Nuances
Estudos sobre Educação

CONTINUING EDUCATION AND SCHOOL REALITY: TEACHING CONCEPTIONS ABOUT INCLUSIVE SCIENTIFIC EDUCATION

FORMAÇÃO CONTINUADA E A REALIDADE ESCOLAR: CONCEPÇÕES DOCENTES SOBRE O ENSINO CIENTÍFICO INCLUSIVO

LA EDUCACIÓN CONTINUA Y LA REALIDAD ESCOLAR: CONCEPTOS DIDÁCTICOS SOBRE LA ENSEÑANZA CIENTÍFICA INCLUSIVAEM

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ABSTRACT: The present research had the general objective of investigating whether Science and Biology teachers promote inclusive education and what are the factors that help them or that prevent them from acting in the face of this reality. The research is characterized as qualitative, so that the data collection technique was a semi-structured interview, with nine Science and Biology teachers. The analysis of this information was carried out following the principles of content analysis and the data show that teachers recognize the urgency of offering continuing education courses, which consider the real training needs arising from the school reality, especially about school inclusion and the education of Science and Biology.

KEYWORDS: Inclusive education. Continuing teachers education. Science and biology.

***RESUMO**: A presente pesquisa teve como objetivo geral investigar se os docentes de Ciências e Biologia promovem a educação inclusiva e quais são os fatores que os auxiliam ou que os impedem de atuarem frente a essa realidade. A pesquisa caracteriza-se como qualitativa, de forma que a técnica de coleta de dados foi uma entrevista semiestruturada, com nove docentes de Ciências e Biologia. A análise dessas informações foi realizada seguindo os princípios de análise de conteúdo e os dados mostram que os professores reconhecem a urgência da oferta de cursos de formação continuada, os quais considerem as reais necessidades formativas provenientes da realidade escolar, especialmente em relação à inclusão escolar e ao ensino de Ciências e Biologia.*

***PALAVRAS-CHAVE**: Educação inclusiva. Formação continuada de professores. Ciências e biologia.*

***RESUMEN**: La presente investigación tuvo como objetivo general indagar si los docentes de Ciencias y Biología promueven la educación inclusiva y cuáles son los factores que les ayudan o les impiden actuar ante esta realidad. La investigación se caracteriza por ser cualitativa, por lo que la técnica de recolección de datos fue una entrevista semiestructurada,*

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con nueve profesores de Ciencias y Biología. El análisis de esta información se realizó siguiendo los principios del análisis de contenido y los datos muestran que los docentes reconocen la urgencia de ofrecer cursos de educación continua, que consideren las necesidades reales de formación que surgen de la realidad escolar, especialmente en relación a la inclusión escolar y enseñanza de la ciencia y la biología.

***PALABRAS CLAVE**: Educación inclusiva. Formación continua del profesorado. Ciencia y biología.*

Introduction

Thinking about the construction and effectiveness of an inclusive school requires thinking beyond a space that is visibly open to new social groups and minorities whose history has been marked by exclusion and, thus, promoting actions rooted in the school's social commitment to education. education. Therefore, "to educate is to get the child to go beyond the borders that, so many times, were drawn as a destiny by birth, by the family or by society" (NÓVOA, 2009, p. 3).

The reorganization of the educational system is necessary, since schools, in the way they were structured and remain so, promote situations that lead to the dissemination of elitist and excluding practices, and these practices must be abandoned, so that there is an appreciation the needs of all students and a new restructuring of the educational system itself that will take place according to these needs (MANTOAN, 2003).

One of these paths refers to the diversification of teaching methodologies so that they are truly inclusive. In the case of Science and Biology subjects, most of the contents are related to detailed aspects that are difficult to understand, especially when using a teaching methodology that is not accessible. We consider, with the accomplishment of this research, the principle that all students, including the target audience of special education (students with disabilities, global developmental disorders and high abilities/giftedness), need to have access to knowledge within Sciences and Biology in a that they can:

> [...] to awaken appreciation and a taste for science but also, and mainly, contribute to the formation of citizenship, so that people develop attitudes, social values and the ability to understand, judge and participate in decision-making processes that involve scientific-technological issues (VIECHNESKI; CARLETTO, 2012, p. 7) (Our translation).

