

# Medical school as an environment, a source of development: what are its meanings?<sup>1</sup>

O curso de graduação em Medicina como ambiente, fonte de desenvolvimento: quais são seus significados?

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## ABSTRACT

Physicians-professors are, among other institutional actors, responsible for the technical, ethical and cognitive training of medical students, thus transforming medical teaching into an object of discussion over the last few decades. The theoretical reflections presented here are results from doctoral research that aimed to understand the unit "learning leading to development" of medical students, through the teaching activity carried out by professors, under the contributions of the Historical-Cultural Theory. Considering the important role that they play in the organization of the relationship maintained between students and knowledge, in the different learning environments, we assert that the environment plays a decisive role in the development of physician-professors as well as students, provided that, for that, it reflects a scientific-pedagogical atmosphere shared between the medical school the subjects inserted in it and the Higher Education Institution. We consider that such an atmosphere is materialized in the sharing of ideals, in the presence of a pedagogical intention based on a theoretical base and, above all, in the performance of knowledge as a mediator of these relationships,

## RESUMO

Médicos-docentes são, entre outros atores institucionais, responsáveis pela formação técnica, ética e cognitiva dos estudantes de Medicina, transformando, assim, a docência médica em objeto de discussões ao longo das últimas décadas. As reflexões teóricas aqui apresentadas são desdobramentos de uma pesquisa de doutorado que se propôs a compreender a unidade "aprendizagem conduzindo ao desenvolvimento" dos estudantes de Medicina, por meio da atividade de ensino exercida pelos médicos-docentes, sob os aportes da Teoria Histórico-Cultural. Considerando o importante papel que estes desempenham na organização da relação mantida entre os estudantes e o conhecimento, nos diferentes ambientes de aprendizagem, se assevera que o ambiente tem papel decisivo no desenvolvimento de médicos-docentes assim como de estudantes, desde que, para tanto, seja reflexo de uma atmosfera científico-pedagógica compartilhada entre o curso de Medicina, os sujeitos nele inseridos e a Instituição de Ensino Superior. Se considera que tal atmosfera seja materializada no compartilhamento de ideais, na presença de uma intencionalidade pedagógica pautada em um campo teórico de base, pensada e desenvolvida de forma consciente e competentemente orientada para o

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transforming the different learning spaces into development environments. In this context, the importance of the environment, as a source of development, in the relationships between those who teach and those who study, is sustained.

**Keywords:** Environment; Teaching activity; Study activity; Medical culture; Physician-professor.

desenvolvimento dos estudantes e, sobretudo, na atuação do conhecimento como mediador destas relações, transformando os diferentes espaços de aprendizagem em ambientes de desenvolvimento. Neste contexto é que se sustenta a importância do ambiente, enquanto fonte de desenvolvimento, nas relações dadas entre quem ensina e quem estuda.

**Palavras-chave:** Ambiente; Atividade de ensino; Atividade de estudo; Cultura médica; Médico-docente.

## 1 Introduction

Faculty members are, among other institutional actors, responsible for the technical, ethical, and cognitive training of medical students. Thus, the physician-professor and the teaching activity they perform, as a mediated action, and their relationship with the Medicine course, as an environment, were the focus of analysis of a doctoral research that aimed to identify historical-cultural determinants that characterized the teaching activities of professors. It took into account the relationship between the conceptual dimensions, pedagogical and psychological, linked to the process of teaching and learning. In addition, we sought to understand how faculty members expressed, idealized and developed these activities when working on this course. To this end, we use the historical-genetic method, which presupposes the interpretation of processes of historical developments, through which specific and mediated historical-cultural contexts are analyzed. In this article, the term environment, which will be presented as a theoretical concept, is presented as essential to the understanding of the unit "learning leading to development".

In a recent historical context, especially in the last two decades, medical education has undergone important reformulations, especially related to curricular aspects, triggering transformations in the student and professor profiles (Lampert, 2009). Supported by curricular and methodological proposals developed with a view to the training of a general practitioner and humanist, these reformulations show legitimate concerns, but superficial to what we understand by teacher development. It is possible to note that the changes related to medical

education are centered on the early insertion of the student in medical practice, meeting the demands of the latest National Curriculum Guidelines (DCN in its Portuguese acronym) for the Course. While proposals that are organized from a conception of teaching and learning, as a fundamental basis for the development of students, are rarely addressed (Pavan; Senger; Marques, 2022).

