autonomy and, at the same time, of the student's responsibility. The didactic contract must be constituted with a focus on the use of DICTs, aimed at student learning, containing a set of obligations that involve the teacher, the student and the knowledge that regulates teaching and learning situations, therefore, being an essential instrument for develop the mature relationship of trust between the subjects, potentials necessary for the student's development.

In this way, the didactic contract is established as the first tool of Didactics of Continuum, built with the cooperation of the class, in a democratic way, and innovating this tool for the use of DICTs in the classroom, for teaching and learning.

3.2. Second technique and instrument of Didactic of Continuum

Floridi's second view (2015) concerns the dilution of the boundaries between man, machine and nature in the digital age. In order to understand it and bring it closer to education, we seek understanding in artificial intelligence, that is, in the substitute machines of man, in the man-machine fusion, which has always been part of the human imagination. Today, artificial intelligence carries the external memory of human beings: mobile digital devices carry relevant data that are part of the human being's identity, such as the number of bank accounts, contacts and confidential conversations.

The software presents itself as a manager of the software itself, confirming "the radical evolution of DICTs, which are no longer tools

manipulated by human will to become autonomous forces" (FLORIDI, 2015).

In addition to artificial memory, cognitive computing enables the processing of information based on learning, using the user's previous experiences collected by the machine and informing the positive and negative points of learning. Thus, the machine sees itself as more human, and man, more technological.

Today, there is this resource in several learning platforms that provide constant feedback for the evaluation of both the student and the teacher. Socio-cultural and activity theories, by Tharp (1993, p. 272) and Daniels (2006, p. 153), advocate the use of feedback as a knowledge acquisition process, offering information on the performance of the teacher and the student.

Thus, the feedback is pointed out as a procedural evaluative form of Didactics of the Continuum, as it allows comparing what was learned with what was established, as a standard to be achieved by the student, thus enabling the correction and self-correction, both of strategies of the teacher, to reach the proposed objective, and of the student, when perceiving cognitively towards their learning.

Feedback can also be used outside the virtual learning environment in the classroom. When using the mobile digital device, the traces of learning are recorded, guaranteeing the identification of the deviation. Thus, the specific action to remodel the strategies is revealed to the teacher and the student, in order to achieve the proposed objective. The teacher, through instruction, assists the student in the search for a new path.

3.3. Third technique and instrument of Didactic of Continuum

Floridi's third view (2015), "the amount of information available has changed from scarcity to overabundance", requires thinking about knowledge and teaching in times of digital connection.

A few years ago, information was obtained from a few sources and media. The school was the place of greatest acquisition of information and knowledge. Television and radio delivered little regulated and biased information. Today, with the internet and continuous access from TDICs, information has gone beyond its transmission, going from scarcity to abundance.

This fact, which could be interesting for obtaining knowledge and information on different subjects, becomes a problem for the student, for the teacher and for the acquisition of knowledge, since the information demand has become so exaggerated that it is easy to get lost in plenty of news and knowledge available when searching for information.

The Akamai company reports, in a survey on worldwide internet activity, that in Brazil, every 60 seconds, 2.4 Mbps (megabit per second) are made available on the network, which is equivalent to 1,000 kilobits per second or 1,000,000 bits per second for each unit.

Often, the knowledge found on the internet is in a raw form or has its veracity compromised, which causes students to obtain wrong information. In turn, teachers, in the search for information in a network with the purpose of using the technological context to involve the student, end up confusing him, because the language of the internet needs adaptation.

The planned didactic action can reduce this problem, creating a didactic transposition, which, according to Chevallard (1991), means transforming wise knowledge into known knowledge, that is, it consists of transforming scientific or raw knowledge into knowledge learned from contextualization, organization and decomposition of knowledge in a degree of difficulty. The didactic transposition of knowledge must be taken by the teacher as an object of work. The current world, which includes the internet and digital technologies, impacts the teacher's activity, modifying it and establishing new ways and new tools for didactic use. Innovation takes place in the sense of taking what we already had and using it in line with current needs.

3.4. Fourth Continuum Didactic Technique and Instrument

Floridi's fourth view (2015), "from the primacy of the subject, to the primacy of interaction", demands looking at the subject who makes use of TDICs and information and communication networks, in which the construction of knowledge takes place in "Expansive interconnections"[8], with primacy in communication, interaction and in different relationships.

This view requires analyzing the student and his collective interactions, focusing more on communication and dialogues in the communities to which he belongs than on the student himself.

After the use of DICTs, the teacher-student relationship, which was built on specific classroom communication, starts to extrapolate the educational place and time. Constant dialogues and interaction are essential in this context, therefore, the teacher must offer a didactic elaborated with strategies for that to happen.

There are two antagonistic points in the interaction beyond space and professional time that should be highlighted. The negative point is seen in the invasion of professional life through personal life, and the didactic contract can be an important means to restrict, organize and control this invasion. The positive point is seen in the possible approximation between teacher and student and in the teacher-teacher relationship, which offers an opportunity for the emotional bond in favor of teaching and meaningful learning.

