

International Journal of Human Sciences Research

EDUCATIONAL PRAXIS AND DIGITAL TECHNOLOGIES: RELATIONSHIPS WITH HISTORICAL-CULTURAL THEORY

Iasmim Ferreira da Silva

Pedagogue from UniCerrado, Specialist in Information Technology from FUNIP and Master in Professional and Technological Education from the institution: Instituto Federal Goiano (IF Goiano). She is currently a teacher of Basic Education at the institution.: Estado de Goiás

Cinthia Maria Felicio

Graduated and Master in Chemistry by the institution: Universidade Federal de Uberlândia (UFU). PhD in Chemistry from the institution: Universidade Federal de Goiás (UFG). She is currently a professor at the institution: Instituto Federal Goiano (IF Goiano)

Paulo Vitor Teodoro

Graduated in Chemistry and Master in Science Teaching by the institution: Universidade Federal de Uberlândia (UFU). Doctor in Science Education from the institution: Universidade de Brasília (UnB). He is currently a professor at the institution: Universidade Federal de Uberlândia

All content in this magazine is licensed under a Creative Commons Attribution License. Attribution-Non-Commercial-Non-Derivatives 4.0 International (CC BY-NC-ND 4.0).



Abstract: In this article we establish a dialogue between educational practices, mediated by digital technologies, in the teaching-learning process for an education that considers the aspects of Science, Technology and Society (CTS). Such practices supported by digital technologies bring different ways of teaching and learning. The way these technologies are used portray the teacher's conception and, this way, we will reflect on how this conception can interfere in the teaching-learning process and integral development of students in basic education. Based on a bibliographic survey, we discuss some conceptions arising from the use of digital technologies. In order to understand its relationship with the teaching-learning process, we will make an overview of the technical-scientific rationality permeating educational practices and their possible intentions in pedagogical mediation and its criticism from Vygotsky's Historical-Cultural Theory (THC - 2009). This theory contributes to the understanding of the formation of subjects through mediation. For this, we will clarify the concept of "pedagogical mediation" and its role in the development of scientific thinking and apprehension of the world. Finally, we will discuss the role of the school and teachers to achieve an integral human formation, as well as the scientific and technological development in Basic Education and the concerns related to the use of these in an ethical and humanizing way, from the development of critical thinking in the social media.

DIGITAL TECHNOLOGIES: TEACHING AND LEARNING

Educational history shows us that teaching and learning were mostly linked to a physical space. With scientific and technological innovations, society has been resignifying the modes of production in the most diverse environments, especially in school education.

These innovations create teaching-learning possibilities and challenges beyond school gates through the use of digital technologies in this process.

Technology is a term that involves technical and scientific knowledge and the tools, processes and materials created and used from that knowledge (VIEIRA PINTO, 2005). Therefore, it is important that science and technology walk together towards social construction, in a Science, Technology and Society (CTS) perspective. Scientific literacy may be insufficient in this context, considering that it refers purely to scientific issues (TEIXEIRA, 2013).

Therefore, scientific literacy as citizen training, not only in the dimension of knowing about science, but how to do science and learn about science and its role in society, its limits, the STS relationship can be a proposal for the development of the teaching-learning process by through the use of digital technologies as tools for cognitive, emotional and values development to face the challenges and uncertainties of the 21st century.

Lévy (2009) states that digital technologies, as well as virtual learning environments blogs, podcasts, wikis, etc. have emerged and form the infrastructure of cyberspace with a new environment for communication, sociability, organization, transaction and above all the new information market. and of knowledge. The new market demands new professionals who can meet its accelerated dynamics of scientific and technological production, that is, these dimensions need to be considered and analyzed, in how to interfere in all social sectors, including school, considering it as an environment of integral human formation.

For Moran (2012) education is changing, the school is still one of the institutions most resistant to change due to the bureaucracy involved in its constitution. However, there

is a silent revolution where some teachers supported by digital technologies are carrying out innovative experiences with all their students. All this is happening at the same time: delay, bureaucracy and innovation. In a paradoxical context caused by the Covid 19 pandemic, in which many of these resources are being uncritically appropriated, exacerbating inequalities even more and exposing even more the dual aspects of Brazilian education.

For Peixoto (2015), the integration between digital technologies and teaching has not happened naturally. The rapid insertion and obsolescence of digital technologies, their development, applications and services end up trampling the subjects of education through a technical rationality. This rationality is a way of thinking and acting on the world based on the management of the means of production and consumption.

This trampling can hurt the fine line between scientific knowledge (referring to the scientific method) and common sense (acquired popular knowledge). In this case, Freire (1996) states that curiosity leads to criticality and it can defend us from the irrationalities and rationalities of our highly technological time.