Regarding the theoretical part of the study, we articulated medical education with the Cultural-Historical Theory (CHT) by Vigotski, the Activity Theory by Leontiev, and the Theory of Developmental Teaching by Davidov, constituting a theoretical model that would enable the comparison between two lines of development: the history of the Medicine course investigated, as a historical-cultural context and the teaching histories, as actions mediated by medical culture. Therefore, our approach is based on the dialectical unit "teaching ↔ to study", based on the teaching activity performed by the physician-professors and its implications for the humanities formation in a medical school.

Based on the above-mentioned contributions, we understand that learning and development have their genesis in the historical and social forms of human experience. Therefore, professional (and human) training implies that medical students master medical knowledge, conducts, and procedures, making them become part of their future professional activity, as a medical personality. We understand personality as a historical-cultural expression of consciousness, taking into account the interactions among subject, also with the world, as contexts of alterity (Vigotski, 2001). In our argumentative context, we consider it as the expression of the relationship "learning leading to development", with direct implications for the training of medical students, with knowledge and more complex ways of knowing, doing, and being (Machado, Schroder, 2021).

In the same way, we assert that learning and development are based on the joint participation of reciprocities, that is, on the relationship established between professor-students ↔ and ↔ student-students, engaged around knowledge. This participation expresses the social nature of the behavior. Therefore, human development is concerned with a conscious construction of

thought processes, which is how we develop and deal with thought. The theoretical core of the issue is situated, precisely, in the mediated action (by knowledge) and the intervention with the participation of the other person, having as its central movement the transformation of historical, institutional, and cultural contexts.

Furthermore, we take as a basis the contributions of the Belarusian psychologist L. S. Vigotski (1896-1934) in order to present the key concept of our arguments: the environment. The author presents us with two possibilities for the same expression. The first, more universal, understood as a generalization of physical space. The second, announcing the importance of the word/concept as a synthesis of factors that influence learning and development. For Vigotski (2017, p. 16), it is possible to understand the environment as a unit of analysis, "not as an absolute parameter, but as a relative criterion." In our context, the role of the environment in the development of subjects can only be understood when studied relationally, from the point of view of the activity. Also as a unit of analysis of human development - the subject is constituted in the activity (Leontiev, 2004).

Supported by Marxist historical and dialectical materialism, as well as by the contributions of the Historical-Cultural Theory, we understand the process of humanization as a result of the social interactions of production in and through practical activity. Based on this premise, the understanding of the role of the environment, represented here by the undergraduate course in Medicine, as well as its relationship with the development of the physician-professor, is essential for our analyses. However, as Vigotski (2017) argues, for development to take place, it is imperative that ideal forms<sup>3</sup> are present in the environment, and that they establish dialectical/interactive processes with what Vigotski calls initial forms. In this scenario, we consider as an ideal form the conscious teaching practice, which is the teaching activity supported by a

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<sup>3</sup> In Vigotski's (2017) text, when mentioning the forms found in the environment, in dialectical terms, he used several expressions such as "initial", "primary", "rudimentary" and "definitive" "final" and "ideal" form.

basic theoretical field and, mainly, based on knowledge as a mediating instrument of the relations between those who teach and those who study, transforming the different learning spaces into environments for learning and development. On the other hand, initial forms refer to the understandings already elaborated by the professors about their actions and responsibilities in a medical school and even about the medical activity and its meanings.

We propose, therefore, the use of the term "learning environments" when referring to socially determined and organized spaces for the realization of the "learning and development" unit. From the point of view of teaching, it is where the<sup>4</sup> medical, pedagogical, and psychological-pedagogical cultures meet and are conditioned, constituting the teaching activity under the coordination and guidance of the physician-teacher.