When we align what are the difficulties existing in the school reality, with what the student is expected to learn, we can investigate which paths will be best taken so that we have

a formation of interested citizens and committed to practicing their scientific knowledge beyond the school spaces. And this leads us to the importance of the teacher's role in changing these realities, since it is the professional who will best be able to consider the real difficulties, as well as the successes in each one's learning.

One of the ways in which the teacher can act in the face of inclusive scientific education refers to the training process that he builds throughout his professional career. In this sense, we consider that continuing education, as a process aimed at improving teaching work, through proposals that are linked to their professional qualification, should contribute with knowledge that further enriches their professionalism and performance in the face of the various situations that guide the field of work.

Thus, the present research is part of this context in which there has been an increase in the access of children and adolescents target audience of special education in regular schools and seeks to analyze whether the educational system provides conditions - such as: training courses; adaptation of the physical space and also the adaptation of didactic material – to the teachers so that there is the promotion of inclusive education. The approach is based, however, not only for the proper adaptation of teaching methodologies but also intends to connect them with knowledge acquired through the training processes they carry out, based on the assumption that these must help teachers in the preparation and development of their classes, as well as promoting school inclusion.

Through this research, it was investigated whether the educational system has offered conditions for teachers to acquire adequate knowledge during their training, more specifically continuing education, analyzing whether such courses, in general, bring the theme of inclusion and in what way this knowledge effectively reach the classrooms, resulting in greater possibilities for students not only to be enrolled in schools but also to be part of them and also to be able to build their knowledge and learning. In this sense, it has as a general objective to investigate whether Science and Biology teachers promote inclusive education and what are the factors that help or prevent them from acting in the face of this reality.

Methods

The present work is characterized by covering the field of qualitative research, which prioritizes the social process, in which researchers “seek to visualize the context and, if possible, have an empathic integration with the process object of study that implies a better understanding of the phenomenon” (NEVES, 1996, p. 2). And, in the end, “the data collected

are in the form of words or images and not numbers" (BODGAN; BIKLEN, 1994, p. 48), obtained through an in-depth study of a few cases, but they are interconnected when they are identified. the similarities between them and the reasons behind their existence (ROSA, 2013).

As a form of data collection, a semi-structured interview was carried out, which aimed to obtain information about the research participants, coming from "descriptive data in the subject's own language, allowing the researcher to intuitively develop an idea about the way subjects they interpret aspects of the world" (BODGAN; BIKLEN, 1994, p. 134). Still, with the use of a script of questions, "one is sure to obtain comparable data among the various subjects" (BODGAN; BIKLEN, 1994, p. 135).

During data collection, a recording device was used, through which the information was stored and later transcribed, allowing a new look at the research to understand what was really asked and answered, in addition to the possibility of investigating the subjective aspects that perhaps were not perceived only through observation and during the interviews (BELEI *et al.,* 2008).

To obtain the data and carry out the research as a whole, the project was initially registered on Plataforma Brasil and submitted for analysis by the Ethics Committee of UNESP – Faculdade de Ciências e Letras, Campus de Araraquara. Its approval was obtained through the generation of the Submission Registry for Ethical Assessment (CAAE) number 92938218.7.0000.5400.

Given the above, as a form of data collection, a semi-structured interview was carried out with nine Science and Biology professors. The interviews took place individually, in four different cities, located in the interior of the State of São Paulo, and the locations varied between audiences, such as universities and cafeterias; as private, in the participants' homes. The interviews took an average of twenty to thirty minutes, following the semi-structured script. But, in some cases, other questions were elaborated during the conversation, aiming to understand some scenarios that were not previously foreseen.

After data collection, they were analyzed according to the Content Analysis technique, proposed by Bardin (1977). According to the author, this analysis methodology depends directly on what was obtained through the communication and what type of interpretation is made from it. Therefore, it is a "set of communication analysis techniques" (BARDIN, 1977, p. 38), through which it is possible to infer what are the meanings behind the contents of these messages.

In the analysis, according to Bardin (1977), initially there was the organization of raw data into organized ones. With the transcription of the interviews, it was possible to classify the messages that had common criteria or similarities in their content in the same category. With that, after studying these messages and rearrangements of the contexts from which they were created, it was possible to elaborate three distinct categories, which were later interpreted in the light of relevant theoretical references.