Society can be observed from different perspectives such as common, religious or philosophical sense. Each worldview perspective has its particularities, usually arising from beliefs or historical experience and for Chassot (2012) regardless of the perspective, technologies interfere positively or negatively in society, and their interference in educational and cultural processes and the formation of values, procedures is undeniable and attitudes.

In the deterministic conception, there are those who deify technology, considering that social organization is defined by it as a driving force of innovation, imposing its logic on the social environment, therefore,

the technocentric character of this approach, among those who believe in the defense of technology, as resource to be inserted in the educational environment, and that will, by itself, bring quality to this process (ECHALAR; PEIXOTO; CARVALHO, 2016). In the same way, among those who fear it, there is a feeling of threat, that one day the teaching work may be replaced by some technology, as has happened in industries and in other sectors of production and communication, and it is impossible not to feel its impact and threat to employment.

On the other hand, the instrumental conception seems neutral in the sense that technology is basically combined as a means to achieve ends established by man, this way it will be attending to his will. This assumes that technology is “a tool or instrument of the human species with which we satisfy our needs” (FEENBERG, 2010, p. 46)”. However, the neutrality of this conception disregards the historical-cultural fabric as it is based on a basically technical order, not considering social, cultural and economic contexts. It is worth mentioning that deifying, fearing or instrumentalizing technology demonstrates a certain technical rationality.

In this sense, digital technologies have the ability to streamline the teaching-learning process, not being used, or even reproducing traditional practices. In addition to optimizing activities that help in the formation of active subjects in social construction, it can also serve as just another object for the reproduction of traditional classes. That is why it is essential to reflect on how teachers' conception of digital technologies can interfere in teaching-learning relationships to promote the development of critical thinking and the autonomy of those who seek an emancipatory training.

As society changes, the school follows this development. Education is a social process that affects everyone in particular ways.

Society educates while transmitting new ideas and values, so we can learn from the most diverse situations (VIGOTSKI, 2009). This previously silent revolution, faced with the scenario of social isolation with the “need” for the continuity of the school process, seems to have taken up a voice and time, in fact trampling everyone involved in the teaching-learning process. We witnessed something that previously seemed diffuse, that the change in the view that education does not need to happen only within the physical school space, but could reach the most diverse formal and informal spaces through the internet and network connections.

Despite the hegemonic concern with quantity rather than quality, it is possible to perceive the usefulness of digital technologies for integral human formation. By opening up to digital technologies, the school can dialogue with spaces of interest to students, such as the media, integrating the real and digital world to better understand the facts in order to modify them when such a need is observed. The integration of theory and practice, problematized and reflected, can make possible several connections between intellectual learning and real situations related to their studies.

For Bacich and Moran (2018) these situations can make learning more dynamic, using models and simulators that can serve to improve the understanding of theories that are quite abstract, bringing certain concreteness through mental models that help to think and develop thinking with active methodologies. In this sense, the focus of the teaching-learning process needs to be more focused on the mediation of learning than on teaching, more on the student than on the teacher as a transmitter of knowledge.

According to Conte and Filipozzi (2015) it is no longer possible to conceive of a static education, because reality is in the process

of accelerated change and interconnection with digital technologies and with this, in addition to nature itself, human beings are transformed, humanized or become individualized. Students, as digital natives, identify with technological means, as they respond to their needs and are attracted by the diversity of languages, themes, concepts and contents. Different from some digital immigrant teachers, who are still adapting to the new possibilities and challenges (BACICH; NETO; TREVISANI, 2015).

Moran (2013) denounces the existence of a greater concern with quality teaching than with quality education. For him teaching and education are different. While in teaching, a series of activities are organized to understand the curricular components; in education, the focus goes beyond teaching, it is to integrate teaching and life, knowledge and ethics, reflection and action with a vision of a totality. This integration between theory and practice in its complexity can lead to the promotion of an integral human formation.

By integrating the scientific, technological (CTS) dimensions, it is possible for students and teachers to contribute significantly to society, and this movement began its discussions in Europe and the United States, in the post-war period and reached less developed countries after the 70s. having been the basis for building curricula in several countries, especially in science, giving priority to literacy in science and technology linked to the social context (PINHEIRO; SILVEIRA E BAZZO, 2007).

These authors report that this movement emerged as a critique and reflection on the scientific and technological implications in the social environment, from the horrors of the second world war, in sociology and philosophy of science, reaching education for more than four decades. They discuss the importance of working in education in

situations that involve reflections on scientific and technological advances and their implications for life in society in a critical way since basic education. Also highlighting the importance of Technological Education in our society, as science needs to be understood in its “social and environmental dimensions”:

In other words, it is necessary to understand it with regard to the factors of a social, political or economic nature that modulate scientific-technological change and with regard to the ethical, environmental or cultural repercussions of this change (PINHEIRO; SILVEIRA E BAZZO, 2007, p. 75).