It is important to specify to the reader that, in our text, the concept of "culture" will always be correlated with the concept of medical culture<sup>5</sup>, which means the set of knowledge of a theoretical, practical and ethical nature (conducts), which are part of medical education. We consider medical culture as a totality of specific knowledge - a cultural work, resulting from the activity of medical research, as well as from the medical activity itself, in its relations with health and human life. In this way, the knowledge (instrumental, technical, and symbolic) produced by the activities and which incorporates the social experience of the indispensable care of the other is reaffirmed as a culture. Therefore, Medicine as a human production also needs to be understood in its historicity. In this sense, we assert that medical culture is part of what Vigotski specified as the line of cultural development, forming mediating psychological systems and that it crosses different historical-temporal planes (Vigotski, 2004a).

It is useful to present to the reader these cultures as conceptual categories and, therefore, our understanding of them. When we refer to medical culture, we are dealing with the theoretical, practical, and ethical

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<sup>4</sup> The term culture, used throughout the text, refers to the knowledge historically accumulated by humanity.

<sup>5</sup> Term proposed for medical knowledge, historically produced.

knowledge that is part of medical education, so the guiding question of this category is: what is necessary to teach medical students? Concerning the pedagogical culture, we allude to the pedagogical practice, in different learning environments, being guided by the question: how to teach what is necessary for the student to learn? Conceiving the processes of learning and development as phenomena of human constitution, we understand the psychological-pedagogical culture as the engagement between students and teachers and students among themselves around scientific knowledge, guided by what Davidov (1986) characterized as the meaning-forming motives. The question that guides this category is: how do students learn? From the students' point of view (as an exercise of what we call study activity) it is the fundamental encounter with medical culture, in environments such as the classroom, the library, the laboratories, the outpatient clinics, and the hospital.

For Vigotski (2017), the environment plays an essential role as a source of development, in this case, we consider the Medical School as an environment that leads to learning and the development of a medical personality. Therefore, we understand the study activity as a product of the historical process in which, under the guidance of teachers, the student is inserted into developed forms of social consciousness, as content (the medical culture), enabling the development of the indispensable capacities to act under the social requirements pertinent to the profession (León *et al.*; 2022).

## **2 The concept of Activity and its relation to the unit "teaching ↔ studying"**

Based on our main theoretical basis, we also consider it necessary to broaden our analyses from two theoretical strands included in the historical-cultural tradition<sup>6</sup>. The first is the Activity Theory, with the Russian Aleksei Nikolaevich Leontiev (1903-1979) as its main representative. With this approach, we emphasize the concept of activity, its developments, and its relation to the formation of consciousness.

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<sup>6</sup> From the theoretical-methodological legacy left by Vigotski, there is a significant contingent of scholars who provide an extensive and fruitful set of theoretical ideas, as well as methods that contribute to ways of thinking and doing research, especially human development as a scope.

Concomitantly, we also delve into the Theory of Developmental Teaching<sup>7</sup>, proposed by the Russian Vasili Vasilievich Davidov (1930-1998). We emphasize an important theoretical concept that allows us to look at the classroom as an environment and its participants and content, but from a determining activity: the study activity.

Based on Marxist theoretical assumptions, in which the individual transforms his material conditions, as well as transforms himself in this process through work, that is, through activity, Leontiev (2004) adds that, through this, the subject constitutes, beyond objective realities, human consciousness themselves. In his theoretical perspective, known as Activity Theory, Leontiev contemplates the triad of activity ↔ consciousness ↔ subject, which focuses on the emergence of subjectivities. Our argumentation is based, therefore, on a theoretical perspective that is subordinated to the idea of humanization through practical activity. In our case, the teaching activity.

At this point, it is worth emphasizing an important aspect pertinent to the theoretical concept of activity: it is a form of creative transformation of the world and of the subject (Davidov, 1986). Through activity, there is a form of convergence of the most general forms of organization of behavior by which the human species obtains access to the world, based on a need, as originally advocated by Leontiev (2004). Regarding work practice and its influence on the development of the human psyche, Leontiev (2004, p. 76) states: "work created man and also his consciousness". The author starts from the assumption that all human and collective activity is social and always driven by necessity, and that it results in a final product - human activity is concretized in its product.

The starting theoretical core associated with the concept of activity is found in the Vigotski's foundations expressed by the general genetic law of cultural development (Vigotski, 2017; Vigotski 2001) which is, in the process of human development any (psychological) function manifests itself twice, on two different planes - first on the social plane and, on a second plane, it

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<sup>7</sup> Although much of Davidov's research was related to elementary education, the richness of his theoretical contributions extends widely to other educational contexts and levels of education.

appears as a psychological function, on a personal level. In terms of historical development, at first, it happens between subjects in interaction (social), as an interpersonal category (of an interpsychic nature), and later exists as an intrapersonal category (of an intrapsychic nature), in the form of thought/consciousness.

