

## CONTRIBUTIONS OF VYGOTSKY'S DEFECTOLOGY STUDIES FOR THE INCLUSION OF STUDENTS WITH DISABILITIES AT SCHOOL

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### ABSTRACT

Despite all advances in inclusive educational policies implemented in Brazil in recent decades, students with disabilities still face prejudice, discrimination and various barriers (attitudinal, communicational, informational, among others) in schools that limit their human development in vygotskian terms. In view of this, this article aims to discuss how ableism operates in relation to people with disabilities in school education, analyzing some concepts formulated by Vygotsky in his defectology studies and, most importantly, his dialectical conception of disability and education. It is understood that this vygotskian conception offers theoretical support for the construction of inclusive educational practices that promote the human development of all students. Thus, in this article, the theoretical review is based on the aforementioned studies by Vygotsky and on the analysis of both academic literature and empirical research about the topic discussed here. It is concluded that Vygotsky's teachings about the specificities of human development, when mediated by historical-critical pedagogy, prove to be essential for school inclusion and, therefore, for the full development of students with disabilities.

**Keywords:** historical-cultural psychology; inclusive education; disability

### Contribuciones de los estudios defectológicos de Vygotsky para a inclusión escolar de estudiantes con deficiencia

#### RESUMEN

A pesar de los avances de las políticas educacionales inclusivas, implementadas en Brasil en las últimas décadas, estudiantes con deficiencia aún enfrentan en las instituciones escolares prejuicios, discriminaciones y diversas barreras (actitudinales, comunicacionales, informacionales, entre otras) que limitan su desarrollo humano en términos vygotskyanos. Delante de eso, se pretende discutir en este artículo como el capacitismo actúa con relación a las personas con deficiencia en la educación escolar, analizando algunos conceptos formulados por Vygotsky en sus estudios defectológicos y, principalmente, su concepción dialéctica de deficiencia y de educación. Se comprende que esa concepción vygotskyana ofrece subsidios teóricos para la construcción de prácticas educativas inclusivas, que promuevan el desarrollo humano de todos los estudiantes. Así, la revisión teórica de este artículo se fundamenta en los referidos estudios de Vygotsky y en el análisis de la literatura académica y de investigaciones empíricas sobre el tema aquí discutido. Se concluye que los enseñamientos de Vygotsky acerca de las especificidades del desarrollo humano, cuando mediados por la pedagogía histórico-crítica, se muestran esenciales para la inclusión escolar y, para el pleno desarrollo de estudiantes con deficiencia.

**Palabras clave:** psicología histórico-cultural; educación inclusiva; deficiencia

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peças com deficiência na educação escolar, analisando alguns conceitos formulados por Vygotsky nos seus estudos defectológicos e principalmente, a sua concepção dialética de deficiência e de educação. Compreende-se que essa concepção vygotskyana oferece subsídios teóricos para a construção de práticas educativas inclusivas, que promovam o desenvolvimento humano de todos os estudantes. Assim, a revisão teórica deste artigo fundamenta-se nos referidos estudos de Vygotsky e na análise tanto da literatura acadêmica, quanto de pesquisas empíricas sobre o tema aqui discutido. Conclui-se que os ensinamentos de Vygotsky acerca das especificidades do desenvolvimento humano, quando mediados pela pedagogia histórico-crítica, revelam-se essenciais para a inclusão escolar e, logo, para o pleno desenvolvimento de estudantes com deficiência.

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## INTRODUCTION

Brazilian educational policies have been implemented in the country since the 1990s, under the aegis of a discourse that appreciates diversity and respect to differences.

However, according to Garcia and Michels (2021, p. 3), although they present this progressist discourse with the postmodern bias of “affirmation of rights, recognition of identities, and respect the differences”, they are, in social and political terms, conservative because they do not question the social order and, quite the opposite, they overrate the adaptation of individuals to the neoliberal capitalist order.