Looking at the teacher's professional construction, the "primacy of interaction" seems to gain new outlines, coming from Libâneo (2005), recognizing that "the school is the group of professionals who are in it" (LIBÂNEO, 2015). This group sees itself with the mobility allowed by TDICs, in new interactions that blur the boundaries between on and offline and change the behavior of teachers, who admit networks as a

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[8] Term created from studies of Activity Theory and, mainly, from the five points of its manifesto and developmental didactics, in which each subject (community, rules, division of labor), mediated by artifacts, creates conflicts and dialogical connections that generate knowledge objects and give a new meaning to the object and its meaning. Today, as dialogical connections are made by the thousands per second, it is predictable that they are expansive and endless dialogical connections (2019).

place of knowledge, instituting new ways of learning and teaching, experienced within communities of practice.

Within these communities, learning and teaching are mixed in the exchange of information, in interaction, in the new knowledge that occurs in a shared and dynamic way. The roles of community members are leveled, breaking the notion of a hierarchy of learning in an open system of mutual and global interaction. The members of the community of practice provide reflection of knowledge from their places, which are multiplied in the vision that each member offers in the face of local knowledge, referring to the concept of "glocal" (ROBERTSON, 1992 and 2000), a local dimension in the production of a culture.

The Didactics of Continuum reflects on this innovation and suggests its fourth tool, the community of practice, as an exercise of continuous teacher education, whose collaboration mechanism provides the formation and construction of knowledge of the practical activity of the teacher, who, in the dialectic with peers, seeks current and contextualized knowledge.

In this way, the continuing education of the teacher is redesigned, as the new didactic practice, which is defined with the incorporation of TDICs as a tool for dialogue between students and teachers immersed in digital culture, calls for a fundamental transformation in the constitution of this professional. Thus, there are four teaching tools used in an innovative way that will assist the teacher in the use of TDICs in the classroom: 1) didactic contract; 2) feedback; 3) didactic transposition; 4) community of practice.

4. Inquiry interview

In order to ascertain instruments and tools identified for Didactics of Continuum in the use of TDICs, an interview was made with 12 teachers, raising the possibility of using these didactic resources in the classroom. For the purpose of the interviewees' research, the search for subject teachers who acted in the so-called face-to-face education was the first step, since the reality of distance education is quite different

and already has the natural component of DICTs, therefore, distance education teachers new arguments for the analysis of the new didactic model proposed by the thesis cited in this article.

The interview was conducted with teachers from elementary, high school and higher education and started with questions about the reality of the teacher to arrive at a future scenario, in which the Didactic of Continuum proposal is found. In this interview, we sought to understand the pedagogical practices adopted by the teacher daily and how he sees the presence of mobile devices at school and the possibility of using the four tools of Didactics of Continuum.

The conclusion was that 100% of respondents needed instructions, tools and instruments to deal with DICTs in the classroom, according to the response of an interviewed teacher:

On the question "do you see yourself prepared for the adoption of a [new] didactic in this new reality? [If the answer is "No", how do you think the training should take place?]. Such a teacher manifested himself: "I don't feel ready. I think all of this is very cool, I would like to be prepared because I realize the potential that mobile technologies are. But unpreparedness immobilizes me, I don't know where to look for it. I see, in your work, an answer to our didactic anxieties; in a way, you are already trying to respond to our difficulties. This is already a purpose for his work, he becomes socially valuable for that purpose".

5. Conclusion

Today, science and technology influence the speed with which innovations emerge, which cause a gap between discoveries and their use, which sometimes leaves the school drifting away from their enjoyment, so it is necessary to establish connections that can assist the school in this process.

The educational universe does not exist apart from life, as all things connect and change based on the connections between world and school. In the hyperconnected world, teaching, learning, communication, knowledge, information, the teacher, the student, time, space and the

school create and recreate concepts that become innovative to previous meanings; they influence and collaborate to change the educational reality and, consequently, didactics.

This change propagates in continuous communication, in individualized, autonomous and collaborative learning, in the right to that autonomy, in access to real information, in the networked internet and in big data, stimulating the teacher to reformulate his practice, now revised under new contexts and new influences.

Originating in hyperconnected generations, digital culture imposes itself at school and in the classroom. Thus, in the educational space, a new configuration of society and science is imperative to promote the interaction between teacher, student and knowledge.

In order for a new didactic language to happen, in fact, so that the framework of Didactics of Continuum can be the link between school and world, there is a need for school and teacher to prepare themselves, admitting the new practices suggested by this thesis, which will incorporate the DICTs and the everyday tools of hyperconnected subjects, who, despite being influenced by the power of the internet and the network, still need the school and the teacher to develop intellectually and emotionally.

The theory developed by this research brought important didactic instruments and tools, which, being innovated by didactics in the digital age, have the potential to help teachers in their search for contemporary didactics.

The research carried out with professors working in face-to-face classrooms, even with a small sample, indicates that Didactic of Continuum can be applied. This was a real fear, because, although the theory was validated in the graduate program, it needed the endorsement of the classroom teacher.