And for these discussions to reach the learning spaces, face-to-face or remote, it is necessary on the part of the teacher to open up a movement of dialogical learning in their classes. Freire (1996) considers that the collaboration between those involved in education makes life seen as a permanent process of learning, especially of the mediator of this process. It is important that the teacher is aware of the unfinished, of the constant learning, construction, deconstruction and reconstruction of knowledge and bring discussions that arouse students' curiosity. With this awareness, it is possible to mediate them for their most critical personal and professional training.

The active teaching-learning process considers that a subject, through his actions, involves himself, his colleagues and the teacher in a dialogical and argumentative process. In the search for information, meaning meets knowledge, producing individual and collective reflections and knowledge, developing personal and professional skills (MASETTO, 2013).

The production of knowledge is capable of generating ethical and political attitudes, interfering in behavior, relating theory and practice to solve problems, in short, assisting in decision-making. In this process, the

teacher has the opportunity to be the mediator in the development of knowledge among all, each one in their own time, according to their potential. And as stated by Pinheiro; Silveira and Bazzo (2007) on the importance of inserting a STS discussion from basic training, it is worth noting that the STS approach that will be inserted in the curricula is only an initial awakening in the student, with the intention that he can come to assume this role. questioning and critical posture in the near future.

So, considering that digital technologies can suggest new ways of learning and teaching, it is important to carry out research and seek to develop new proposals for the use of digital technologies in the school environment that can help in the process of understanding the scientific culture and seek aspects of the humanization of science. that Santos (2008) discusses from the educational proposal of Paulo Freire and the CTS relations. In it, the author argues that modern society is marked by social division. This context is marked by an oppressive process of human exploitation.

To extend the CTS approach to a Freirean humanistic perspective means rescuing the political agenda of the CTS movement. As Paulo Freire has always repeated, education cannot be neutral, as learning does not take place in a vacuum. In fact, those who believe that the teacher has to be apolitical are naively defending the dominant ideology imposed by technological systems. This political position requires the teacher's political commitment to social change, taking into account the context of inequality present in the current globalization process and seeking to build a more egalitarian and fair society (SANTOS, 2008, p. 126).

For Kenski (2012) digital technologies allow all young people to dialogue equally with adults. Digital natives have a lot of curiosity and stories to tell. They delve into areas of interest in their search for information. In addition, they learn from each other

in the articulations between groups from different places in the world. That is why it is necessary to use technological innovations to promote a more interactive and engaging teaching and learning, in the sense of using digital technologies as allies, not as a tool or a paradigm seeking innovative educational practices.

Despite being connected in the subjects of their interest, digital natives may need an intermediation between dispersed information and the production of knowledge relevant to their lives. The dynamics of digital technologies proposes a collaborative work of research and projects, and they can be used to produce content that stimulates students' skills and the teacher will have an important role in helping this student in the analysis of information and its validity as knowledge, from of their training experiences.

When thinking about this learning mediated by digital technologies and pedagogical mediation of the teacher, we can analyze the importance of this in the construction of concepts, because according to the theory of Vigotski (2009), in which the teacher will be able to act in the Zone of Proximate Development (ZPD). ZPD analyzes the gap between actual development and potential development. Potential development is the ability to resolve issues with the help of a third party, whereas actual development determines the ability to resolve issues without assistance. In this sense, it is important to value teaching-learning that values real development.

To work in this mold, it is necessary to stop teaching in order to plan, guide, discuss, present results and publish, in the sense of socializing their reflections on aspects relevant to the development of pedagogical practices. The teacher can be based on active methodologies, concrete situations, stories, case studies, videos and

research incorporating more information and instigating theoretical reflections along with the practice experienced by students (MORAN, 2013). Recalling that the publication and/or analysis of the results does not represent the end of the teaching-learning process, it may just be the starting point of a pedagogical praxis based on perceptions, conceptions, experiences and experiences critically analyzed and for reformulations that are necessary. (ANDRE, 2010).

PEDAGOGICAL PRACTICE AND MEDIATION: A NECESSARY DISCUSSION

First, it is necessary to resort to the particularities of pedagogical practice and teaching practice. A pedagogical practice is woven pedagogically intentional (praxis). On the other hand, teaching practice can be built without a pedagogical perspective (poiesis) (FRANCO, 2016). This mechanical action disregards the historical-cultural and human construction of the subjects who are part of the school community. In poiesis, technique is a producer of the human, unlike praxis, in which technique is a product of the human. Pedagogically constructed practices consider the mediation of the human, and not its submission to digital technologies.

Thus, pedagogical practice as an educational praxis encompasses continuous individual and collective reflection on the intentionality of actions in the educational act. Franco (2016) also emphasizes that the concept of pedagogical practice has a conceptual ambiguity that depends on the understanding in which it is used. This ambiguity would be divided between the technical-scientific pedagogical rationality and the critical-emancipatory pedagogical rationality, in the sense of human formation.

