EDUR • Educação em Revista. 2018; 34:e180600
DOI: http://dx.doi.org/10.1590/0102-4698180600

ARTIGO

PROFESSIONAL TECHNICAL EDUCATION AT A DISTANCE: TEACHING MEDIATION AND FORMATION POSSIBILITIES

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ABSTRACT: This article presents a reflection on teacher mediation within technical courses at a distance and its relation to quality formation. Based on the Historical-Cultural Theory (VYGOTSKY, 1931, 2007; DAVYDOV, 1988), using the pedagogical-didactic concept of mediation and the instrumental mediation of Lenoir (2014), a case study of three technical distance courses was made from within the federal network. It was observed that the working conditions presented could not support another form of teacher mediation, only instrumental mediation, since it requires minimal pedagogical, infrastructural and human resources. The difficulty most cited by the students was the absence of didactic mediation by a teacher who mastered the content. Core activities of teacher mediation such as dealing with content doubts and task orientation are relegated to tutors from diverse areas. It was concluded that teacher mediation and the pedagogical structure of the courses analyzed do not support integral formation, pointing more for the need to adapt Brazilian policies to those recommended internationally.
Keywords: Professional technical education. Mediation. Distance education.

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EDUCAÇÃO PROFISSIONAL TÉCNICA A DISTÂNCIA: A MEDIAÇÃO DOCENTE E AS POSSIBILIDADES DE FORMAÇÃO

RESUMO: Este artigo traz reflexões sobre a mediação docente em cursos técnicos a distância e suas relações com a formação do egresso. Fundamentados na Teoria Histórico-Cultural (VYGOTSKY, 1931, 2007; DAVYDOV, 1988) e nos conceitos de mediação pedagógico-didática e mediação instrumental de Lenoir (2014), foi feito estudo de caso com três cursos técnicos a distância da rede federal. Foi observado que as condições de trabalho apresentadas não poderiam sustentar outra forma de mediação docente senão a instrumental, pois são mínimas em recursos pedagógicos, infraestruturais e humanos. A dificuldade mais citada pelos alunos foi a ausência de mediação didática por um professor que dominasse o conteúdo. Atividades centrais da mediação docente como dúvidas de conteúdo e orientação em tarefas ficam relegadas a tutores de áreas diversas. Concluiu-se que a mediação docente e a estrutura pedagógica dos cursos analisados não sustentam formação integral, apontando mais para interesse em adequar políticas brasileiras às recomendações internacionais.
Palavras-chave: Educação Profissional Técnica. Mediação. Educação a distância.

INTRODUCTION

Since 2002, Technical Vocational Education, has received special attention from Brazil´s leaders due to the established relations between education and work for the country's development. Policies for the expansion of Vocational Education have been revised and several programs have been created with the intention of increasing the offerings of education at this level and stimulating the low-income and vulnerable population to improve their professional qualification. As an example, we mention the technical education programs for youth and adults out of regular age of study (PROEJA), *Mulheres Mil (specific for women in vulnerable situation)* and *e-Tec Brazil Network (Rede e-Tec Brasil)*. All these programs stem from that decade and aimed at improving professional qualifications, providing basic conditions of employability to people in vulnerable situation, increasing productivity and, indirectly, collaborating with social control.

Among these initiatives, the e-Tec Brazil Network Program, still in force up to the present date, stands out for the purpose of this article. This Program regulates a set of actions that must be developed at a distance, namely: professional technical courses, language, short technical courses, etc.

Starting in 2007 under the name of the Open Technical School of Brazil, the e-Tec Brazil Network Program (*Rede e-Tec Brasil*) was widely

stimulated, not only for the above mentioned needs, but also for the need to serve peripheral regions of the country lacking professional training.

In the period 2008 to 2011, distance technical courses accounted for 6% of the distance courses on offer in Brazil. After 2011, this grew by 2,5% per year, on average, representing 11% of distance education in Brazil (ABED, 2016). The key change that occurred in 2011, accelerating the Program's growth was the aggregation of the private network, of System S and other types of associations, in the regulation authorizing such organizations in order to receive public money for the funding of distance learning courses. In that year, the Open Technical School of Brazil program changed its name to *Rede e-Tec Brasil*.

We understand that both the private network and System S provide different educational objectives from the technical vocational education offered within the Federal network. The latter, with the transformation of most schools into federal institutes, reinforced the commitment to integration and integrated formation in the sense of articulating the exercise of citizenship and work and the training of critical and creative citizens (BRAZIL, 2010a, 2012). Therefore, the first contradiction to appear is: how can institutions of different natures (public and privately funded) operate under the same orientations?

Subsequently, from direct experience with the implementation of the e-Tec Brazil Network Program at our Institute, it was possible to observe that the pedagogical work conditions were not in place in accordance with the institution's regulations. Regarding this, some research carried out into undergraduation at a distance (PIMENTA and LOPES, 2014; TONETTI, 2013) show inferior conditions in both the labor and pedagogical spheres. Pimenta and Lopes (2014), even emphasize that the alleged democratizing goals associated with distance education are not feasible from the outset due to such conditions.

Also noteworthy is the new attitude of the government of Michel Temer (2016-2017), moving for an extension to distance education processes in regular High Schools, and the implementation of educational reforms which have been proposed for the vocational training axis. It is understood that it is necessary we evaluate the experiences already developed in distance technical courses before thinking that this methodology can solve all types of problems with educational access. The qualitative dimension still needs to be evaluated.

Within the context presented, this current work presents reflections to analyze teacher mediation and the pedagogical practices developed in distance technical courses, since they are understood as to be of extreme importance for the quality of the formation offered.