Also, according to Garcia and Michels (2021), policies have been implemented in peripheral capitalist countries, such as Brazil, supported by the orientation and guidance of international organisms, like the World Bank and the United Nations Organization for Education Science, and Culture. These organisms, operating in the field of “education and inclusion”, have recommended in their reports a series of social policies, especially educational ones, which, by means of a supposedly inclusive discourse, end up intensifying social inequality in the countries in which they are not implemented. In this sense, the following quote is effective at explaining it:

[...] Although the concept of inclusion has been appropriated by the international political discourse since the 1990s, it was already present in the 1960s and 1970s in sociological analysis. Parsons (1966), assuming the functionalist comprehension, discusses the inclusion concept understanding that the term refers to one of the stages of the structure of the social system, constituting itself by the differentiation of social groups who, until then, had not been recognized as part of society. In this analysis, Parsons (1966) relates inclusion to the necessity to promote adaptive capacity or social adaptation. Therefore, there is an affirmation of the diffusion throughout society of common values that are determined as favorable to good development, while emphasizing that, before social adaptation, there are other stages of development of social structure such as selection and differentiation. Thus, it all comes

down to the fact that public policies for education are formulated by means of a liberal appropriation of the inclusion concept, and corroborate the defense of the maintenance of the status quo and the consequent naturalization of social inequality (Garcia & Michels, 2021, p. 4, excerpts from the original).

In this sense, it is important to emphasize that, in the realm of these policies and the academic discourse itself, very often elaborated in consonance with the inclusion ideology, what can be observed is a promotion of the differences of the struggle among classes and their relations of inequality. However, it is not about denying differences or, more precisely, denying human diversity, it is rather about criticizing the abstract and non-historical way by means of which this characteristic of human condition is ingeniously appropriated by inclusive policies.

Such ingeniousness, according to Garcia and Michels (2021), is the new driving force behind the recommendations by international organisms (World Bank and UNESCO), with learning for everyone, which appears now as a complement to the equity slogan and replacing the Education for All motto. In the words of the aforementioned authors:

More recently, we have been able to identify that the meaning of cohesion that is present in the political discourses takes the form of sustainability, according to what is registered in the objectives of sustainable development (UNESCO, 2015) and in the propositions of the World Bank (World Bank, 2011).

The 4th objective of sustainable development was proposed to the area of education with the keywords inclusion, support, and lifelong. Whereas at the end of the 20th century the prominent slogan said Education for All, now the World Bank (2011) confirms the “[...] expansion and improvement of education” as a strategy for adaptation to changes and presents a new slogan Learning for All. The theory of human capital drives this strategy with the prioritization of economy over human development, observed by the direct articulation between learning and economic development and the reduction of poverty, in an autonomous way regarding education learning processes (Garcia & Michels, 2021, p. 6, excerpts from the original).

## ABLEISM IN SCHOOL EDUCATION

Thus, according to Garcia and Michels (2021), centered on the relation between education and inclusion, there is an emphasis on the strategies of equality and learning that are present in the recommendations realized by peripheral countries. In the reports, there is evidence that there is no equality in learning results and teaching processes.

In this case, it is up to public administrators to go as far as guaranteeing equality of opportunities for all (equality), although in this process, many students, even with access to school, are not able to learn and develop their capacities whereas others learn only what interests the job market and the neoliberal capital logic.

Under the influence of the pedagogies of competences<sup>1</sup>, schools, aligned with inclusive policies, tend to underappreciate the classic meaning of the transmission and assimilation of knowledge. According to the reflections of Garcia and Michels (2021), such reorientation, on the other hand, compromises the discussion on learning and the opportunity for school education, limiting teaching activities, “the act of teaching”<sup>2</sup>, because they disregard the processes of studying, of teaching, and of human development itself.

According to what has been exposed, the pertinence of defectology studies by Vygotsky (1924-1935) in contemporary research works from an inclusive perspective becomes evident. However, it is fundamental that such research works are not connected to neoliberalism and, as well as in the context of the intellectual production of the Belorussian psychologist, it is also fundamental that they are committed to social transformation and the overcoming of social inequalities, including for people with disabilities.