According to Sirgado (2000), the subject, through his social relations, internalizes and transforms the culture that surrounds him into subjectivities. It is a process that occurs through the internalization of what is social (cultural), that is, there is a displacement that occurs from a given sociocultural context to an intrapsychic dimension that concerns the psychological functioning of a subject (Vigotski, 2001). Vigotski (1989, p. 56) states about this process of a psychological nature: "we construct ourselves through others", that is, every higher form of behavior appears twice in development: first on the interpsychic (social) plane, then on the intrapsychic (individual) plane.

According to Vigotski (2001), the emergence of higher psychic functions is related to human practical activity, therefore, consciousness is an aspect associated with practical or productive (work) activity. Still, about this relationship, Marx states (*apud* Leontiev, 2004, p. 78, our translation):

Work is first and foremost an act that takes place between man and nature. Man plays the role of a natural power in relation to nature. The forces with which his body is endowed, arms and legs, heads and hands, he sets in motion in order to assimilate the materials and give them a useful form to his life. At the same time that he acts by this movement upon the external nature and modifies it, he also modifies his own nature and develops the faculties which are dormant in it.

We point to the concept of productive activity as a mediated relationship between subjects, with themselves, and with the world, in order to understand the dialectic "teaching↔study", which inserts the student in developed forms of social consciousness (such as culture). That lies in the following premises (Vigotski, 2004a; 2001) which, we believe, incorporate the complexities associated with the teaching activity as a humanities booster:

1. Teaching, as well as study, has as its centrality the sharing of consciousnesses, which is determined by historical laws in a dialectical relationship that is not direct, but always mediated in its symbolic form - knowledge as a mediating instrument.
2. Learning and development have their genesis in the historical and social forms of human experience, therefore, professional (and human) training implies that the student appropriates knowledge, conducts, and also procedures, making them become means of his future professional activity, now as a personality.
3. Learning and development are based on the joint participation of reciprocities: faculty ↔ students and student ↔ students, engaged in knowledge and common goals. Participation expresses the social nature of behavior.
4. The conception of human development as the "path to freedom", a process subordinated to the development of consciousness.

According to Leontiev (2017), in the activity the need that characterizes it must be associated with an objective, which becomes a meaning-forming motive, here, from a personal point of view, attributing a defined direction to the consequent action. In terms of human development, these goals are idealized "[...] in the form of images or representations, of thoughts or concepts, and also in the form of moral ideas" (Leontiev, 2017, p. 45, our translation). In this way, the motive of an activity concerns an important aspect: when the motive finds its reflection in consciousness, it directs to action with a view to the fulfillment of a need. Therefore, it is constitutional for the motives to be conscious. On this theoretical aspect, Leontiev (2017, p. 50, our translation) makes an important observation to teachers: "For this reason, [...] the pedagogical task is to create significant general motives that not only incite action but also give a definite meaning to what is done."

In addition, the author alludes to a fundamental psychological aspect of the activity, which is also related to the formation of interest as "[...] determined direction that have *the cognitive functions for the objects and phenomena of reality*" (Leontiev, 2017, p. 51, our translation emphasis added). Obviously, we understand

that interest is an essential function for student learning, an aspect of a psychological nature associated with the teaching activity itself: knowledge acquires true meaning - here, Leontiev (2017) refers to the attitude of students towards the world and society.

Furthermore, Vigotski (2017) argues that for development to take place, it is imperative that ideal forms are present in the environment, and that they establish interactive processes with what he calls initial forms. From the point of view of the teaching activity, a physician-professor probably already has an idea about what it means to be a professor, his role, and responsibilities towards the education and the students. In the same way, the medical school evinces, tacitly or not, the meanings of teaching, as well as its expectations about the teaching activity.