1. PROFESSIONAL TECHNICAL EDUCATION AT A DISTANCE

Professional technical education in Brazil has a history of structural duality that is strongly directed towards maintaining technical education without the pretensions of integration with scientific education or with the general development of students (FRIGOTTO, 2010; KUENZER, 2000). In spite of this, in 2010, the document *Conceptions and Guidelines for the New Federal Institutes* was approved, and affirms, in several sections, that such education should take place "with a close commitment to the integral development of the working citizen" (BRAZIL, 2010a, p. 3).

In addition, the National Curricular Guidelines for Technical Professional Education (BRASIL, 2012, p. 2) endorse the need for integral training for workers:

> I - The relationship and articulation between the formation developed in High School and preparation for the exercise of the technical professions, aiming at the integral formation of the student; [...] III - work assumed as an educational principle, having its integration with science, technology and culture as the basis of the political-pedagogical proposal and curriculum development; VI - [...] the inseparability between theory and practice in the teaching-learning process;

In spite of these prescribed objectives, several studies (KUENZER, 2000; FRIGOTTO and CIAVATTA, 2003; SHIROMA, 2013; LIBÂNEO, 2013, 2014) show that Brazilian governments adopted recommendations from international organizations, not only for professional education but for Brazilian education in general:

> Due to high investment, [...] the World Bank has recommended that priority be given to basic education by refusing to invest in specialized and cost-effective Vocational Education. [...] The bank itself concluded that the fundamental level is the one with the greatest economic return and that it is irrational to invest in a type of professional training that is expensive and prolonged. The research points to the irrationality of investment in academic and extended education for those who, according to some research findings, are a majority and are not born competent to engage in intellectual activities: often, the poor, black people, ethnic minorities, and women. For them, it would be more rational, to offer minimum standard basic education, [...], complementing it with short-term, low cost professional qualification. (World Bank, 1995apud KUENZER, 2000, p. 20).

Multilateral international organizations, such as the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Bank (WB), the Organization for Economic Co-operation and Development (OECD), etc., have moved ahead in the elaboration of diagnoses, educational projects and financing strategies, in order to adapt the national educational policies to their interests.

Considering that most of the aforementioned institutions are by nature profit generating institutions, the adoption of their recommendations appears to link education with economic development. According to this logic, it is natural to follow cost-cutting policies, with lower costs and increased effectiveness. It is about planning programs and actions in which the educational services provided attend to more people and at the same time produce more labor within a shorter time scale. The strategy is to meet the social and economic needs of a country that, in global terms, meets the international demands of developed countries who manage these multilateral organizations and who finance programs in less developed countries.

In the case of Brazil, to adhere to these international projects, its leaders reinforce support for the projects of integral formation in its society and a struggle arises because they seek to meet the goals of the financiers and their investments.

Specifically in Professional Technical Education, the focus of international policies is to meet the needs for skilled labor in the labor market coupled with the promotion of welfare actions that cooperate with the social order:

> In secondary schools especially, the focus should be on providing an educational environment that ensures the development of knowledge, skills and attitudes relevant to students' transition to the labor market and working with communities to eradicate social problems related to youth. (WORLD BANK, 1999, 58-59 - authors´ translation).

With the idea that generating profit is above any negotiation, it is strongly recommended that the pursuit of the aforementioned objectives be sustained through Digital Information and Communication Technologies (DICT). It is understood that it is possible to obtain better value for money even in educational processes. They insist on the idea that it is not worth investing in the integral education of poor people, and other such ideas that have also been widely spread, such as that of technological-information determinism as a solution to school problems. Since the 1999 document, the intention is to rebut this idea by increasing awareness that renowned universities are already doing distance education:

> A range of institutional models for offering distance learning programs has grown in traditional universities as a means of resolving access, equity and cost-benefit problems, and as a means of expanding access or filling specialized gaps in local education programs. (WORLD BANK, 1999, p. 28 – authors´ translation)

In spite of the stimulus for the development of educational processes at a distance, international recommendations don´t mention pedagogical and other needs (labor, infrastructural, etc.) required to

accomplish that, nor the socioeconomic problems that are related to the educational problems within the context of each country. Such recommendations, unilaterally, place "*distance learning*" as a solution to educational problems, regardless of the national situation.

In a quick parenthesis, attention is drawn to the use of the term "*distance learning*" instead of *"education at a distance"*. The implicit intention is to eliminate the dimension of teaching and the breadth of the word education, in order to enforce that the teacher and other sociocultural conditions are not necessary for learning, leaving only the dimension of learning that would be the responsibility of the student. Shiroma, Campos and Garcia (2005) explain how language artifices are used in the texts of multilateral organizations. The term equity, for example, is not synonymous with equality. Much used in these documents, they generally indicate that there is an intention to offer opportunities, but not equal opportunities (Id., SHIROMA, 2013). In this context, we emphasize that *"distance learning"* is not the same as *"distance education",* the latter being defined by the documents mentioned. The articulated use of the terms distance learning, equity, access problems and cost-benefit indicates the prevailing economic concern. The policies of distance education in Brazil are therefore, broadened within this context of global capitalism.

Thus, since 2007, the provision of distance technical courses through the e-Tec Brazil Network Program has been regulated. In 2011, with new regulations incorporating the e-Tec Network into PRONATEC, The National Program for Access to Technical Education and Employment (BRASIL, 2011a, 2011b), the responsibility for the provision became a joint public-private venture. Public funding and private management have legally included System S and other organizations in offering distance technical courses. Thus, the supply of technical courses has been increasing rapidly and, currently, most of it is within the private sphere (ABED, 2016).