Thus, the proposal for this article is to discuss the contributions by defectology studies by Vygotsky (1924-1935) for the inclusion of students with disabilities at school. In order to do so, at first, supported by academic literature in the educational area and empirical research works already developed in the theme, we discussed how ableism operates regarding people with disabilities in school education. Subsequently, we analyze some concepts formulated by Vygotsky in his referred studies, especially his dialectic conception on disability and education. Finally, we present some contributions by the Vygotsky’s concepts in the study of human conduct, and more precisely, regarding the processes of human development of students with disabilities in school education.

<sup>1</sup> “it presents itself as the other face of the learning to learning pedagogy, what the objective to provide individuals with flexible behaviors that leads them to adapt to the conditions of society in which the very necessities of survival are not a sure thing. Satisfaction has ceased to be a collective commitment, and it is the responsibility of each individual, according to the etymology of this word, find themselves subjected to “the invisible hand” of the market” (Saviani, 2012, pp. 151-152).

<sup>2</sup> Cf. Duarte (1998).

According to what we have already discussed, inclusive policies, especially the ones implemented in Brazil from 2003 to 2016, strongly influenced the enrollment of students with disabilities at regular schools. According to micro data from the School Census of 2022 (Brasil, 2022), realized by the Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Inep), or “Anísio Teixeira National Institute for Studies and Research Works on Education”, an organ that is connected to the Ministry of Education (MEC), there was an expressive increase in the number of enrollments of students with disabilities in regular classes in the public network of education from 2010 to 2022. In absolute numbers, the number of students with disabilities that were enrolled rose from 443.204, in 2010, to 1.126.434, in 2022 (Brasil, 2022).

The terms inclusive and accession, often non-critically, are used by a large number of Brazilian educators in this ideology, according to the demonstrations of Crochík, Pedrossian, Anache, Meneses and Lima (2011) and Böck and Nuenberg (2018), people with disabilities still suffer with prejudiced attitudes and discrimination at Brazilian schools. Recently searched practices have been named Ableism by the national academic literature. However, what does that mean? How does it operate in the school space?

Ableism is a structural dimension and it has been approached by many researchers (Campbell, 2009; Lewis, 2020; Mrcuer, 2006; Mello, 2016; Taylor, 2017). This term was developed in the United Kingdom and in the United States, in the 1960s and 1970s, based on social movements by people with disabilities. In the English language, the term Ableism, made by the combination of the words able and the suffix ism (practice, doctrine, or system), refers to practices and attitudes that affect pejoratively people with disabilities. “This form of systemic oppression leads people and society to determine who is valuable based on the way people look or on their capacity to produce, stand out, or at least, behave correctly” (Lewis, 2020, n.p.).

In Brazil, according to Mello (2016), until 2012, the Portuguese language had no word in order to express the discrimination against people with disabilities such as in the case of sexism (gender discrimination), racism (discrimination due to the color of one’s skin) and homophobia (discrimination against sexual orientation). Regarding disabilities, there was a lack in the Portuguese language vocabulary. According to Diniz and Santos (2010, p. 10), “this discourse problem is an indicator of the social and political invisibility of this phenomenon”; because it is certain that Ableism is in urbanism, at the university, at workplaces, and it has also been at school for quite a while.

When we analyze Brazilian reality, we are able to

observe that people with disabilities have appropriated, in an alienated way, the means of production and the absence of knowledge. Concerning education, since 1990, with the inclusion discourse, as we have previously discussed, students with disabilities are getting enrolled especially in public schools but they do not actually internalize historically accumulated knowledge. Thus, inclusive policies implemented by the education system in our country, since then, have strategically alienated inclusion (Leite, 2017), because, in the logic of capital, it is under a pseudo inclusion that capitalism supports itself. According to Garcia and Michels (2021, pp. 14-15):

By thinking of the political tactics used by the sectors and groups that defend the right to school education, we understand that there must have been, in the past few years, a mistake that consists of prioritizing the defense of inclusion in this connection with the intransigent defense of state public schools. The defense of the right to school education to students with special needs in regular classrooms does not criticize the current school education project, established by means of classifying, discriminating, and privatizing policies, which have attempted at a standardization of performances and the development of lower competences for human development, based on the skills that are necessary for the job market. However, this depends on the practice of teachers. Special education at regular elementary schools is fundamental, but it is not enough, just like it is not enough for students connected to special education to just be at regular schools. It is necessary to dispute the project of school education as part of a society education project, the political and the pedagogical practice according to Florestan, with an awareness that such dispute happens in the middle of the struggle among classes.