Research has shown that the teacher wants a new didactic path and that he feels lost in the sea of information about life that is continuous, in which online and offline merge, as proposed by Floridi (2015) in onlife. There is a need for a larger sample, which has been done, initially,

with some teachers from the State of Roraima and with the intention of doing the same research with teachers from the State of Minas Gerais and, perhaps, from all over Brazil.

The new role of the teacher who understands the fractional view of time and space, but requires didactic interaction in a continuous process, still calls for the same principles and the old conscious teaching exercise of teaching and educating, understanding the current context of the student and society digital culture. The role of the teacher, therefore, will be to understand, each day, his profession, as well as to recognize himself as a student of this new mechanism of teaching on the net, researching new teaching resources, creating communities of practice where he can interact with other professionals and venture out on new paths.

References

AUSUBEL, D. P. **A aprendizagem significativa**: a teoria de David Ausubel. São Paulo: Moraes, 1982.

BROUSSEAU, G. Fondements et méthodes de la didactique des mathématiques. **Recherches en Didactique des Mathématiques**, Grenoble, v. 7, n. 2, 1986.

BROUSSEAU, G. La théorie des situations didactiques. Recueil de textes de Didactique des mathématiques 1970-1990 présentés par M. Cooper et N. Balacheff, Rosamund Sutherland et Virginia Waefield. **La Pensée Sauvage**, Grenoble, 1998.

CHEVALLARD, Y. **La transposición didáctica.** Del saber sábio al saber enseñado. Buenos Aires: Aique Grupo Editor S. A., 1991.

COMENIUS, Y. A. **Didática Magna.** Lisboa: Fundação Calouste Gulbenkian, 2001.

DANIELS, H. **Vygotsky e a Pedagogia**. São Paulo: Edições Loyola, 2003.

DOURADO, F. A dimensão do espaço-tempo na cultura digital. **Instituto de Estudos Avançados da Universidade de São Paulo**, São

Paulo, 27 jun. 2015. Disponível em: http://www.iea.usp.br/noticias/ica--massimo-canevacci. Acesso em: 29 out. 2020.

ENGESTRÖM, Y. Activity theory and individual and social transformation. *In*: ENGSTRÖM, Y.; MIETTINEN, R.; PUNAMÄKI, R. L. (eds.). **Perspectives on Activity Theory**. Cambridge: Cambridge Press, 1999.

FLORIDI, L. The Onlife Manifesto. *In:* FLORIDI, L. (eds.). **The Onlife Manifesto**. Springer, Cham. The Onlife Initiative, 2015.

HISTÓRICO da empresa - como a Akamai começou. **Akamai**. [2020]. Disponível em: https://www.akamai.com/br/pt/about/company-history.jsp. Acesso em: 29 out. 2020.

MACLUHAN, M. **Os meios de comunicação com extensões do homem**. São Paulo: Cultrix, 1964.

MARINHO, S. P. P. *et al*. App Currículo, escola e mobilidade. *In:* 3º CONGRESSO BRASILEIRO DE INFORMÁTICA NA EDUCAÇÃO (CBIE), 2014, Dourados. **Anais eletrônicos** [...], Workshops (WCBIE 2014), 2014. Disponível em: https://br-ie.org/pub/index.php/wcbie/article/view/3234/2795. Acesso em: 25 out. 2020.

MARINHO, S. P. P. *et al*. Oportunidades e possibilidades para a inserção de interfaces da web 2.0 no currículo da escola em tempos de convergências de mídia. **Revista E-Curriculum**, São Paulo, v. 4, n. 2, jun. 2009.

MARINHO, S. P. P.; LOBATO, W. **Tecnologias digitais na educação:** desafios para a pesquisa na pós-graduação em educação. Belo Horizonte, Pontifícia Universidade Católica de Minas Gerais, Programa de Pós-graduação em Educação. Relatório técnico de pesquisa, 2004.

MORAES, M. C. **O paradigma educacional emergente**. Campinas, Papirus: 2010.

MORIN, E. **Introdução ao pensamento complexo**. 3. ed. Porto Alegre: Sulina, 2007.

PETERS, O. **Didática do Ensino a Distância**. São Leopoldo: Unisinos, 2006.

ROBERTSON, R. **Globalization**. Social Theory and Global Culture. Teoria sociale e cultura globale. Trieste: Asterios, 1992.

ROBERTSON, R. Glocalización: tiempo-espacio y homogeneidad-heterogeneidad. **Zona Abierta,** España, n. 92-93, p. 213-242, 2000.

VYGOTSKY, L. S. **A formação social da mente.** São Paulo: Martins Fontes, 1984.

VYGOTSKY, L. S. Aprendizagem e desenvolvimento intelectual na idade escolar. *In.*: VYGOTSKY, L. S.; LURIA, A. R.; LEONTIEV, A. N. **Linguagem, desenvolvimento e aprendizagem.** 5. ed. São Paulo: Ed. Ícone, 1988.

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