2. THE MEDIATIONS OF INTEGRATED HUMAN DEVELOPMENT

The concept of mediation, although much discussed, is still mostly understood within a restricted view of the function of constructing a relationship between two things or persons that are separated (LENOIR, 2014). This restricted understanding comes from the realization that, once a *"bridge"* between separate things or persons is established, relationships are guaranteed. This is a simplified view of the concept of mediation.

According to dialectical logic, mediation is not restricted to the needs of conciliation or simple communication. Mediation, in the dialectical perspective, refers to relations established, or that can be, and that cause changes in the things and agents involved. In this sense, Marx (2008, p. 245 and 248) observes that all human activity is mediated and mediating of others:

> But it is not only the object produced for consumption. It determines its own character, its finish. In the first place, the object is not an object in general, but a determinate object, which has been consumed in a certain way by mediation, and again, by the production itself. [...] In distribution, society, in the form of decisive general provisions, is in charge of mediation between production and consumption; in exchange, this mediation takes place by individually determined chance.

Mediation is seen as a relationship that can be symbolically embedded in products, it can be thought of through ones relationship with knowledge, or of the actions we perform, the needs and desires created, and by many other things and human activities, because everything that is human is constructed by a socio-historical trajectory and, for this reason, it carries meaning which mediates our relations with the world, transforming it and transforming men (Id.).

In this sense, what we learn, do, watch and participate in, that is, all types of activity and its content, namely, school, professional, socio-cultural practices in general and political-economic events are mediations that produce objects and also transformations in us according to the relationships we establish in these situations.

This shows that human action and interaction in different contexts, the development of different activities and different sociocultural instruments, constitute explicit and implicit mediations, based on the different forms of use of the instruments and signs created by man. From these relationships, we understand, construct and reconstruct thoughts and actions, which influence our senses, even triggering new behaviors. By means of the social practices in which we are involved, mental representations are constructed and reformulated, for the individual and collective experiences, both material and intellectual, and mediate meanings, knowledge and social behaviors that will again exert force on the world in the forms of human action.

Human development, therefore, is procedural, not linear and not born: "[...] cultural development overlaps with the processes of growth, maturation, and the organic development of the child, forming with it a whole. It is, in fact, a unique process of socio biological training" (VYGOTSKY, 1931, p. 21). Human development is socio-historical and cultural according to Its insertion and participation in social practices. Thus, learning, of all kinds, continuously measures development.

Human development is multi-mediated according to the quality of sociocultural mediations in which the individual participates. With the expectation of a broad integral formation of people, it is understood, then, that superior development is achieved only if there is participation and engagement by the individual in socio-culturally rich activities.

Research by the Vygotsky School (VYGOTSKY, 1931; DAVYDOV, 1988; 1999; LURIA, 2008) explains that it is through socio-cultural mediations, intentionally planned and regulated for a particular purpose, that it is possible for the processes of teaching-learning to help with moral, affective, aesthetic and cognitive development. In this way, the integral development of the individual is characterized by the articulated development of intellectual, technical and attitudinal capacities.

Vygotsky (1931, p. 19) explains that "[...] culture gives rise to specific forms of conduct, modifies the activity of psychic functions, builds new levels in the developing human behavior system", and this edifice is only concretized by means of a *"living"* teaching process...," which must be the object of real scientific study" (Ibid., p. 212).

The role of cultural mediation, specifically of scientific content, refers to the development of ever greater intellectual capacities:

> Formal instruction, which radically alters the nature of cognitive activity, greatly facilitates the transition from practical to theoretical operations. As people acquire formal instruction, they increasingly use categorization to express ideas that objectively reflect reality. The significance of schooling is not only in the acquisition of new knowledge but also in the creation of new motives and formal modes of verbal, discursive and logical thinking divorced from immediate practical experience. (LURIA, 2008, p. 133, 178).

In other words, for the integral formation of the individual, intentional socio-cultural mediations are necessary for the purpose of emancipation, taking as a reference the collectivity into which it is inserted.

In order to highlight the dimension of human behavior, an awareness of the individual as part of a society must be worked together with content. Petrovsky (1985b *apud* MELLO and CAMPOS, 2013, p.271) explains that school practices must match personal goals with collective goals. The individual must be consciously taught that he is part of a collectivity that "[is] a group of people who, being part of society, are united with common ends to carry out joint activity, subject to the objectives of this society" (Ibid., 270). For this, every teaching-learning moment must also be used for teaching values:

> The experienced teacher can always use the contradictions that arise among different groups as the driving force to develop the collective as a whole. This will not happen unless the objectives of the activity of each group fail to subject themselves to the general objectives and end within these groups. (Ibid., p. 271).

The social mediations of colleagues and teachers also have the characteristic of enabling exchanges of experiences and opinions that help in the construction of the senses and teach collective values such as respect and cooperation, for example.

In the context of formal education, it is therefore necessary to ensure specific conditions for the teaching-learning process in which, necessarily, both student and teacher have an active participation in order to attain the predetermined objectives. For these reasons, mediation is a basic category in the conduct of pedagogical practices which aims at the integral formation of individuals.

3. TEACHING MEDIATION: HOW AND WITH WHAT OBJECTIVES?

In school spaces, thinking about teacher mediation, with a view to directing the teaching-learning process for the integral human development of students, implies contemplating the socio-cultural mediations mentioned above. The Vygotsky School surveys show that intelligence is not inbred and no longer reaches higher levels by relying only on everyday knowledge. Rather, it takes intentional action, directed toward the development of dialectical thinking:

> It is necessary to formulate dialectical thinking at all stages of education. [...] Theoretical thinking does not arise and does not develop in people's daily lives; it develops only in such an education, whose programs are based on the dialectical understanding of thought. It is precisely this teaching that has developmental character. (DAVYDOV, 1999, p. 5, 7).