For Franco (2016) the technical-scientific pedagogical rationality based on various theories of learning comes from the empirical and positivist line. In it, only the knowledge obtained through experimental and technical methods is valid. This conception provides for a neutrality of the teaching-learning process, limiting the explanation of phenomena, in addition to standardizing and prescribing practices. This conception favors the dissemination of hegemonic values to organize the State. This organization strengthens the fragmentation of society between the ruling class and the proletarian class.

On the other hand, inspired by Marxist dialectics, critical-emancipatory pedagogical rationality contemplates history, politics, culture and society. Its fundamental principle is historicity as a condition for understanding the knowledge produced. This way, "reality constitutes a historical process reached, at each moment, by multiple determinations, the result of the contradictory forces that occur within reality itself" (FRANCO, 2016, p. 539).

Thus, subjects and digital technologies can be constantly evolving in internal contradictions through human intervention over their actions. For this evolution, it is important to reflect on the practice, not only to understand reality, but to interfere with it. The point is to train individuals in and for praxis. That by emancipating themselves through knowledge, they will be able to collectively seek the end of social fragmentation.

As it is an intentional critical-reflexive action, pedagogical praxis can be structured by a clear and organized planning. Libâneo, Oliveira and Toschi (2009) emphasize that it is necessary to plan and make explicit the technologies used so that they contribute significantly to the teaching-learning process. Not planning can compromise educational intentions, as well as the achievement of objectives. Therefore, it is important that

planning is a guide, with attention to digital technologies so that their use is not limited or boasted. Thus, the teacher will be able to walk with his praxis mediating the teaching-learning process supported by the use of digital technologies.

For Masetto (2013) mediation is a process that occurs through the teacher. The intentionality supported by the posture of facilitator, motivator and promoter of learning, as well as a bridge between the student and knowledge. As discussed by Antunes (2013) in football terms, at that moment the teacher abandons the position of star of the team, and occupies the space of coach. When he abandons the role of "holder of knowledge", he starts to act as a mediator who, based on his social, cultural and historical conditions, has the ability to lead the educational process and the production of dialectical knowledge.

Zabala (1998) considers that educational practice cannot be reduced to the application of ready-made formulas inherited from traditional education. It is necessary to reflect that as society is built, the need for new approaches arises. Even more so when it comes to a practice aimed at digital natives. Despite the continuous flow of information available on the internet, it is necessary to instigate criticality so that they can select information from reliable sources and transform it into knowledge. This criticality can be achieved with integral human formation mediated by educational practices and through STS dialogue and reflections.

Mediation in educational practice can be directed to assist in the construction of knowledge that the student does not yet have, to interfere with their prior knowledge. The teacher's planning, associating his external interpsychic action, has the ability to provide learning that has not yet begun, taking into account Vygotsky's Zone of Potential

Development (2009). This action can help the student's cognitive progression. Thus, the educational practice being directed to the production of knowledge and respecting their previous knowledge, may provide new possibilities for teaching and learning.

There are several teaching-learning possibilities offered by digital technologies. Masetto (2013) states that these tools stimulate self-learning driven by intrapsychic actions and inter-learning arising from the interaction between colleagues and teachers. This way, self-learning (intrapsychic/internal) and interlearning (interpsychic/external) are dialogically correlated and can be stimulated by the use of technological resources.

The instrumentality of these resources in an integrative perspective where digital technologies are not the end of learning, but means to use new methodologies that lead the student to learn to learn, to be an incessant researcher, curious, creative and autonomous. Thus, it is interesting that the teacher articulates educational practices based on the relationship between knowledge, technology and subject. This will enable experiences with new situations that promote skills needed by citizens of the digital age. That is why it is interesting that the teacher as a mediator is supported by methodologies that use digital technologies. This strategy makes it possible for the student to feel like the protagonist of their actions and to be able to get to know, learn and develop.

The mediation of educational practices with digital technologies is not limited to teaching. As a praxis, it configures a process of constant planning, reflection action not only of the teacher but also of the student. It is necessary to dialogue with the social reality experienced, encourage reflection on action, create meaningful learning situations through problem situations and finally "cooperate so that the learner uses and commands the

new technologies for their learning and is not commanded by them or by whoever programmed them (MASETTO, 2013, p. 145)". These assignments are relevant in view of the current social landscape of constant technological advances and totally remote teaching due to the social isolation imposed by the Covid-19 pandemic.

In this sense, the social responsibility of the teacher in producing educational practices that facilitate meaningful learning with a view to integral human formation is clear. Through mediation, the teacher will be able to create more autonomous conditions favorable to the teaching-learning process that seeks the emancipation of subjects. For this, it is necessary to systematize information, coordinate methodologies, instigate reflections and positions for the development and greater generalization of concepts.