Results and discussion

For this topic, three categories will be analyzed, aiming to understand, through the literature of the area, a little of the reality that is interconnected to the answers that were obtained during data collection.

The first category, entitled "**Into the school space:** a view of school management", is based on the idea of how the structuring and work carried out by school management, with teachers, greatly contribute to the effectiveness or not of education. inclusive. Considering that education must be able to provide both intellectual development and moral development, it is known that the school is characterized as a space in which these developments are likely to happen, if it brings in its essence aspects that prioritize: equality access and permanence; universalization of education; appreciation of teaching and school subjects; Democratic management; pluralism of ideas and conceptions and the guarantee of educational conditions that are closely linked to the promotion of quality education for all (FERREIRA, 2005).

However, the school reality was historically constructed based on the assumption that the country's economic growth was intrinsically connected to education, being the gateway to training qualified professionals committed to meeting the economic demand of society at each time (FERREIRA, 2005). With this, it becomes contradictory to think about equality, when what prevails is the scenario in which limitations can harm the production of educational results that enable the formation of the country's new intellectual elite.

The "paradigm of equality" (LIBÂNEO; OLIVEIRA; TOSCHI, 2003, p. 85), is linked to the idea that freedom of access, permanence and guarantee of efficient and quality education for all students, but, in reality, many of these students, when they actually arrive at schools, remain on the sidelines of the educational process. During the teachers' answers, it was noted that there is, in fact, greater access for students in schools in the common education network, precisely because there was this expansion of access to education. But there is still a lot to really ensure inclusion, as just enrolling is a far cry from what is needed:

> Creating equal opportunities for development and learning often means doing things differently. Much more than enrolling all students in the regular school, we have to make this school able to respond effectively to the educational needs of each one. In general, the school has been efficient in complying with the law, which determines enrollment, however, this efficiency does not translate into effectiveness, that is, enrollment does not guarantee the expected effect, which is the school fulfilling its role (CARNEIRO, 2016, p. 84) (Our translation).

The teacher's complaint refers to the lack of initial and continuous training of school management to understand the need and urgency to provide mechanisms that are not only linked to the acceptance of enrollment, which is guaranteed by legislation (BRASIL, 1971), but conditions that help both in the elaboration and development of their classes, as well as conditions for the target public students of special education to feel belonging to this process, guaranteeing access but also learning conditions and support for teachers.

For Guhur (2003) there is an ambiguity between what inclusion is and what is provided in the school reality. This occurs due to the integration of the student in the common flow of the school, without the recognition that the students who are the target audience of special education now belong to the school routine and that numerous changes are necessary for this belonging to really happen, starting with dialogue. and professional encouragement from which the teaching and learning processes will begin to take place – teachers, from any and all areas.

Given the above, the learning of students who are the target audience of special education remains in ways that are practically impossible to happen and to persist, since many teachers say that they are insecure about knowing how to teach, considering that they need to comply with school bureaucracies that do not give openness and/ or freedom for new paths. And, they conclude that they feel unable to change the school structure so that the school management itself understands that new measures need to be adopted.

Carneiro (2016) explains that the school was built, over time, in order to massify the students, disregarding the differences between them and mischaracterizing the individuality of each one. The school maintains its essence through numerous actions, such as those that directly involve the teaching and learning process, which are based on homogenization and emphasize competitiveness among students.

The obstacles caused by a school management that is not consistent with the inclusive paradigm were listed, since they often occurred during the responses to the interviews. The teacher does not work alone, but his performance is much more limited when he does not get

the support of school management, which is responsible for the school as a whole and is directly linked to the results of what is done within the classrooms.

It is up to the school management team to know the students belonging to that school community. Knowing what the difficulties and specificities are and being open to proposing learning alternatives. The professionals responsible for school management must be committed to all students who are there, being fundamental to guarantee diversity within schools and the ways to still value it. One of the objectives of your profession is to recognize, accompany and provide conditions that aim at the

> [...] integral development of students, seeking to promote, on the one hand, individual and collective achievements and, on the other hand, working with the knowledge of individual differences and respect for them through discussions, reflections, interaction with the family, community, faculty and others in the educational process (AZEVEDO; CUNHA, 2008, p. 66) (Our translation).