For this reason, teacher mediation should be a didactic mediation[1], that is, it should concern itself with the relation that the student develops with scientific knowledge aiming to extrapolate the acquisition of knowledge for the development of dialectical thought to develop intellectual, affective and behavioral capacities.

With this approach, the activities that are part of the teaching-learning process should be problematized and contextualized from real examples including, from the beginning, forms of activities in which students can research, analyze, think about, compare and record their reasoning, among other activities, for verifying and demonstrating their ideas, so that they themselves can construct the necessary concepts (LIBÂNEO and FREITAS, 2013).

In activity mediation, there should also be reflective questions that orient the actions to the object of study. Questions play a central role in teacher mediation. The accompaniment of the teacher should be, therefore, to monitor and intervene, in order to direct the student

in transforming the object until he appropriates it. When intervening with questions, orientations and / or with the reorganization of tasks, the objective should be to awaken discoveries, mental stimulation and to direct the research of the student so that they themselves will build the necessary relations to dominate the concept. In this way, didactic mediation is not a previously fixed action nor is it characterized by direct answers. Rather, the answers must be to guide the students´ thinking so that they can, through their reasoning processes, construct the answer or arrive at a conclusion.

Didactic mediation is part of a planning process whereby, as the teacher accompanies the student and verifies their understanding, activities are proposed, and questions and other forms of guidance are also used to help them overcome the gaps and difficulties diagnosed, until they appropriate knowledge. It is, therefore, a process of monitoring and pedagogical-cognitive intervention through actions, observations, statements (intentionally by teachers´ and their colleagues), dependent on the expressions of the students so that the educational process can be diagnosed and regulated in accordance with its constant development.

To that end, didactic mediation must continually concern itself with the student's engagement in activities, which implies considering the affective dimension of the teaching-learning process, since with the absence of such a dimension "[...] there is inevitably an underestimation of voluntary action, of action in its higher forms..."(VYGOTSKY and LURIA, 2007, p.84).

According to Davydov (1988, p. 147), the desire for something is the essential element of every engagement that is responsible for the individual's decision to engage in an activity: "In this way we can say that activity has its own prerequisite: a desire perceived... which must be generated in the activity of study itself through the manipulation of the material to be assimilated obtaining a new spiritual product, that is, knowledge of this material" (DAVYDOV, 1999, p. 2).

To bring this about, pedagogical practices should articulate teaching-learning activities and other cultural activities in different forms, for example, collective and individual activities, written and oral expositions, etc., and in this process, a primary role is *feedback*.

Within this type of teaching, teacher mediation is essential. According to Lenoir (2014), learning is inseparable from the mediation relationship and implies a practical and regulatory interactivity between learning subjects, the object of study, norms in general, and a socially invested mandated intervener, the teacher.

For this author (Ib.), it is not possible to reach such higher levels or articulate integral formation without specifically planned teaching action. Cognitive mediation, intellectual construction of the relations between the object of study and the knowledge already acquired, can only be triggered by means of teaching that situates the student and the knowledge socio-culturally and that enables students to express themselves in order to be directed to the conceptualization of the object in order to reach higher cognitive states. It is a guided process that, for the purposes of intellectual emancipation, "[...] requires pedagogical-didactic mediation, without which a relation of cognitive objectification cannot be unlocked in a scientific way" (Ibid., p. 203).

The didactic mediation of the teacher, as a human being invested with professional knowledge and authority, is a differential factor in guiding, intentionally, the teaching-learning process. Several researchers (CUSSET, 2011; NYE, KONSTANTOPOULOS and HEDGES, 2004; BRESSOUX, 1994) demonstrate different levels of knowledge appropriation by students according to the teaching performance. Cusset (2011) still asserts that the differential comes from the way the pedagogical-didactic relationship is concretized in the process.

In addition, Lenoir (2014) emphasizes that a system of mediations influences teacher mediation because it will be realized "*in a socially normalized framework taking into account multiple, contextual and other constraints [...]*" (Ibid., p. 238-239). This author emphasizes that mediation "is conceived on the basis of the dynamics of human beings in their social relations. [...] In this perspective, mediation - it would be fairer to speak of a system of mediations - is intimately linked to the social practices within which they take place"(Ibid, p.62).

3.1. INSTRUMENTAL TEACHING MEDIATION

Instrumental mediation is thus characterized by Lenoir (2014) as being due to the preponderance of actions restricted to resolving operational conflicts, from teaching to technical tools, from sharing to negotiation procedures. Such mediation is centered above all on the operative forms of mediating action and on the adoption of the idea that such action must be neutral (Ibid., p. 59).

Instead of focusing on the degree of student learning, instrumental mediation focuses on the idea of technically equipping the student. In addition, the adoption of teacher mediation as a neutral activity in the formation process has, implicitly, the socio-educational purpose of not contributing to the emancipatory formation of individuals:

> It refers to a differentiated model that emphasizes the difference between individuals who are part of a collectivity. Focused on the cult of negotiation, this mediation uses techniques to achieve determined goals, thus becoming an alternative means of resolving conflicts. It questions the dysfunction of the individual in relation to society, fundamentally recognized as balanced, homeostatic, the objective being, then, only improvement to a social order already rationally fair in its principles by the suppression of eventual dysfunctions... (Neves Almeida, 2000 *apud* LENOIR, 2014, p. 59-60).

This perspective of teacher mediation usually deals with problems that arise in the teaching-learning process as problems of incapacity or low intellectual autonomy. It is difficult to evaluate pedagogical practices from the point of view of to whom and how they are taught, considering any unusual case as the students´ problem.