The intentions of the teaching-learning process need to be clear from the planning stage so that there is the construction of a didactic sequence that contemplates the specificities of each student. It is still important to know that this social responsibility is imbricated in the teaching work. Considering that "teaching is working with human beings, on human beings, for human beings (TARDIF, 2014, p. 31)", this responsibility for the human being as a working partner needs to be part of the teaching role.

The educational practice developed by the teacher is not only the result of training or the curricular component that he dominates, but also of multiple historical-cultural determinations of the environment in which he lives and coexists with his students. According to Moura (2014), working in human education requires a greater mastery of knowledge from the teacher and this gives him a certain intellectual autonomy. This

contributes to the integral human formation of subjects in the development of cognitive capacity capable of acquiring knowledge and reflecting on their role in social construction.

It is worth mentioning that the teacher can mediate teaching-learning relationships with or without digital technologies through their practices. But this practice takes on a poetic character when the use of these tools is summarized in content reproduction, in the sense of conducting the same “blackboard and chalk” class in the traditionalist molds.

If the teacher positions himself as a mediator, regardless of his conception and use of digital technologies, the teaching-learning process can move towards the construction of a more just and egalitarian society. A society that contemplates the historical, political, economic and social context to understand the facts and intervene in the world. In the same way as Freire (1996), it is necessary to be at peace to deal with technology, not to deify or demonize, just to be constantly curious about the stimuli and curiosities that these new tools can make available to us.

CULTURAL-HISTORICAL THEORY: POSSIBILITIES FOR HUMAN AND INTEGRAL FORMATION

For Vygotsky (2009) the human mental structure arises from the development process based on the relationships between individual and collective history, shaping the cultural-historical theory. Based on the assumptions of a psychology that criticizes instrumental technicism, it is based on historical-dialectical materialism to understand the intellect and human formation. The cultural-historical theory accompanies influential historical facts for understanding the current conjuncture, as well as the mechanization of the means of production of life, work.

Technology, in the light of the conception of science as a productive force, occurs within the framework of the industrial revolution. This way, technological artifacts gain everyday social and cultural prominence (MOURA, 2014). However, despite this process that revolutionized the market, digital technologies did not yet exist. Therefore, understanding its application in the historical-cultural perspective for integral human formation can be of great importance for the present, given the remote teaching imposed by social isolation in the pandemic called Covid 19. end of school duality and social divisions, and for training that values work as an educational principle.

In the Marxist perspective, work, as an educational principle, brings to education the task of educating “for” work and not “for” work; it is a work that is expressed in praxis. For Saviani (2007) the relationship between work and education underwent a new determination with the advent of modern industry in the industrial revolution. This advance simplified the craft by bringing machines that perform most of the functions. Manual work is simplified, transferring intellectual responsibility to the machine.

However, this machinery is nothing more than materialized intellectual work. With this, science can be considered as a force of material production. Thus, human existence is conditioned to a practical relationship with nature, an active and productive relationship. For Marx, this relationship and creation usually leads to illusion and alienation regarding the use of technologies developed to dynamize work.

Men have always had false ideas about themselves, about what they are or must be. They organized their relationships according to the representations of God, the normal man, etc., which they accepted. These brain products have grown to the point where they completely dominate

them. Creators bowed before their own creations (MARX, 2004, p. 34).

This context presented by Marx led society to a reorganization. In particular the school as responsible for training. The universalization of primary school met basic training for machinery operation. With that, “Behold, on the common base of the primary school, the education system forked between general training schools and professional schools (Saviani, 2007, p. 150)”. Strengthening the historical social division between those who learn to be (future leaders), and those who learn to do (gears of the productive system).

The Being, as a human specificity, must be available to every human subject. Gramsci (2001) defends an effective way of deconstructing this historical duality, through a unitary school. He knew that the school environment alone would not break the barrier of social injustices, so it would be important to have a political project that goes hand in hand with the pedagogical one.

Gramsci’s unitary school provides a general access school that provides a broad domain of knowledge to all. Regardless of social class, a school that provides the development of human cognitive functions such as intellectual, bodily and technological, that is, in polytechnics.

The meaning of polytechnic that we are dealing with here is in the political and emancipatory sense in overcoming through education, the social division of manual/intellectual work, and training workers who can also be leaders (Gramsci, 2001, p. 287). The origin of this teaching opposes the unilaterality placed by the training of the exercise of work, this way the omnilaterality is in the socialist assumptions for the understanding of the whole process and interest that involves work as a productive force, as well as its dialectic. This in the sense of forming the human being in the physical, mental, cultural,

political, scientific-technological integrality (CIAVATTA, 2014). With this, the exercise of citizenship and the ability to become a social leader, not just a cog in the system

In Brazil, the meaning of Gramsci’s terms seems to meet Vygotsky’s theory. Ciavatta (2014) adds that polytechnics acquired a historical-cultural meaning due to socioeconomic, political and educational transformations marked by fragmented teaching. And that it is difficult to achieve polytechnics for integral human formation in a capitalist country. As the country is dominated by hegemonic power relations of capital, access to education may not be universal and with the same conditions of equality for all.