In this sense, admitting inclusion means restructuring this proposed system and the role of the school within this restructuring will be to "not adapt the different to live the hegemonic culture, but rather produce a common culture through coexistence, participation, appreciation of all minorities hitherto stigmatized" (CARNEIRO, 2016, p. 75). One of the ways in which this restructuring can happen is precisely through the collective work between teachers and these towards school management. Another point highlighted in the interviews refers to the importance of the work carried out in conjunction with the school community with other professionals who also work with students who are the target audience of special education, since they will be able to direct teachers and school management more clearly and concisely, what are the difficulties, facilities and needs of each student.

On this point, all sectors of the school will be able to act so that the discourse that each one has in favor of inclusion is coherent with the actions they carry out, based on the assumption that the educational actions of all walk together towards a single purpose: to promote conditions real so that the potential and differences of the students are valued (AZEVEDO; CUNHA, 2008). When different professionals work to achieve the same final objective, which is to include and promote the learning of students who are the target audience of special education, a new scenario can be established.

In the second category, "**Beyond the school space:** the guiding axes of training processes", aspects related to continuing education were highlighted, based on the assumption that there was an increase in the number of places in the enrollment of schools, public or

private, and that both the teachers and the school management themselves need a suitable professional training to act in the face of the new reality.

According to INEP/MEC (BRASIL, 2017), through the 2016 School Census, there was an increase in the rate of students with disabilities, global developmental disorders or high abilities/giftedness who are enrolled in regular schools, with a percentage which affects 57.8% of Brazilian schools. By way of comparison, in the year of the establishment of the National Policy on Special Education from the Perspective of Inclusive Education, 2008, this percentage was only 31%.

With this, there is an exposed need for teacher training concerning inclusive education, considering that many teachers did not have access to this instrumentation in other periods of their formative life and also considering that students are arriving in network schools. regular education in an increasingly growing way, a fact that increases the urgency of understanding the mechanisms of effective inclusion, as well as its need.

It is important to highlight that, even when there are conditions of access to issues involving inclusive education during initial training, these are not enough, since "[...] there is an evident training insufficiency in the degrees" (GATTI, 2014, p. 40) and this is due, among other factors, to the reduction in workload and the impossibility of aligning with it, the demand for knowledge, theoretical foundations and the practical activity carried out in supervised internships. Still, another point to be considered refers to the fact that it is only during the experience, in the professional career, that the situations will present themselves in a unique way, not being possible to anticipate them to be presented in the initial formation, which makes with that there is a need for constant training throughout the teaching career.

When questioned about this urgency, the teachers interviewed emphasized that they feel the need for this improvement that should be made available through continuing education, since they report that there are really many specificities within the theme of inclusion and that only the study and training available in the courses of graduation are not enough. However, what was reported by most of the teachers interviewed is that continuing education courses do not follow this reality and, therefore, are not able to meet this need they have. The scenario reported by them is quite discouraging, so they return to the classrooms with the same difficulties and deficiencies that they previously had.

In this regard, Sant'Ana (2005) explains that several changes are necessary in the educational system for inclusive education to become effective. The highlight for the author is the access and commitment of teachers to training programs, which should be carried out in

an integrated and permanent way. One of the changes is the change in training courses itself, since they lack both the perception that teachers need to be instrumentalized regarding the theoretical part, and the lack of encouragement for them to adopt as a constant practice serious reflections about their pedagogical practice, beliefs and how they can improve the teaching that is offered in the classroom.

In this way, there would be greater teacher commitment to this training process, culminating in not only improving the teaching they offer in the classroom but also enabling a didactic change; change from their previously rooted conceptions as students; modification of their perspectives on education and ways to better expand it (CARVALHO; PÉREZ, 1992).

Far from this reality is still the subject who directs the training courses. One of the professors interviewed explains that there is a very large discrepancy between the professional who is in front of the professors during this process. Most of the time, they are professionals who are not directly present in classrooms, or who do not have the theoretical and empirical foundation necessary to respond to the needs of teachers. Freitas; Villani (2002) explain that this occurs since, during the process of organizing the contents to be presented in such courses, the knowledge that was obtained through educational research is privileged, with the conception that training of the teachers, in practice, for the implementation of knowledge that was produced by other, more experienced people, which is not what is consistent with the training reality.