3.2. PEDAGOGICAL-DIDACTIC TEACHING MEDIATION

Lenoir (2014, p. 62-63) explains:

> Unlike the instrumental concept (the most common), the dialectical concept is inscribed in a historical-philosophical approach, which means that it rests on the ontological postulate that every human being is constructed collectively by constructing with someone else, a reality in time and in space and with the view to some form of social emancipation.

According to this logic, the materialization of pedagogical-didactic mediation in formal educational processes necessarily requires conditions that allow the construction of pedagogical social relations. At the same time as they learns, the subject changes:

> The process of objectification (understood here as a learning process) is indissolubly a process, and at the same time, the constitution of the subject with which it engages in a social relationship and of an objective reality that it produces and structures and to which it recognizes it belongs, based on which he is assured of his recognition as a human subject. (Ibid., p. 25-26).

Lenoir (2014) explains that the role of pedagogical-didactic mediation includes, besides cognitive and moral development, the affective dimension related to the importance of the social role of the subjects involved in the teaching-learning process. In this theory, the desire for knowledge by each person, born of the desire expressed and shared socially, is constructed and renewed in relation to the social recognition, with the teacher having the primary role:

> A learning subject, as an entrepreneur in his school career, does not study for the sake of school subjects. The core of the learning process is initially found in a powerful mediator which is the desire to make manifest the other's desire. [...] But this

> emergence (of desire) is neither spontaneous in nature nor the result of any internal conversion that would have reached a subject autonomously. It is due to encounters with some unusual teachers, who are the bearers of the desire to know. (Ibid., p. 33).

Lenoir (2014) calls educational intervention the result of intentional and instructive teacher mediation, pedagogical-didactic mediation, since it triggers and directs intellectual changes in the subject until the desired objectives are achieved. In this sense, didactic mediation is characterized by a set of dialectically constructed intellectual interventions, until students are overcome by the present cognitive state.

Didactic mediation from the dialectical perspective extrapolates, therefore, actions of negotiation, of technical aid and of communication of information. Didactic mediation corresponds to a network of integrative and regulatory actions that occur along the path of pedagogical social relations, intentionally planned in a scientific manner, replete with content and activities.

4. UNDERSTANDING MEDIATIONS IN CONDUCTING THE PEDAGOGICAL PRACTICES OF DISTANCE TECHNICAL COURSES.

Based on Dialectical Historical Materialism, multiple case studies were completed to develop this research. For Gil (2002, p. 139), although multiple case research requires more time and methodological rigor, "it provides evidence inserted in different contexts, competing for the elaboration of better quality research".

Three technical distance courses of the federal network linked to the Rede e-Tec Brasil Program were surveyed. The criteria for choosing these courses were: they were offered by the federal network, the institution´s experience in distance education and, finally, their location in different Brazilian regions. From this, the following courses were selected: Technician in Informatics (South Region), Technician in Environmental Management (Southeast) and Technician in Sugar and Alcohol (Center-West), each of which is promoted in their entirety by the e-Tec Network Program.

The instruments of data collection were: the current legislation for technical professional education; the courses´ academic documents such as pedagogical projects and lesson plans; observations of online pedagogical practices of the courses; semi-structured interviews. The observations of the online practices were made through the synchronized and unsynchronized classes (Forums and chats) class records of the virtual environment used, and the observation of the tasks and evaluations registered in the same environment.

With regard to the professionals interviewed, there were nineteen in all: seven coordinators, seven teachers and five tutors. In addition, twenty-seven students participated in online chat in the form of an open press conference.

Based on the data collected through the aforementioned instruments, the following categories of analysis were organized: a) Mediations of the socio-historical and political context; b) The pedagogical organization of the courses and teacher mediation.

The mediations of the socio-historical and political context

The existence of only a confusing guiding document of the e-Tec Network, Resolution n. 18/2010 (BRAZIL, 2010b), which is very focused on the hiring of grant-aided teachers and a list of mixed and poorly understood assignments, highlights the lack of pedagogical concern with the operation of distance technical courses. In the list of teacher assignments, for example, composed of sixteen items, only one refers to teaching. The others describe administrative controls, follow-up of issues of evasion, research and even technical support. The same document (Id.) - and there is no other one for Network e-Tec - allows the use of tutors who do not have a university degree, but who only have experience of teaching. In addition, the only contracting regime is per scholarship, and the professional benefited may already have another legally registered principal source of employment.

In the aforementioned document (Id.), it was still possible to prove its strong links with the documents of international financial institutions, especially those of the World Bank. The most important features are the stimulation of public-private partnerships, the provision of services through scholarships, the orientation for courses not to be of long duration, and the encouragement of the use of digital technologies as a strategy for a better cost-benefit ratio.

The statements of the coordinators and professors interviewed were homogeneous in the three participating institutions regarding the small management team, only five people (Id.). Besides being small, it was not specialized and was supposed to be responsible for everything related to distance courses, because in all the schools surveyed, the regular services of the institutions did not absorb the demands of the distance courses due to the malaise created among the people who received scholarships (teachers and tutors) and those who had to absorb the administrative demands without a scholarship, for example, centers of selection, photocopying processes, enrollment department, etc.

In view of the data presented, it can be seen that legal guidelines open the way, from the beginning, to fragile pedagogical organization that culminates in poor conditions for didactic mediation:

> On regular courses, teachers care about the student, with evasion; they get together, discuss the problems of the class, and advise each other. E-Tec does not. I go there, post my content and I´m 'done'. I no longer think about the course or the student. (Prof7, interviewed on 5/13/2013)

> The teacher is very affected by administration. The teachers are not effective in the network, so they come here, teach and leave. In the first week of class, he saw that the strategy did not work what could we do? Nothing. They do not care. If the pedagogical coordination, which is separate, calls him to talk, he does not come. He has no time ever. Everyone works every day at other jobs and come to here to class only at night. And this difficulty is not pedagogical, it is administrative. The administrative one directly affects the pedagogical one due to lack of an institutional link. If you do not have this link, the teacher has no responsibility. It's a bit piece job. (Coord5, interviewed on 9/25/2013).