The concept is, therefore, directly related to the concept of environment, through the teaching activity - organized with a view to the appropriation of medical culture (a shared ideal). Thus, according to Leontiev (2004, p. 291, our translation), "[...] The movement of history is, therefore, only possible with the transmission to the new generations of the acquisitions of human culture, that is, with education" - a medical teacher enables the student to reach more elaborate levels of knowledge, with consequences for his development. Therefore, teaching actions, as a whole, will only be characterized as an activity when needs (ideals), motives, and objectives coincide.

### **3. The medical school as an environment, a source of development for students and professors**

Thus, the environment to which Vigotski (2017) refers, in our case, is related, mainly, to the variable and dynamic situations, which condition, on the one hand, the doctor-faculty relationship and, on the other hand, the historical-cultural determinants that characterize the existence of a medical school, as well as being part of the faculty team. These determinants affect, and direct their development. However, Vigotski (2017, p. 32, our translation) problematizes the issue related to the environment as follows:

What does that mean? First of all, this indicates a very simple thing, namely, that if no appropriate ideal form can be found in the environment, and development [...], for whatever reason, has to take place outside of these specific conditions [...], i.e., without any interaction with the final form, then this corresponding form will cease to develop properly [...].

In our case, we consider as an ideal form a teaching with psychological-pedagogical intentionality<sup>8</sup>, with consequences on learning and the development of a creative personality (Leontiev, 2004; Davidov, 1986) by medical students. Guided by Vigotski (2003), we understand that the development of a creative personality on the part of medical students, as a result of the learning process, implies the emergence of what the author calls self-awareness, that is, the conscious understanding, by the student, of his role and his place concerning the world. The concept has a direct implication on what Davidov (1986, p. 101, our translation) tells us: "The essence of the human personality is associated with the person's potential for creativity, with his ability to create new forms of life in society."

And this would be possible if the conditions associated with intentionality are present in the environment, in a personal and professional relationship with the condition of wanting and "being permanently" a physician-professor and not just "being temporarily" a physician-professor in the medical school. Therefore, when we consider the concept of environment proposed by Vigotski (2017), we understand that there are implications involved, both of in a conceptual and pedagogical nature, but also an affective nature.

The environment to which Vigotski (2017) refers, therefore, concerns the situations (material, cultural and affective) that determine the relationships between the subjects engaged around objectives from the unit "teaching ↔ to study", more specifically, the relationships between physicians-professors ↔, students ↔, medical culture, which are multiple and dynamic. According to

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<sup>8</sup> We understand by psychological-pedagogical intentionality that consciously contemplates the conceptual, pedagogical and psychological dimensions of a teaching activity and its essential nexus, which results in the conception of an educational project with reflections on the learning and development of students.

Vigotski (2017), the environment becomes the source of all human properties, therefore, if the ideal form is not present, then the activity, the characteristic, and its corresponding quality will not develop:

The environment plays the role of a source in the development of man's higher specific properties and forms of activity, i.e., that **interaction with the environment is precisely the source through which human properties are constituted**. And if interaction with the environment is interrupted, these human properties will not arise if the only source of development is hereditary instincts [...] (Vigotski, 2017, p. 35, our translation, emphasis added).

Therefore, we assert the importance of an environment that takes into account the experiences pertinent to the activity of teaching, based on a psychological-pedagogical epistemology of reference, contributing to the physician becoming aware of himself, not only as a physician, but also as a teacher. This refers to the formation of mental images and schemas before the actual action (according to Davidov, it is the construction of images of objective reality), since the experience is present on two distinct planes: that of the already internalized schemas and the real plane of the activity (Daniels, 2011). It is necessary to rethink these planes, since physicians already have references about the meanings of teaching based on their undergraduate experiences. Also, when we refer to rethinking the planes, we need to pay attention to the contents of a cognitive and affective nature, because they are objectifications of human needs and intentions. Accordingly, when we consider the concept of environment, we understand that there are implications involved, both of a conceptual, pedagogical and psychological nature, especially of a cognitive-affective nature.

In this sense, Davidov (1999) proposes a link between two determinant aspects when we think about learning and development: those of an affective nature and those of a cognitive nature (rational), approaching the elaborations previously made by Vigotski (2004a). When we refer to the training of medical professors, it is necessary to consider the subjective (personal) meanings attributed by them to different issues, such as the value they attribute to teaching and its

intrinsic cultures. We cannot disregard the fact that affective and rational aspects impact their decisions about how to perform the teaching activity in the different learning spaces of the course.