Furthermore, teaching, which is the most important human activity in the work of teachers has not contributed to the elucidation of the objectivity of the world, or to the objective comprehension of social structures and their contradictions (Duarte, 2024). Consequently, in the context of inclusive policies, schools have not promoted reflections and discussions that aim at providing a materialistic and historical explanation to the interface of differences and social inequalities. For example, regarding people with disabilities, according to a research realized by Camargo (2020, p. 94), the education professionals who were interviewed are based on the “[...] principle that if the student has some disability, they are not able to learn or keep up with the students without any disabilities [...]. The responsibility for not learning is placed on the students and their conditions”.

So according to what we have discussed before, behind the innovating, revolutionary mask, accounts of

important social battles in our history are misrepresented in order to serve conservative purposes. According to the research works by Crochik *et al.* (2011), Leite (2017), Böck and Nuenberg (2018) and Camargo (2020), such dynamics manifests itself in the context of inclusive educational policies, in which prejudiced and discriminating practices regarding people with disabilities still exist.

In this sense, we wish to corroborate the pertinence of defectology studies by Vygotsky for contemporary research works on pedagogy because we understand that, in the formulations of cultural and historical psychology, and of critical and historical pedagogy<sup>3</sup>, there are theoretical mediations enough to realize a pretty positive criticism to the current educational and social hegemonic projects in Brazil.

Consequently, the formation of teachers who are committed to a teaching praxis that promotes criticism to the status quo (Neves, 2013), and which is also mediated by an educational project that is politically interested and systematically oriented will certainly promote a social and educational praxis that is committed to the overcoming of oppressive social practices, including the ones that reveal themselves as Ableism-oriented.

#### **MAJOR CONCEPTS FORMULATED BY VYGOTSKY IN HIS STUDIES ON DEFECTOLOGY: FIRST POINTS**

Aware of the multiple social determinations that we face, we must keep our commitment to resistance. Vygotsky, forefather of the cultural and historical theory of human development, had already been defending for over a hundred years that psychology should be at the service of the construction of a new society, and consequently, of a new humankind, Vygotsky believed men and society should be socialist. Regarding this transformation, Vygotsky (2004, p. 10) affirms that “education must play a pivotal role in the transformation of humanity, towards a conscious social formation of new generations”.

In their studies on the development of advanced psychological functions (1931-1995), Vygotsky explains that these functions are “[...] Processes of development of advanced forms of conduct by children” (p. 29). He emphasizes language, drawing, writing, logic, a conception of the world, the resolution of math operations, the formation of concepts (p. 12), logical

<sup>3</sup> According to the entry elaborated by Saviani (2006), “this pedagogy originates in the dialectic conception, specifically in the version of historical materialism, having strong affinities, concerning their psychological bases, with the cultural and historical psychology that was developed by the “Vygotsky school” . Education is understood as the active producing, directly and intentionally, in each individual, that humanity that is historically and collectively produced by people together, in other words, educationally is understood as mediation in the middle of nowhere social practice. As a result never mind social practice presents itself as the starting point and the destination of the education practice”. Cf. Saviani (2006).

memory (p. 247), and voluntary attention (p. 252), in addition to thanking (p. 304) and imagination (p. 307) and other factors that the researcher points out and explains in his studies.

So we ask ourselves: in which concrete social conditions does educational work promote the development of functions that are actually cultural and human? Not every education leads actively to development towards this end and in the same way. It is not in any school, or with any content, or with any radical theory that education will truly develop people.

As a consequence, here we approach a crucial question which is brought up and discussed by Vygotsky (2021) as well as by Saviani (2021): which education truly plays its role of developer of human beings? Which education is capable of transcending the limits of immediate experience, leading students to spontaneously go beyond in their knowledge acquisition, and also of reaching simple conclusions regarding what is apparent, temporary, and pleasurable in order to help students become aware of the real world, experience arts, understand science, and know themselves?