According to Lenoir (2014, p. 201), students, teachers, and all school professionals are part of a complex system of socio-historical mediations in which"there are numerous other factors that intervene and mediate the relationships that the teachers establish with those who have knowledge of the material and with the students". The standardization system mediates school pedagogical practices, first and foremost. It was evidenced that the scholarship system, besides not facilitating a bond of employment, does not foster the conditions necessary for the composition of a collegiate course, which in fact helps bring about pedagogical disintegration and the disintegration of the teaching group. It implies teachers who are always working hastily and providing the "*minimum standard of a class*" and who are disengaged from the social and political issues of teaching and the institution in general, because it is not their main job.

Moreover, the teachers' work regime does not guarantee coherent performance in keeping with their training, which makes it impossible for didactic mediation due to lack of knowledge. So, if it is an organization that does not value the quality and the quantity of the teacher's work, how can it provide integral formation for the participants?

Teacher Mediation and the pedagogical organization of courses

With respect to the curricular structures found in the course projects analyzed, they are consistent with the World Bank's orientation of offering shorter courses for more students. The classes for these courses were found to have, on average, 50 students per center, which

corresponds to at least two hundred and fifty students per class. To keep courses shorter and cheaper, hours of internship, complementary activities, technical visits, classes in laboratories and, also, general and human training disciplines were reduced or eliminated.

Among the three curricular matrices analyzed, only the Technical Course in Sugar and Alcohol had two disciplines in the area of Human Sciences. The course was organized into modules and was also the only one among those analyzed, which required 120 hours of complementary activities. Regarding the workload, this course dedicated 6% of its total hours of classes for professional practice in the laboratory but, according to an interview with teachers, most of the time, they were used as classroom review classes due to difficulties with the logistics of teachers and a lack of inputs.

The curricular structure of the Sugar and Alcohol Technical course did not provide any kind of online interaction with the students on a regular basis. In this course, the forums were only used if any students posted doubts. The forums visited were all empty. Thus, there was virtually no communication between students and teachers. The online activities were all individual and used only the Questionnaire tool. Each student checked the teacher's demands, completed the necessary downloads, solved the exercises individually, and delivered them back. All activities were objective so that tutors, who had no background in the discipline area, could help with the corrections. All disciplines followed this same pattern, regardless of their area.

The Technical Course in Environmental Management was ministered completely at a distance. Nevertheless, its curricular matrix was executed by semester, as well as the other courses of the institution. The curricular matrix of this course was composed only of technical subjects and 400 hours of internship. All activities used the Questionnaire tool biweekly. At the beginning of the fortnight, they were posted next to all material that was called class, usually a chapter of a book in pdf and a corresponding videotape. All disciplines followed this same pattern, regardless of their area. In this course, there were tutors with training in the area of the discipline who assisted the students online. However, this occurred only if the students' requested clarification of any doubts. The course did not offer any kind of face-to-face classes in professional practice labs, nor field classes or technical visits.

The Technical Computer Course was the only one to present a curricular organization that required regular weekly meeting at the center and online communication with the teacher via video-

conference. In addition, there were fifty minutes of chat with the teacher on another day of the week. On the other hand, its curricular matrix did not require internships or complementary activities for students. The tasks collected were, for the most part, questionnaires, but in some disciplines there was an obligation to develop a project during the course as part of the final grade. In this course, teachers had to deliver all class activities fifteen days prior to the start to the posting team and could only change their class after the start of the course, after justification by the pedagogical coordination. The forums were well used by teachers, but always to answer questions posted by the students. The course did not offer any kind of face-to-face lecture in computer labs, neither field classes nor technical visits.

Regarding the pedagogical assistance for activities and specific classes for professional practices, the service at the centers was found to be fragile, mainly because the tutors do not have specific knowledge of the disciplines. This also contributed to the non-completion of classes in laboratories. In the interviews, the teachers confirmed that, although there were specific laboratories at the centers, it was impossible to use them because of this incompatibility between the tutor's training and the teacher's own absence.

In relation to online classes, in two of the courses analyzed, the posting of a chapter in pdf, a corresponding video lesson and a list of exercises is what they call a lesson. Neither of these two courses provided any kind of online discussion for these materials posted as a lesson. From the concept of didactic mediation (LENOIR, 2014), it can be affirmed that the restriction of activities usually to objective questionnaires, does not support a type of investigative or modeling activity with the content in order for the student to learn to construct the conceptual relations for cognitive development. It's all about reading the material available, memorizing and answering the questionnaires. Thus, the pedagogical organization of the courses does not lend itself to teaching mediation of a pedagogical-didactic type and the activities analyzed confirm that there are almost no tasks and classes requiring discussion, reflection and collective work or any other situations of a pedagogical social nature.