However, due to the struggle in defense of public schools and integrated training (Decree n. 5,154/03, later incorporated into the LDB by Law n. 11,941/08) there is a possibility of reintegrating education articulated to work as an educational principle. The decree established that “professional education will observe, among several premises, the articulation of efforts in the areas of education, work and employment, and science and technology (BRASIL, 2004)”.

From this perspective, Frigotto (2012) emphasizes that high school, as the final stage of basic education, must contemplate and articulate work, science and technology for integral human formation. Based on this idea, to develop emancipated subjects who are aware of the society in which they are inserted, so that the appropriation of techniques and technologies that allow social intervention occurs.

For this to happen, it is necessary to work on a formation that provides the mastery of the technical and scientific principles of the production process that favors the development of critical thinking, so as to resist the ideologies that propagate

the dual formation that serve hegemonic strategies. Also to use innovations that digital technologies critically and constructively.

However, as a result of the neoliberal permanence, Freire (1996) denounces “The death of history” due to its unproblematic characteristic in the relations of ideological teaching. Hence the hopeless character of an ideology that equips itself with a technicist education that demands from the educator and the student accommodation to the mute instead of transformation. An educator, trainer, transferr of knowledge and exerciser of skills. As highlighted by Moura (2013), it is currently only possible to discuss polytechnics and the unitary school in full senses and for all in a perspective of the future after the working class has conquered the political power of society.

In this case, Integrated Secondary Education (EMI) with professional education can be considered the germ for an integral, omnilateral human formation articulated to the principles of polytechnics. This model proposes overcoming the human fragmentation historically established by the dualistic division of work, which can promote a complete training that enables interference in society (MOURA, 2013)

Due to the ability to transform or reproduce the social division, we can, so to speak, that “the school is a place of struggle and dispute (FRIGOTTO, 1894, p.19)”, so the teacher aware of his/her social function, supported by the articulated theory indissoluble practice, praxis, has a great influence on teaching-learning relationships. Paulo Freire also adds that teaching requires understanding that education is a form of intervention in the world in a dialogical learning system (FREIRE, 1996).

According to Moura (2014) the constitution of the teacher goes beyond their initial, continuing education or even the discipline

they teach, being constituted by several elements. All these elements that constitute it are intertwined with each other along with others that form the social totality in which they are immersed. This context is generally hegemonic in the sense of guaranteeing the attributions of the government system, of neoliberal strategies that try to transform everything into merchandise, including education, which is strengthened by enhancing competitiveness.

This starts from the premise that the naturalization of the idea of meritocracy would be used to stimulate competitiveness among people so that they are part of the group of included ones, alienating the teaching work and bringing a false idea that there is a possibility of broad domain and that they look like entrepreneurs so that they finally have high rates of employability.

Competitiveness also placed in digital technologies that, while instrumentalizing the development of work, install processes of competitiveness and social injustice, since they are not as accessible to everyone as Moran (2013) and Kenski (2012) claim. Taking into account the dynamism proposed by them, offering new spaces for coexistence and the new market, which automatically requires new professionals who correspond to their demand.

A critique of alienated teaching work is important and “strategic, because to act in human education according to this perspective, it is necessary for this professional to have a certain degree of adherence to the capital project (MOURA, 2014, p. 8)”, even if unconscious. However, it also requires greater access to knowledge and, automatically, its pedagogical practice can contribute to a possible counter-hegemonic action to form autonomous and emancipated citizens who are future leaders. This is not a task that occurs naturally, knowing that

the rationality of capital is in force, and the teacher needs to know and want to walk against this strongly structured system.

In the current political scenario, it is important to understand that it is not enough to interfere in a semantic way, but to become aware of the militancy for the construction of a project of human formation that goes beyond the understanding of reality. We don't just want to understand reality, we want to understand it in order to transform it (MARX, 2010, p. 111). Human formation can serve to interfere in society, in the sense of not only meeting the demands of the new market, but an integral formation. This can be quite a challenge. It is also necessary to understand that its influence can affect all social sectors.

When mediating knowledge, dreams, ideals and utopias, the political nature of education is perceived, that is, education does not become political because of the decision of this or that educator. "She is political (Freire, 1996, p.42)". Therefore, it is important for the teacher to go through a process of becoming aware of the grandeur of this structure, and to reflect on the praxis that goes beyond the mere teaching of curricular components that are put to him.

It is necessary to ignite this revolution daily by critically appropriating the possibilities that digital technologies can provide. In the exercise of work, it is possible to mediate the teaching-learning process for "integral or omnilateral human formation, from the perspective of polytechnics, as that which contributes to the formation of emancipated subjects, regardless of socioeconomic origin, and that this must be the utopia to be followed". search (MOURA, 2014, p. 9)".