So what would be an education that develops people? Davydov (1988) argues that the task of school is to teach students the practice of reflection, of comprehension of reality, so that they can develop advanced psychological and cultural functions. In order to do it, it is necessary to organize instruction in a way that promotes such development. The researcher defends that, in agreement with Vygotsky, teaching is supposed to develop people – that is, a formation that, when organized, leads to fundamental learning and promotes advancement.

Vygotsky (1993, p. 334) also emphasizes the importance of good, fruitful teaching, the one that promotes development: “Teaching would be absolutely unnecessary if it were only able to use what is already mature in development, if it were not the source of discovery and newness”. These affirmations are definitive when we want to analyze and propose something about school education to the students, whether they have disabilities or not.

According to Vygotsky’s teachings on the development of advanced psychological functions and disability: The psychological functions that are characteristically human (voluntary attention, logical memory, the formation of concepts, imagination, volition, and so on) are not a product of biology or of the mere phylogenetic history of the species. They are social because they “internalize social order relations and the foundation of the social structure of personality” (Vygotsky, 1995, p. 151).

The defectology studies and theories of Vygotsky (1997) were extremely important. Although his life was short, it was a productive and creative one. He dedicated many writings to these themes, developed theories and realized research works, and he also severely criticized the treatment given to people with disabilities or mental

problems in addition to proposing effective actions.<sup>4</sup>

On his prospective vision about development, in defense of human possibilities, disabilities should not determine the destiny of people. We take this perspective in our analysis and consider it to be the horizon of school instruction organization. The theory of human development by Vygotsky follows the general genetic law, that is, a law that determines the genesis and the origin of development. In this sense, the Russian psychologist established that any development of the psychological functional system happens in two dimensions. First in the social dimension, in the inter-psychological field, so that it can become intra-psychological within people (Vygotsky, 1995). So we can ask ourselves: how does Vygotsky justify his law? He emphasizes the true nexus between what he names inter-psychological and intra-psychological.

The psychological functions that are characteristically human are not products of biology or simply of the history of the species. They are internalized social order relations and, most importantly, the foundations of human personality. His general law of development explains the importance of collectiveness in the lives of people with or without disabilities. What is converted into personal are the relations between people and the meanings that are attributed to these relations because they are the starting point of development towards socialization and individualization, from the social to the individual. That way, adults are initially the ones who give the world meaning for the children.

Logically, it will only be possible with the systematically and intentional presence of the educational work, under this perspective of social education. It is not about external influences exclusively, it is rather about the cultural constitution of each individual, which happens in interpersonal relations, that is, the signification process. What students transfer to the intra-psychological sphere are not words or actions, there are significations that constitute themselves by means of historically constructed relations, that is, the internalization of complex or advanced cultural forms that constitute the teaching process.

The contributions by Vygotsky in the field of disabilities are theoretical, methodological, institutional, clinical, and pedagogical. One of his objectives was to

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<sup>4</sup> His most important writings on psychology and pedagogy for people with disabilities can be found in a collection of texts published in *Obras Escogidas* (Tomo V), fundamentals of defectology, from the Visor publishing house, prayer Madrid. Part of the texts about problems of defectology was translated from the Russian language into the Portuguese languages by Zoia Prestes and Elizabeth Tunes (2021). However, there are many writings, lectures, and the classes given by this author that approach, intensely, the development of people with disabilities. Van Der Veer and Jaan Valsiner agree that the writings by Vygotsky on defectology are an important part of his general theoretical approach (1996, p. 88).

understand the peculiar organization of psychological functions and of the conduct of people with disabilities. Based on the ideas of this author, we are able to understand that people need a social means that is intellectually nutritional and well organized for their cultural development, and they also need a permanent interaction with other members of their culture in combination with an educational action that is carefully planned, systematized, and coherently sequenced. Thus, by approaching educational work for children with disabilities, the author affirms:

Because children with mental disabilities in their experience are so dependent on all concrete visual impressions that tend to be scarce to the disadvantage of the development of autonomy in abstract thought, schools must set them free from the excess of direct visual methods. Because they are obstacles to the development of abstract thought and the education in these processes. In other words, schools should not only adapt themselves to these children's disabilities. They should overcome them (Vygotsky, 1997, p. 36).