The teachers interviewed also point out the excessive number of students per class, tutoring outside the training area and the organization into short modules, as serious problems which would make them change the planning of the class to something more objective, even to disregarding what they themselves would consider better activities for student learning:

> The activities in distance education have to be a little different because of what the difficulty is: we have four centers with seventy students each. If you give an exercise with five compositions, it is a lot of work to correct. The discipline lasts a month and a half, so I am not able to. So most of the activities have been objective, whereas in the classroom, I would do everything subjectively which would in turn be better evaluated, but, because of time constraints, student numbers per center, the duration of the discipline, I cannot evaluate how I would rate it in the same way as a discipline that lasts six months or a year. (Prof4, interviewed on 5/28/2013)

> I cannot accompany student by student as well as I would in class, but I do not think that is the goal either. In the classroom I can do this, but there is no way I can from a distance with 300 students. There isn´t a specific tutor, there is no way they can help you correct. Some tasks have automated correction with scanning software. (Prof2, interviewed on 9/25/2013)

> Objective questions were to be prioritized, but I ended up modifying because I found that the student needed other types of questions to better use the content. So I had some feedback on the discursive issues, but it gave me a lot of trouble later. We have a hard time with tutors, right... they are not area specific. (Prof5, interviewed on 2/5/2013)

> Only teachers answer students´ doubts here. There are seven centers with fifty students each. In the virtual ambient it is a single room. So I have 350 students. Content mentoring would help in that regard in qualifying activities even more. Because you think like this: I have to prepare an activity which will generate 350 answers, so if there was something to give me support with this volume, I could provide more elaborate activities, and a greater quantity than the amount that I think there should be. (Prof1, interviewed on 9/24/2013).

These testimonies again indicate the necessity for instrumental mediation. On the other hand, they confirm that teacher mediation, influenced by the physical and pedagogical working conditions mentioned above, especially the number of students and the untrained tutor, could not but lead to a different situation.

It was also noted, during the interviews, that teachers do not use any form of synchronous dialogue in the Virtual Environment of Teaching and Learning (AVEA), except for the Technical Course in Computing which has a weekly video-conference class and chat. Some teachers said they were even instructed not to use such tools to avoid generating high demands for data traffic on the internet.

It is observed, then, that the activities of these courses are reduced to only making available material for the student to study and then to enter the online environment only to respond to the activities. There is no development of a social pedagogical relationship that monitors and intervenes in the students' activities. Recalling that in the quest for the emancipation of the human being,*" mediation cannot*

be reduced to some technical, instrumental dimensions" (LENOIR, 2014, p. 51), the possibilities for the broad development of workers who attend these courses are very small.

Thus, while on the one hand it can be considered that there is a democratization of access because distance courses allow the flexibility of temporal and physical access, on the other hand, it is clear that it is a questionable democratization since it does not deal with the qualitative dimension. In the case of professional education, which requires activities of professional practice, it is observed that this dimension is also impaired.

This reality meets the international guidelines we are talking about: There is a commitment to create educational opportunities, but on the other hand, opportunities are impregnated with specific economic interests for the lower classes, far from having the same qualitative precepts of face-to-face education in the offering schools. The conditions imposed for distance courses, such as exorbitant amounts of students, little infrastructure investment, rapid courses, a whole system based on scholarships and public-private partnerships (BRAZIL, 2010b, 2011b; COSTA, 2015) do not create the right conditions for didactic mediation. In this way, we agree with Shiroma (2013) when she states that terms like democratization represent rhetorical devices with a false concern for inclusion and citizen participation, since, qualitatively, they will make little change to their professional training.

With regard to students' perceptions, it was possible to prove the cognitive and affective needs arising from fragile teacher mediation:

> I talk more with colleagues and consult the books because it is no use going after the tutors because they tell you to ask the teachers for information. They never know anything and teachers delay a lot. (Student2, chat participation, June 2013)

> Our teachers do not resolve our doubts and teachers tend to delay corrections. Sometimes I feel totally ignored because I ask but receive nothing in reply. (Student7, chat participation, June 2013)

> Since there is an absence of a teacher, the tutors could be enabled to deal with our doubts. I need the teacher, yes; they help because we always have doubts. They should pay more attention to the students. We should not have to study alone just because the course is a distance course. (Student11, chat participation, June 2013)

> I find it difficult to do without teachers, because without them there is no way to resolve doubts. Even when conducting research on the internet, exchanging information with a specialist in the field is very important. We had one face-to-face class that was very important because the teacher was very knowledgeable about the content and clarified our doubts. The handout content alone is not enough to study. (Student18, chat participation, June 2014).

Although the dominant discourse diffuses the idea that it is enough to be autonomous to adapt to a distance course, the statements show that affective cognitive needs permeate the teaching-learning process and, when not met, trigger feelings of neglect and abandonment. Taking up Vygotsky and Luria (2007), when disregarding the affective dimension of social relations that occur through the various forms of communication, will and desire are underestimated, which affects the actions and the engagement of the student. This is also confirmed by Davydov (1988) and Lenoir (2014).

The testimonies of students requesting assistance from a teacher who knows the content and in a timely manner, also confirm the relationship between affection and cognition, because it is not only a question of wishing to talk to the teacher, but of solving cognitive problems with students present. Thus, part of the desire is created with respect to the activity itself, that is, to understand the social function of knowledge and to appropriate it (DAVYDOV, 1988), but another part is related to the human need for recognition and social belonging (LENOIR, 2014), which helps the student to stand and face obstacles because they feel supported, believing that they will succeed. Thus, the hypothesis that arises, and considering the high dropout rates (47%) found in these courses, is the degree to which the distance methodology adopted affects the decision to abandon the course.

On the other hand, it is important to note that when they insist on assistance, which provides them with guidance, they do not complain about distance, but about the lack of attention. Some students say that they like the course a lot and that there are possibilities for learning, but they point out that the resources that could enable them to better communicate and attend are not sufficiently utilized:

> I am really enjoying the course, although I have a lot of difficulty in understanding the subjects in the area of the exact sciences and informatics. A teacher available to explain the doubts would be great. Having autonomy does not mean that we know everything and do not need a teacher; we always need an instructor to resolve our doubts. (Student14, chat participation, June 2013)

> Video classes and texts, for me, are complementary forms that help. Although I have autonomy in my distance course, I have always made a lot of use of classes with the teacher. We should have more video-conferences for discussion, just reading the material is not enough. (Student15, chat participation, June 2013).