Continuing education is seen, for teachers, as courses that propose mere content updates, which will hardly be able to be proposed and incorporated into their pedagogical practice, since such courses are not able to bring knowledge that is considered more urgent in the school reality, in addition to resulting in a mismatch between what is presented in this training process and what is desired by teachers.

From this perspective, many teachers end up considering continuing education a mechanism for exchanging favors. When they attend these courses, they receive “in return” necessary points that they will contribute during class assignments, or in hours that will be deducted later at schools. The search for training, in fact, was unlinked, by some teachers, as necessary for their instrumentalization and improvement of their pedagogical practice.

There is a negative link between the credit system and teacher assessment, in which continuing education begins to be characterized “[...] simply as a process of obtaining credits, with teachers being obliged to attend courses, whatever they may be” (GALINDO; INFORSATO, 2016, p. 470). As a result, training centers start to organize themselves closer

to the logic of a local market, aiming at quantitative aspects and effectiveness, instead of really considering the need to respond to personal and problematic expectations that are experienced in schools and the means to act. in front of these.

Through the creation of a space that really aligns with the teaching needs, considering the school reality and other factors related to the teaching and learning process, the teacher will be able to recognize himself as an active subject and responsible for what he learns and how such contents training courses can effectively change their professionalism; attitudes towards school problems; interests and their pedagogical practice.

The last category, **"The classroom as a plural space:** diversity in learning", is based on two contradictory ideas: the first, that the school exists for the target public student of special education only as a space for socialization; and the second: which considers that learning can occur, considering what is proposed by the curricular subjects in conjunction with the more subjective aspects of learning - what students have as difficulties and how the school can act to minimize them.

Concerning socialization, this is a factor that can help in the construction of learning, since the social interaction itself contributes to the creation of a more welcoming environment within the classroom and this, in turn, ends up facilitating the student to promoting their learning, improving social and educational performance. However, the inclusion of the target public student of special education in the classrooms is not enough and there are teachers who believe that the main function of the school is to contribute to the socialization of these subjects, with the idea that if we consider that previously the school used even more excluding practices, this is already an advance.

There is much to be done and starting to question the invisible institutionalization (MOYSÉS, 1998) can be one of the first ways. For the author (1998) students remain in the physical space of schools and classrooms, but are not included in the teaching and learning processes, remaining invisible. In the case of the answers obtained during the interviews in this research, two scenarios result from this invisibility/exclusion: the clear exclusion, in which students remain unaware of what happens in the classroom, and the more silent exclusion, in which teachers believe they are contributing to inclusive education, but it doesn't happen.

It is a fact that the different difficulties that students have influence their learning progress. It is up to the school organization and the teacher to make decisions that can gradually reduce these difficulties, and not stagnate them with the use of the same material

throughout the school term. By using resources that can increase students' interest, safety and encouragement for learning can also be increased. Also:

> Some teachers think they are helping the child by giving them painting and drawing activities, while the rest of the class does another type of activity. However, this procedure does not contribute to the child, on the contrary, most of the time this strategy makes them work in isolation in activities that are unrelated to those carried out by the rest of the class, triggering a negative effect on the child, reducing their interest in learning (CAPELLINI; RODRIGUES, 2009, p. 359) (Our translation).

By not recognizing the profile of students and what educational needs they have, the school fails to provide new alternatives so that the teaching and learning processes are consistent with these needs. Thus, the school will not be able to promote conditions that make students able to go beyond their own limits (CAPELLINI; RODRIGUES, 2009), remaining in the school space with emphasis only on socialization.

However, by joining social integration to the teaching and learning processes, the exchange of information and interaction with other students can help them to become more motivated to learn and more socially adapted, considering that school coexistence can contribute to the attitudes and values that these individuals will have towards their neighbors inside and outside the school.

It is necessary to overcome social integration so that the school can enable students to develop different cognitive skills. Capellini; Rodrigues (2009) agree with the above when they explain that there is a need for the school to act in order to seek the maximum development of students' potential and that, for this, it is necessary not to underestimate what students can do or submit them to reduced educational programs, which are characterized by promoting situations with a lack of stimulation and challenges.