In this sense, based on these general observations, we can proceed to other concepts that drive cultural and historical psychology, which directly introduce us to smarter ways of regarding children and young people with disabilities.

#### **CONTRIBUTIONS BY VYGOTSKY'S THEORY FOR THE SCHOOL EDUCATION OF PEOPLE WITH DISABILITIES: GUIDING CONCEPTS**

The concepts approached here are results of Vygotsky's studies. They are interconnected and interdependent. Such characteristic prevents them from being analyzed in an isolated or fragmented way, because each one significantly contributes to the comprehension of the whole thing. Consequently, the studies by Vygotsky, by approaching human development, transcend the dichotomy between people with and without disabilities and offers a more comprehensive vision.

According to Der Veer and Jaan Valsiner (1996), the interest of Vygotsky for defectology problems does not consist of a set of inconsistent methodological and theoretical propositions. It reflects the work he was realizing with education officers in Russia, which was intense and collaborative and provides us with plenty of valuable clues for the comprehension of the development of his thoughts as a whole.

In this sense, it is evident that Vygotsky, in his work defends the necessity of instruction that is productive – that develops people –, so that children can go beyond what they already know, and consequently be successful in their development of advanced and complex psychological functions. Thus, the Russian author affirms: "Instruction is only validated when it precedes development. In this context, there is an act of awakening

and engineering of a whole series of functions that used to be in a maturing stage and remained in the zone of imminent development" (Vygotsky, 1993, p. 243).

Regarding obstacles, like in the case of disabilities or other pathologies, Vygotsky stayed away from biological determinism and alerted us that pedagogical organization sometimes might not adapt to the limitations of people; Contrarily, the organization of teaching might outline alternative trajectories, or new ways, so that everyone can learn and develop advanced psychological functions. Such procedure is diametrically opposed to relativist pedagogies, widely disseminated in the educational field today, such as the ones that follow the ideology of "learning to learn": learning by oneself, without the necessity of transmission of systematized knowledge.

According to Duarte (2001, p. 36), these pedagogies establish a value hierarchy, in which learning by oneself is considered of a more elevated level than the learning that results from the transmission of someone else's knowledge."

The idea of a fruitful education, that promotes the development of psychological functions, connects with the concept of the zone of imminent development<sup>5</sup>, demonstrated by Vygotsky in order to explain the psychological process of elaboration of knowledge based on the insertion of cultural practices. The author approaches the possibility of qualitative advancements in the development of advanced psychological functions, when in collaboration with a more experienced partner – these advancements are related to the development of advanced functions.

The concept of Zone of Imminent Development, introduced by Vygotsky as part of his analysis on children's development, emphasizes the importance of imitation as a critical mechanism for cognitive advancement. In his text, "O problema da Idade", or The Age Problem (1995, p. 268), Vygotsky highlights the superior function of imitation and affirms that a child can do a lot by means of that function. "What can be done today in collaboration with an adult person and with supervision can be realized autonomously in the future".

On this aspect, we must understand the following facts: first, it is a possibility and, therefore it might happen or not, depending on the teaching conditions; secondly, the words today and tomorrow do not refer to the days in the week that are next to each other because he was talking about periods of development – about the passage from one period to another; and third, if we only observe what children can do by themselves, we will be focused on the past, on what has already been conquered. Thus, what matters to education is exactly the possibility to look into the future and establish a prospective visual.

<sup>5</sup> Several translations use the expression "zone of proximal development". We are using "zone of imminent development" because we are based on the direct translation from Russian by Zoia Prestes (2012).

The principal law that characterizes psychological development is its historical nature. There are certain moments, or periods, in which they are not subordinate to the chronological counting of time: “time and the content of development change in the different years of life and of development of children” (Vygotsky, 2018, p. 19). Pedological age (of a child’s development) does not coincide with chronological age (the passage of years) and, by becoming aware of that, we assume a position of alertness in which we can assess a child, whether the child has a disability or not.