From this perspective, pedagogical practice needs to be problematized, contemplating cultural, historical, political and classical contexts. That is why it is important to be based on a teaching-learning

theory that meets all these requirements. With this, it is possible to move towards this integral human formation.

In the cultural-historical theory, actions aimed at a certain end have a mediating character by using tools generated by man. These actions are organized by the essentially human conscious capacity carried out through a historical-cultural interaction, mediated by instruments and signs (VIGOTSKI, 2009). In other words, these instruments are elements developed for interference in the external environment. Soon the man and his work by him are mediating. Already the signs would serve for the organization of the psychological actions.

Vygotsky (1998) states that man does not report directly to the world, his relationship with him is mediated by knowledge objectified by previous generations, by physical or symbolic instruments that are interposed between man and objects and phenomena. In the same way that physical instruments potentiate the material action of men, symbolic instruments (signs) potentiate their mental action.

In other words, instruments allow the transformation of nature, but it is the signs that develop social relations, the appropriation of human culture, a condition for the construction of knowledge and thought. Therefore, knowledge is a social production that emerges from human activity. Pedagogical practice needs to be social, planned, organized in actions and operations and socialized. Human activity is productive (VIGOTSKI, 2009). Because it is human action, pedagogical practice can also be productive.

For Franco (2016) what's a pedagogical practice is the intentionality guided by the planning, development of actions and evaluation. Remembering that this process needs to be reflected in the molds of praxis

in order to improve it. With this, it is possible that the teaching work can promote an integral human formation supported by the use of digital technologies.

CONCLUSIONS

For the above, it is worth reflecting on the historic moment of social isolation. The Covid 19 pandemic surprised everyone and the fear and anxiety caused by the lack of information and knowledge scares everyone in an unimaginable way in unprecedented situations in contemporary human history. This made teaching happen completely remotely. If the school is updated according to society, the use of digital technologies, previously timidly inserted, has become the only means of transmitting content or building knowledge, depending on the conception of each subject.

We deal with fair transmission because what we witness daily are teachers who were “run over” by this moment with digital technologies. Because they are in a unique moment they never imagined coming across, with pressure from the state for the continuity of the school process. Without even time to critically reflect on this imposition, they continued to reproduce traditional classes, using the simplest tools such as a board, chalk, projector, as well as the digital technologies.

What we perceive on the part of the state is the need to continue the educational process. Continuity that does not seem to value quality. In this perspective, the concern is more focused on teaching than on learning. Teaching-learning as a process, can promote integral human formation as long as it is focused on the student’s action. So it is important to consider the multiple determinations that the subject is inserted, and the particularities that each one has for the construction of a fairer society.