Therefore, the lack of scientific-pedagogical training, focused on teaching, favors, to a large extent, the physician-teacher to establish his undergraduate professors as a reference, constituting tacit knowledge with his theories about what to do in the classroom (Duarte Neto, 2013). Driven by this dynamic, the physician-teacher does not show himself to be integrated into a theoretical understanding of reference, guided, systematized, and designed for the learning and development of a medical personality by the students, as they appropriate the medical culture, as previously mentioned.

Thus, we affirm that learning about teaching, for a doctor, is still a revolutionary experience, at the same time, of an individual and social nature, according to Vigotski (2018; 2001; 1995): learning is inseparable from the existence of an environment focused on development. Or, the formation of a teaching consciousness arises from collective forms of behavior. This has an important meaning for us: teaching awareness must be already present in the environment. But how does it come about? How does it reach the physician-professor?

#### **4 The creation of a scientific-pedagogical atmosphere**

We understand that, in order to ensure that the ideal of the medical school is achieved, different subjects must be invited and involved based on this ideal (members of the upper management, course coordinators, pedagogical advisors, and professors). The objective is to achieve the social responsibility of the institution, so that there is an organization, with intentionality, thus with pedagogical awareness, consonant with them. On the other hand, a second sharing of ideals is necessary between the physician-professors and the students, so that, once again, the subjects inserted in the relations between teaching and studying perform their respective activities (Ashbar; Mendonça, 2022).

Understanding the "becoming a teacher" as a great challenge for higher education professionals, especially in medical education. We consider it essential

that teacher training should be considered by Higher Education Institutions (IES in its Portuguese acronym) as a mission "in terms of social and moral responsibility", since teacher training should be "recognized as a fundamental element in the consolidation of the social role of the university." (Silva; Costa; Lampert, 2019, p. 168, our translation). To this end, the formation of a "scientific atmosphere" focused on teacher training, based on the sharing of ideals among institutional actors, needs to materialize in teacher training centers, necessarily linked to the higher management of the IES.

The central idea is that the nucleus, surrounded by the "scientific atmosphere" and structured based on a basic epistemology, is designed to assist professors in the understanding, planning, and execution of their teaching activities, in addition to inserting them in research contexts and administrative processes. Silva, Costa, and Lampert (2019) emphasize the importance of training that enables professors to assume administrative positions since when they become managers, act as the link between higher management and other institutional actors:

The recognition of the need for training is the first step in the planning of teacher development actions, preparing them to assume management positions. Teacher development initiatives should systematically address a range of topics, including personal, professional, and social dimensions, leadership and management styles, conflict resolution and negotiation, also collaborative team building (Silva; Costa; Lampert; 2019, p. 176, our translation).

The initial step seems to be, therefore, the awareness on the part of these institutional actors about their perceptions of the roles they play. Once again, we point out that the development of the physician-professor involves becoming aware of his/her role in the students' learning and development process. In this sense, we justify the importance of the unit "teaching ↔ activity and study activity" to generate protagonisms, since traditional educational practices generally place teachers and students in uninspiring environments, favoring only the memorization of knowledge, which can give rise to very superficial and uncreative forms of thought (Machado; Schroeder, 2021).

The idea of protagonism in the classroom, including physician-professors and students in their respective activities, is linked to what we call the development of creative autonomy, as a psychological function, in the process of appropriation of medical culture, in the course of the transformation of the [medical] activity into the personal activity of each student. Vigotski (2001, p. 171, our translation) contributes, clarifying that:

[...] Where the environment does not create the corresponding problems, does not present new demands, does not motivate or stimulate the development of the intellect with new aims, thought . . . does not develop all the potentialities which it actually contains, does not attain higher forms or arrives at them with extreme delay.

When we mention protagonism in learning environments, we are referring to the conscious participation of students in clearly challenging exploratory tasks. This is the psychological and pedagogical aspect inherent to the concept proposed by Vigotski (2017; 2001) of the Development Zone.

## **5 The environment and its relationship with Development Zones**

The essential aspect of the concept lies in the need for the student to learn the new, deriving from this formulation the understanding of the classroom or other physical spaces as environments that become a source of development, as we have already announced. In other words, the teaching that occurs in it involves the creation of knowledge zones by the teachers, as it represents the most decisive moment in the relationship between teaching ↔ and studying, according to Vigotski (2001).