On the importance of the diversity of operations with signs, Vygotsky and Luria (2007, p. 49, 50 e 51) write:

> On the one hand, a broader study of other forms of symbolic infantile activity shows us that not only speech, but all operations related to the use of signs

> of all varieties and situations, show the same evolutionary pattern, the same organization and the same operation as speech. Recognizing the fundamental importance of signs in the development of higher psychic functions is a logical consequence: we must include them in the system of psychological categories just as with those external psychological forms of activity - such as speech, reading, writing, calculus or drawing. The behavior of humanity is the product of the development of a broader system of social ties and relations, of collective forms of conduct and of social cooperation.

Knowing that online communication currently enables the aforementioned variety of activities, we can say that the problem is not with the course being a distance course, but the way it is conducted. The working conditions, the methodology adopted as a process of distance learning and even teacher training are factors that affect teacher mediation, just as by not creating conditions for them to explore different ways of developing study activities.

When students say that some teachers have used other resources or have combined more than one media and they have been able to understand the content, this indicates that it is possible to organize an effective teaching-learning process in an online environment. Thus, if on the one hand there is a problem of pedagogical posture by the teacher in the virtual environment, on the other, there are external mediations - labor, organizational, pedagogical, vocational training, etc. - for distance courses, which contribute to the teacher not having a posture different to what was found: the mediation of instrumental teaching.

FINAL CONSIDERATIONS

Based on the research carried out, the links to the international guidelines with the program of expansion of professional technical distance education became evident, mainly through its reform in 2011 when the process was shared with the private network. On the one hand, it meets the government's need to disengage itself and, on the other hand, assists international organizations both in receiving private funding and in bringing education closer to economic interests.

The ideas contained in international documents with a focus on digital technologies is borne out with the reality evidenced in the courses studied and shows a tendency towards pedagogical processes of a technical nature. If educational objectives are required to meet economic interests, corresponding forms of teacher mediation and the organization of the teaching-learning process as a whole also need to be considered.

Regarding online teacher mediation, it is clear that the attempts, in the courses analyzed, do not seek the integral formation recommended in the official documents. According to the tasks and activities analyzed, as well as the diagnosis of the elimination of classes in specific laboratories, complementary activities and other items, even technical training is questionable, since what occurs in the online environment cannot sustain solid training. Core activities of teacher mediation as correction of activities and orientation of doubts, are not made by the teacher, but by a person called a "tutor" who, by the current legislation, does not even have to be a teacher. In the cases analyzed, most were teachers by training, but they were tutors in disciplines completely distant from their area. The organization of the activities also does not take into consideration the capacity for analysis, reflection, comparison and synthesis. They were always questionnaires with direct answers, precisely to coincide with the work of the tutors who, because they did not have formation in the area, would not be able to correct subjective activities. The pedagogical work of the teacher was almost always reduced to the preparation of texts, tasks and tests.

If we consider that in order to monitor and regulate the activities of the students, it is necessary to accompany them with a certain regularity, then there are at least three points that can, stated clearly, do not contribute to didactic mediation: a curricular structure that does not provide for regular online meetings, the intermediation of a tutor outside the area of knowledge who, in addition to delaying the process of contact with the teacher, also has no professional background to help either the teacher or the students, and the workload generated due to the number of students.

Thus, the central problem that affects most distance courses is not the physical separation between the subjects, since it can be overcome by technological means if integrated with a curricular and pedagogical organization whose objective is the integral formation of the students. The problem is the disarticulation of these elements, focusing on cheaper structures, leading to minimal conditions for the performance of teachers, which in turn will also require students to play a minimal role.

Despite the potential for pedagogical use of Digital Information and Communication Technologies (DICT), they are dependent on the teacher's pedagogical posture which also depends on formation. The reported shortcomings show that DICT´s alone cannot meet the human needs that permeate the teaching-learning process. Therefore, many negative feelings regarding the monitoring of and the assistance afforded to students were revealed.

Among the mentioned difficulties, we highlight the working conditions that need to be rethought. Tutoring, the way it is currently used in the structures presented does not meet the demands of the students, as they need teachers with training in the area both for the questions asked online and for activities at the training centers. In addition, although the national documents have included the term tutor as if it did not involve teaching activities, surveys (TONETTI, 2012; COSTA, 2015) show that they carry out teaching and teaching activities. This change of nomenclature is also a factor contributing to the precariousness of teaching and, consequently, its remuneration. The lack of follow-up with mastery in the area leads to delays in online attendance, demotivation of students, the underutilization of the centers as a complement to the teaching-learning process with practical technical activities and, consequently, insufficient training.

Despite the difficulties highlighted, we pointed out elements that allow us to see possibilities for didactic mediation occurring through the various digital media in which content and individual and collective study activities can be organized with the teacher in AVEA. The methodology of this research, when using the chat and forum to maintain communication with the students, shows that it is possible to develop pedagogical dialogic relationships in online environments. It should also be stressed that the problem is not one of being distance education, but the way it has been developed by the absence of a critical pedagogical foundation to guide the implementation of this mode of teaching.

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NOTES

[1] For this text, the expression didactic mediation means the same as pedagogical-didactic mediation, the latter expression used by the author Lenoir (2014). In Brazil, the term didactic mediation already implies the term "pedagogic" since the area of Didactics includes the Science of Pedagogy (LIBÂNEO, 2002). Yves Lenoir uses the compound term because of its theoretical reference being of French origin in which Pedagogy and Didactics are large independent areas.

Submission: 28/05/2017

Approbation: 24/07/2017

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