REFERENCES

- ANDRÉ, M. **Formação de Professores: a Constituição de um Campo de Estudos**. Educação, v. 33, n. 3, 19 dez. 2010.
- ANTUNES, C. **Professores e professauros: reflexões sobre a aula e práticas pedagógicas diversas**. 7ª ed. Petrópolis, RJ: Vozes, 2013.
- BACICH, L.; MORAN, J. **Metodologias ativas para uma educação inovadora: uma abordagem teórico-prática**. Porto Alegre: Penso, 2018.
- BACICH, L.; NETO, A. T.; TREVISANI, F. M. **Ensino híbrido: personalização e tecnologia na educação**. Porto Alegre: Penso, 2015.
- BRASIL. Decreto 5154 de 23 de julho de 2004. Regulamenta o § 2º do art. 36 e os arts. 39 a 41 da Lei nº 9.394, de 20 de dezembro de 1996. **Estabelece as diretrizes e bases da educação nacional** Presidência da República – Casa Civil. Brasília – DF, 2004. Disponível em: http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2004/decreto/d5154.htm. Acesso em: 20 fev. 2022.
- CHASSOT, A. **O que é ciência afinal?** 2012. TVUFRB (1h18m29s). Disponível em: <https://www.youtube.com/watch?v=Sqmpk3i3R0I>. Acesso em: 20 fev. 2022
- CIAVATTA, M. Ensino Integrado, a Politecnia e a Educação Omnilateral: por que lutamos? **Revista Trabalho & Educação**, v. 23, n. 1, p. 187–205, 2014.
- CONTE, E. FILIPOZZI, R. M. As Tecnologias na Educação: uma questão somente técnica? **Educação & Realidade**, vol. 40, núm. 4, pp. 1191-1207 Universidade Federal do Rio Grande do Sul Porto Alegre, Brasil 2015.
- ECHALAR, A. D. L. F.; PEIXOTO, J.; CARVALHO, R. M. A. DE. “A tecnologia não tem que ser maior do que o professor”: visão dos professores quanto ao uso da tecnologia no contexto escolar. **Educação e Cultura Contemporânea**, v. 13, n. 31, p. 160–180, 2016.
- FEENBERG, A. O que é a filosofia da tecnologia? In: NEDER, R. (Org.). Andrew Feenberg: racionalização democrática, poder e tecnologia. Ciclo de Conferências Andrew FEENBERG. Brasília: Observatório do Movimento pela Tecnologia Social na América Latina/Centro de Desenvolvimento Sustentável. Série Cadernos: CCTS – Construção Crítica da Tecnologia & Sustentabilidade, v.1, n. 3, p. 39-51, 2010.
- FRANCO, M. A. R. S. Prática pedagógica e docência: um olhar a partir da epistemologia do conceito. **Rev. bras. Estud. pedagóg.** (on-line), Brasília, v. 97, n. 247, p. 534-551, set./dez. 2016.
- FREIRE, P. **Pedagogia da autonomia: Saberes necessários à prática educativa**. Editora Pa. São Paulo. 25ª ed. , 1996.
- FRIGOTTO, G. Concepções e mudanças no mundo do trabalho e o ensino médio. In: **Ensino Médio Integrado: concepções e contradições**. São Paulo: Cortez, 2012.
- GRAMSCI, A. **Cadernos Do Cárcere**. Civilização ed.1 Rio de Janeiro: v. 2, 2001.
- KENSKI, V. M. **Educação e tecnologias: O novo ritmo da informação**. 8ª ed. Campinas, SP; Papirus, 2012.
- LÉVY, P. **Cibercultura**. (Trad. Carlos Irineu da Costa). São Paulo: Editora 34, 2009. Disponível em: <https://mundonativodigital.files.wordpress.com/2016/03/cibercultura-pierre-levy.pdf> . Acesso em 13 ago. 2020.
- LIBÂNEO, J. C.; OLIVEIRA, J. F.; TORCHI, M. S. **Educação escolar: políticas, estrutura e organização**. 7.ed. Cortez: São Paulo, 2009.
- MARX, Karl. **Manuscritos econômico-filosóficos**. São Paulo: Martin Claret, 2004.
- MORAN, J. M. **A educação que desejamos: Novos desafios e como chegar lá**. 5ª ed. Campinas, SP; Papirus, 2012.
- MORAN, J. M.; MASETTO, M. T.; BEHERENS, M. A. **Nova tecnologias e mediação pedagógica**. 21ª ed rev. e atual. Campinas, SP; Papirus, 2013.

MOURA, D. H. **Trabalho e formação docente na educação profissional**. 1a ed. IFPR - EAD, Curitiba - PR, 2014.

PEIXOTO, J. Relações entre sujeitos sociais e objetos técnicos: Uma reflexão necessária para investigar os processos educativos mediados por tecnologias. **Revista Brasileira de Educação**, v. 20, n. 61, p. 317-332, 2015.

PINHEIRO, N.A.M.; SILVEIRA, R. M. C; BAZZO, W. A.. Ciência, Tecnologia e Sociedade: a relevância do enfoque CTS para o contexto do Ensino Médio. **Ciênc. educ.** (Bauru), Bauru , v. 13, n. 1, p. 71-84, Abr. 2007 . Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-73132007000100005&lng=en&nrm=iso. Acesso em: 20 fev. 2022. <https://doi.org/10.1590/S1516-73132007000100005>.

SANTOS, W. L. P. Educação Científica Humanística em Uma Perspectiva Freireana: Resgatando a Função do Ensino de CTS. **Alexandria Revista de Educação em Ciência e Tecnologia**, v.1, n.1, p. 109-131, mar. 2008. Disponível em: <https://periodicos.ufsc.br/index.php/alexandria/article/view/37426/28747> Acesso em: 05 fev. 2022.

SAVIANI, D. **Trabalho e educação**: Fundamentos ontológicos e históricos. *Revista Brasileira de Educação*, v. 12, n. 34, p. 152-165, 2007.

TARDIF, M.; LESSARD, C. **O trabalho docente**: elementos para uma teoria da docência como profissão de interações humanas; Tradução de João Batista Kheuch. 9ª ed - Petrópolis, RJ; Vozes, 2014.

TEIXEIRA, F. M. Alfabetização científica: questões para reflexão. **Ciênc. Educ. (Bauru)** v.12, n.4, p.795-809, 2013. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-73132013000400002&lng=en&nrm=iso. Acesso em: 18 jan. 2022.

VIEIRA PINTO, A. **O conceito de tecnologia**. Rio de Janeiro: Contraponto,2005.

VIGOTSKI, L. S. **A construção do pensamento e da linguagem**; Tradução Paulo Bezerra. 2ª ed. São Paulo : Martins Fontes, 2009.

VIGOTSKI, L. S. **A formação social da mente**. 6ª ed. São Paulo: Martins Fontes, 1998.

ZABALA, A. **A prática educativa**: como ensinar. Porto Alegre: ArtMed, 1998.