The theoretical concept of the Zone of Development incorporates a genetic and historical understanding of human development. It enables teachers to idealize the internal course that a student can go through, explaining cycles already acquired (already developed) and cycles that still need to be achieved (Vigotski, 1989). A Development Zone, therefore, is based on the assumption of an asymmetry of knowledge among its participants (of knowledge and professional experience). This means that those with less knowledge and experience learn from

those who know more and are more experienced. This internal course is shown by Moll (1996) in the form of four syntheses, with important references for teachers in the idealization and conduction of their teaching activities, taking into account the Development Zone:

- a) The recurrent proposition of challenging situations, with levels of difficulty that should increase in complexity.
- b) The idea of an assisted performance, that is, the teacher accompanies the undergraduate students aiming at results that need to be achieved. Performance is mainly based on trust: "those who teach" and "those who graduate" need to have clear goals. The fundamental task lies in the understanding that the activities (teaching and studying) overlap.
- c) The evaluation of performance is thought of from the point of view of independence: here, teachers are attentive to the development of autonomous thinking on the part of their students. They are encouraged to participate in contexts in which specific cooperative actions take place.
- d) The "teaching/studying" unit is defined by the logic "students standing ahead of themselves", i.e., students in developmental processes that express the way they internalize medical culture and how they creatively re-elaborate it.

As it is possible to see, above all, the Development Zone has a social nature, notably, from the point of view of the interactions that occur in it. If we take into account the classroom, the social character to which we allude, refers to the student involved in challenging and collaborative contexts. This presupposes social interactions (Vigotski, 2004b), mediated by scientific knowledge. Therefore, we understand that the unit "teaching activity ↔ study activity" are essentially intertwined by culture, therefore, they need to be understood from this perspective.

The idea of teaching activity considering Development Zones reaffirms the need for sharing ideals, as well as joint participation between professors and students in this process, in a relationship based on trust, cooperation, and affection (Moll, 1996). Regarding the cooperative relationship between teachers and students, Leontiev (1978, p. 290, our translation, emphasis added) asserts:

The acquisitions of the historical development of human aptitudes are not simply given to men [...]. In order to appropriate these results, to make of them his aptitudes, the "organs of his individuality", [...], the human being, must enter into a relationship with the phenomena of the surrounding world **through other men**, that is, in a process of communication with them [...]. Under **its function, this process is, therefore, a process of education.**

It is necessary to remember that Vigotski (2017; 2001) understands interactive processes as constituents of self-regulation (a function related to autonomy), as neoformation, according to the author. What we mean is that through the appropriation of accumulated medical experience (as medical culture), students transform themselves - the development of capacities related to knowing, doing, and being, pertinent to the profession.

In this sense, the Development Zone, determined in the activity, composes a historical unit. Vigotski (2001) conceives it from the dialectic that encompasses the stories of the participants involved with social history (medical culture). Stated in other terms, according to Davidov (1986), the conscious mastery of culture also means leading students in the process of internalizing procedures and cognitive strategies that are fundamental to medical science. Above all, concerning how they understand and deal with issues related to professional life, from a humanizing perspective.

In this way, Vigotski also refers to the social nature of teaching. Thus, on the one hand, we infer that medical knowledge are "ideal forms" of the medical culture. On the other hand, the accompaniment of the teacher who proposes and organizes Development Zones. In it, he acts as an organizer and advisor, who determines, challenges, accompanies, and evaluates, leading his students to new stages of development, however, based on cycles already acquired: "*good learning is only that which advances development*" (Vigotski, 1989, p. 101, our translation, emphasis in the original). He continues: "Thus, learning is a necessary and universal aspect of the process of development of culturally organized and specifically human psychological functions" (Vigotski, 1989, p. 101, our

translation). In these terms, Vigotski (2001) asserts that the disciplines play a decisive role in professional and human training, an aspect that implies the achievement of ever higher levels of intellectual and affective demand.