The reality, however, is that we are (we as a society) conditioned to believe that there is a standard of normality that governs learning ideals - as well as other historically constructed social parameters - and through the rooting of these common-sense conceptions, linking them to the idea that certain students are more capable of learning than others, hence the offer of different educational programs for each one, with more or less stimuli.

The potentialities that the authors (2009) refer to are consistent with the acquisition of cognitive skills that the teachers interviewed mentioned, with the idea that each student learns differently, due to the degree of difficulty and ease that each one has and these, in turn, they may not be marked due to deficiencies but also because of the life history that these subjects traced before arriving at schools.

Moysés (1998) explains these differences a bit when he cites two examples of two different children: one who draws a kite on paper and another who builds the kite. In addition to hand-eye coordination skills, these are activities that also carry class values. Belonging to a social group in which the kite is valued, learning to make it is a differentiating element. But this does not mean that the child who failed to build it does not have the potential to learn this and other skills:

> Some children make kites, others draw. Both with the same motor coordination. Each with different expressions of the same coordination. Expressions whose acquisition is stimulated, directed, by values of their social belonging. Which of the two activities best represents visual-motor coordination, which should be chosen as a parameter of normality? Neither can be considered the best, as both are just different expressions, with no hierarchy between them, of the same coordination (MOYSÉS, 1998, p. 36) (Our translation).

Regarding other skills, a teacher reports that sometimes, due to the way the educational system is organized and prioritizes certain aspects to the detriment of others, it is difficult to notice what are the facilities that students have and, in this way, to be able to propose ways to encourage them even more to progress. The skills of perception, motor coordination, orality, reflection, connection of ideas, among others, are also aspects that should be valued, even if textbooks do not.

Valuing the paths that students can take implies questioning and understanding that several school factors can converge in curricular structures and that all these must also be modified when thinking about the effectiveness of school inclusion. These students may not yet be able to assimilate certain more specific contents of Science and Biology, as can happen with other disciplines, but they will be able to progress in other ways, until they feel more prepared to learn what once seemed more difficult.

For that to happen, Moreira; Candau (2007) explain that some care should be taken when working with inclusive education. In addition to considering the learning time of each one, it is necessary to consider the contents that will be taught and learned; school experiences; pedagogical plans developed by the school community; objectives that are expected to be achieved in the teaching and learning processes and the evaluation processes.

So, when we think about providing conditions that can result in the increase of each student's potential, some measures will need to be adopted to encompass these results and the means by which this will occur. Flexibility in curricula must exist as a facilitating condition for learning, so that:

> It is not a new curriculum, but a dynamic, changeable curriculum that can be expanded, so that it really serves all students. In these circumstances, curricular adaptations imply pedagogical planning and teaching actions based on criteria that define:
> - What the student should learn;
> - How and when to learn;
> - What forms of teaching organization are more efficient for the learning process;
> - How and when to evaluate the student (HEREDERO, 2010, p. 200) (Our translation).

Since there are multiple types of knowledge that can be built during the activities proposed for the teaching and learning process, using the plurality of didactic methodologies can contribute to achieving different types of knowledge. With the monotony of Science and Biology classes supported by textbooks and classes essentially proposed with the same methodology, it not only makes the acquisition of this knowledge difficult but also contributes to the students' lack of interest: " Any course must include a diversity of didactic modalities, because each situation requires its own solution; in addition, the variation of activities can attract and interest students, taking into account individual differences" (KRASILCHIK, 2011, p. 79).

In addition to the practical classes, which is a broader didactic modality that can serve all students, there were adaptations that the teachers made considering the most unique difficulties that the target public students of special education had - even if they could later use them to the rest of the gang. One of them was related to the elaboration of drawings on the blackboard, for realizing that in this way, the student was able to assimilate the scientific content and another, for teaching the science content to a student with visual impairment. In the latter case, in addition to the need to assemble tactile models for the student, it also worked to convert the contents, activities and exercises into Braille.