As a result, it is fundamental that we question what aspects of children’s development must be observed and understood so that there can be advancements in cognition. “

Knowing how to determine the pedological age of a child, the level of development of advanced functions, is a major skill pedology operates with” (Vygotsky, 2018, p. 21). This is an unusual procedure for us because we are familiar to assessing things quantitatively, or mathematically, which something that children don’t know how to do, in addition to the fact that many times we are based on medical opinions, which are mostly deterministic and partial.

The development of cognitive capacity and children and young people completely depends on instruction and consequently teaching must happen before development. If organic or biological development imposes limitations, cultural development is unlimited because it implies the social medium, the school, and instruction by alternative routes. For the school education of these students, Vygotsky (1997) highlighted the necessity to develop special means, collateral vias for development in order to socially compensate disabilities:

A child that is blind or deaf can reach the same level of development of a regular student, but children with disabilities reach such levels by a distinct way, by a distinct mode, *and it is important for teachers to know the peculiarity of the ways through which they must lead a child* (Vygotsky, 1997, p. 17, highlights by the author, our translation).

The concepts of a pedagogy that develops people and of the zone of imminent development help us in our comprehension about the concrete conditions for human development. The development of cognitive capacities in children and the young people depends completely on instruction and, as we have said before, teaching must precede development. The proposition by Vygotsky is dialectical (not linear), that is, to him and his followers all aspects of development are parts of a single process. Since there are no separate functions, interfunctionality is another concept that is fundamental in our reflections and learnings.

The development of cultural functions that are characteristically human happens like the instruments

in an orchestra in concert. Luria, Vygotsky’s partner, by considering advanced mental functions as complex functional systems, emphasizes that they are not located in the:

[...] Narrow zones of the cortex or in isolated groups of cells, they must be organized in systems of zones functioning in concert. Each one of these zones plays their own role a complex functional system, and each one of these territories might be located in areas of the brain that are completely different and often very distant from each other (Luria, 1981, p. 16, highlights by the authors).

Once we have assumed the theory of inter-functionality, another important concept is articulated, it is the social compensation of the disability, which is not very different from the alternative ways, or collateral, indirect vias. Knowledge about the articulation of these concepts brings us possibilities for orientation and organization of teaching for students with disabilities. The inclusion of people with disabilities, since very early, in different human groups, can be effective against discrimination or segregation, so the school is a privileged place for that.

In this sense, it is important to remember that Vygotsky established a difference between the primary and secondary nucleus of disability. The first one is biological and the second one is social, a product of the social consequences of the disability. We were able to find in the works in “Fundamentos da Defectologia”, or Foundations of Defectology, written between 1924 and 1935 by Vygotsky, an important contribution for us to understand the role played by instruction in development. The author denounced that the negative characteristics and the complications of disability are not in the biological sphere or involve disability itself in its primary biological form. They are a result of an “[...] incomplete social development or pedagogical negligence” (Vygotsky, 1997, p. 144). In other words, an incomplete education produces serious consequences regarding cultural development. “When a child does not have enough interaction with other children, secondary complications might appear” (Vygotsky, 2018, p. 15).

The teachings by Vygotsky about the development of advanced functions have, and critical and historical pedagogy, a possible and necessary mediation so that the school can play its role, which consists of providing students with the appropriate means for conceptual elaboration. In order to do that, we strongly believe in the necessity to understand social compensation and indirect or alternative routes in order to reach the appropriation of school knowledge. Dainez and Smolka (2014, p. 1106), in a study realized about Vygotsky’s compensation concept, affirm:

Thus, at the moment of the conceptual elaboration of compensation, Vygotsky (1997) shows us

the process of social formation in the mind, by working with the complexity of all the factors, which produce an impact and affect the process of development and the constitution of personality for people with disabilities, with an emphasis on the humanizing character of education.

According to Vygotsky (2011, p. 868):

The structure of the complex terms of behavior in children consists of a structure of indirect routes because it helps when the psychological operation in the children proves impossible through the direct way. However, once these indirect ways are acquired by humanity in their cultural and historical development, and once the social environment, since the beginning, offers the children a set of indirect routes, we very often fail at recognizing that development happens by means of this indirect route.