Therefore, according to Vigotski (2003; 2001), the nature of the educational process lies in change, which can lead us and propose different educational purposes around another important question: how should we act? The author refers to learning and development as a condition to ensure that students are able to live, through the study activity, the social creative experience. Thus, learning medicine and developing oneself is a condition closely related to the idea of human development. As a result, we highlight the "teaching/studying" unit, in the different learning environments of the medical school, which expresses the way in which students are led to organize and act in front of themselves, by internalizing (making their own) the medical activity and their knowledge as human intellectual products regarding care for humans.

In this way, we understand that concerning the professors' and students' needs, materialized in teaching and studying as activities, when carried out consciously and directed to a common goal (an ideal), which is learning, they are fundamental to the understanding of the importance of the environment as a source of development.

## **6 Final considerations**

Physician-professors are essential in the process of student development if we consider an important plan of activity: that of guided participation. In this plan, they focus their attention on the knowledge to be taught and the nature of the guidance, which are essential to the study activity, in addition to deciding on the occasions when they can distance themselves from the students, guiding them to perform increasing levels of intellectual autonomy. Therefore, that is the plane of mediated intersubjectivities that are complex and increasing, determined by the teaching activity.

We understand that teaching and studying have an imperative role in development, to the extent that their most important protagonists share the need

to teach and learn the medical cultural repertory, with knowledge and professionalism, resulting in much more complex ways of doing, and being permanently and temporarily in this world. We also emphasize our conception of human development as the historical process in which the subject, by understanding and transforming the environment (and its relationship with knowledge), also transforms himself. Therefore, the assumption concerns the internalization of (medical) culture as a human, social, and historical activity, a condition for the transformation of students, but as a creative and productive activity. A process we call the development of a medical personality

In this sense, pedagogical action with psychological-pedagogical intentionality, which is, thought and developed consciously and appropriately oriented to the development of medical students, is presented, therefore, as a concrete possibility for the realization of the unit "learning leading to development". This is an aspect that, as we have already argued, presupposes a theoretical-practical understanding around a psychological-pedagogical episteme of reference and elaboration with the necessary scientificity that the teaching activity requires. Thus, it should not be centered only on the immediate transfer of a medical professional experience, but, above all, it should be centered on the study activity, which implies situating students in processes of intellectual and affective interaction with the physician-teacher and with colleagues (the principle of reciprocities), mediated by medical culture with its theoretical and practical developments.

It is in this context that we sustain the importance of the environment as a source of learning and development. So what are their meanings? We ratify that the environment also plays a decisive role in the development of physician-professors - as a scientific-pedagogical atmosphere - which is, when the medical school and professors share the same pedagogical intentionality, based on a basic theoretical field. In the same way, through the activity of conscious teaching of the medical professors, medical students are able, through their study activities, also consciously, to appropriate with protagonism the medical culture.

## La carrera de Medicina como ambiente, fuente de desarrollo: ¿Cuáles son sus significados?

### RESUMEN

Los médicos-docentes son, entre otros actores institucionales, responsables de la formación técnica, ética y cognitiva de los estudiantes de medicina, transformando así la enseñanza médica en objeto de discusión en las últimas décadas. Las reflexiones teóricas que aquí se presentan son desarrollos de una investigación doctoral que tuvo como objetivo comprender la unidad "aprendizaje conducente al desarrollo" de los estudiantes de Medicina, través de la actividad docente realizada por los profesores, bajo los aportes de la Teoría Histórico-Cultural. Considerando el importante papel que juegan en la organización de la relación que se mantiene entre los estudiantes y el conocimiento, en los diferentes ambientes de aprendizaje, afirmamos que el ambiente juega un papel decisivo en el desarrollo tanto de los profesores como de los estudiantes, siempre que es reflejo de un clima científico-pedagógico compartido entre la carrera de Medicina, las asignaturas insertas en ella y la Institución de Enseñanza Superior. Consideramos que tal ambiente se materializa en la puesta común de ideales, en la presencia de una intención pedagógica sustentada en una base teórica y, sobre todo, en la actuación del saber cómo mediador de estas relaciones, transformando en desarrollo los diferentes espacios de aprendizaje. En este contexto, se sostiene la importancia del medio ambiente, como fuente de desarrollo, en las relaciones entre quienes enseñan y quienes estudian.

**Palabras clave:** Ambiente; Actividad docente; Actividad de estudio; Cultura médica; Médico-profesor.

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