Thus, school must offer the social education that is commonly realized in the country for all students. Developing in the children with disabilities a vision of the world that is scientific and work within the school towards a conscious relation between these children and life is our task. In this sense, for example, the Atendimento Educacional Especializado (AEE), or Special Educational Support, or the collaborative teaching among the teachers in regular classrooms and profession special education professionals introduces the students to the general objectives of education, by means of necessary alternative routes. In addition to the indirect means or ways that are already available, such as the Braille system, Libras, alternative communication, abacus, wheelchairs, as well as new and diverse technologies and social behaviors that have already been acquired, and elements of assisting technologies, we also need to elaborate and organize other routes for individual as well as collective works.

What is the meaning, to the students, what words and concepts that are introduced to them? How do the students attribute meaning to objects, to words, to the relations between people, to the different situations in everyday life, if there was no previous process of signification? How are they going to establish possible relations between words or signs and reality? Finally, how are you going to learn about social relations, life, and reality? In this process, teacher formation is a crucial aspect for the socialization of more advanced knowledge and this formation demands a position that is committed with going deep in theoretical and methodological studies on human development and educational practices that are humanizing and truly develop human beings.

The concrete psychology of Vygotsky, a theoretical approach that is based on a materialist method that is historical and dialectical, fills the historical blank

regarding unity between theory and practice regarding your vision of the world, the historical nature of human beings, and education or practices that constitute human consciousness. This theoretical perspective offers subsidies for the construction of educational practices that aim at emancipating individuals and provide them with the tools to fully develop their advanced psychological functions.

## FINAL CONSIDERATIONS

There is no transforming or revolutionary praxis without a theory that is equally transforming and revolutionary. Based on the contributions by Vygotsky, there is the emergence of a set of theoretical and empirical works that redefine the relation between disability and culture, with a highlight on the positivity of the educational interventions in the development of advanced psychological processes, including the ones that are considered to have disabilities. Stetsenko and Selau (2018) approach Vygotsky's position regarding disability, and they say:

[...] It clearly sounds not only contemporary, but apparently quite ahead of its time, because it has a systemic and dialectical vision of the problem of nature versus creation. This is the contribution by Vygotsky to schools on the study of disabilities and on the development of a whole system that is particularly and deeply significant (Stetsenko & Selau, 2018, p.317).

Obviously, Vygotsky's contributions, no matter how consistent and coherent with the transforming and revolutionary praxis by themselves are not enough to produce real transformation or revolution in society. That way, our opinion is that the theory of Vygotsky offers us important mediations for the process of formulation and engagement in a praxis that is transforming and revolutionary because it decisively contributes to our comprehension about historical processes of development of human psychology and the importance of educational activities.

Thus, considering the propositions by Vygotsky in his concrete psychology regarding the complexity of the Brazilian educational reality, which places us face-to-face with real concrete students, a synthesis of multiple social determinations that we must consider for the fruitful development of all the students constituted in their social relations.<sup>6</sup>

The function of the school, different from what inclusive policies propose is, therefore, to accomplish the task of socialization of knowledge in its most developed forms. According to Saviani (2008), it is not enough that such knowledge be systematized at school Because it is

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<sup>6</sup> Thesis VI of Karl Marx about Feuerbach Affirms that "human essence is not an abstraction that is inherent to single individuals. In fact it is the set of social relations" (Marx, 1996, p 13).

necessary to make them accessible to students, so they can appropriate knowledge by means of a systematized teaching and learning method.

Critical and historical engagement leads to the deep articulation between school educational practice, and the foundations of cultural and historical psychology, according to Vygotsky. So, it is possible to avoid a simplistic and direct instrumentalization of this theory for pedagogy. Considering what has been exposed and the forementioned articulation, we can affirm that a revolutionary pedagogical theory must accomplish the task of school education, that is, the mediation between the work of culture and the psychological development of individuals, combined with advancements in the quality of human development. The children and the young people with intellectual disabilities need this mediation in a special and peculiar way. Consequently, the teachings by Vygotsky about the development of advanced functions have, in historical and critical pedagogy, the mediation that is possible so that the school can play its role, which consists of providing the students with the appropriate means for conceptual elaboration.

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## Note

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## Data availability

Research data are available in the document.

## Section Editor

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