The idea of using tactile models to explain molecular models is based on the fact that, as it is a subject of a microscopic scale, naturally difficult to understand and abstract, the professor did it with graphic representation, using polystyrene or *biscuit*. The choice of methodology to be used must be made considering the students for whom it must serve, and, with its diversification, the possibility of including in the learning process those who were on the sidelines of the educational process increases. To this knowledge:

> Students vary in their motivations and preferences, in terms of the style or way of learning, and even in their relationship to knowledge. Not to mention their specific mental abilities, learning rhythms, level of motivation and

> interest in a particular discipline, persistence dedicated to a problem, experiences lived by the social group to which they belong. These factors that may be placed in a classroom certainly influence, among others, the quality and depth of learning, as well as the decision to use the methodological strategy (LABURÚ; ARRUDA; NARDI, 2003, p. 251) (Our translation).

In addition to the contents, the teachers also highlighted the importance of diversifying the time previously planned for certain activities to be carried out by the students. Assuming that there are students who are the target audience of special education, it is necessary to include them so that they work at their own pace, so that they direct their interest towards carrying out activities in a pleasant and enriching way. Each student learns at his own pace, following his own ways of thinking, which implies considering that differentiated didactic situations should be proposed at the most appropriate time, when the student wants and can invest in them (PERRENOUD, 2001).

"One can see that the nature of individual learning is particularized" (LABURÚ; ARRUDA; NARDI, 2003, p. 250), therefore, making curricular and methodological adaptations becomes urgent in the sense that, given the complexity of the factors existing in classrooms, there is no fixed path to be followed, since "all models and methodologies, including the most obvious ones, have advantages and restrictions" (LABURÚ; ARRUDA; NARDI, 2003, p. 251).

How, then, to adapt? Considering the real difficulties, needs, particularities and facilities that each student has, with the follow-up carried out "continuously, even if it is from afar, keeping them under the teacher's gaze" (PERRENOUD, 2001, p. 143).

Conclusion

Initially, we intended to analyze the relationship between Science Teaching, Biology and Inclusive Education, considering that these subjects have, in addition to the excess of contents and detailed aspects, themes that can greatly influence the formation of the student as a committed and responsible subject for with the relationships it also builds outside of school, adopting measures of solidarity and respect for the environmental, social and cultural aspects that are linked to it. In this sense, relating these conditions to Inclusive Education means providing ways for the school experience to go beyond socialization and ensure effectiveness in the teaching and learning process of all students, which is one of the central roles of the school.

Throughout the interviews, however, the teachers mentioned other aspects besides Scientific Teaching and made us question about the very structuring of the educational system and how these different relationships are capable of directing the actions to be taken in schools, contributing or not to the Inclusive education. We could notice that most of the teachers interviewed understand the urgency and need for Inclusive Education, and that they walk towards this reality, acting in a way to promote actions that consider the presence of the target public student of special education and how to effectively insert it. him to this new reality. These actions were widely cited and pointed out very specific examples of how they seek to specialize and plan their classes, so that there were no concrete subsidies more directed to the disciplines of Science and Biology.

Therefore, through the answers, we verified that Inclusive Education is beginning to be outlined in schools of the regular education network, and is not yet so directed only to a subject in question, but rather to broader forms of inclusion, such as understanding that there is diversity among students and that this also presupposes diversity in cognitive abilities, in facilities and difficulties, as well as in the way learning is shaped in each of these subjects. Regarding the teachers interviewed, in most of the answers, we could notice that there is an ethical responsibility towards teaching and learning and that these professionals seek to improve the school reality, but there are still many difficulties.

Despite the desire for changes in the educational system, the answers show that there are not adequate conditions for collaborative work between school management to occur with teachers, professionals from the Specialized Educational Assistance (AEE) and other professionals, such as psychologists and psychotherapists. Thus, school management fails to offer the necessary support to teachers regarding the best curricular and methodological adaptive measures to be adopted in classrooms and outside them, with the participation in training courses, aiming at the improvement of their pedagogical practice.

Part of this reality is structured both in the way schools have been shaped over time, as well as in the very fragility of the initial and continuing education of school management, which, due to lack of adequate knowledge, remains without promoting new actions, which are structured from the understanding of what the real goals of the school are and to whom these goals should be directed – the students.

Concerning continuing education, in turn, the training courses that are offered privilege other themes to the detriment of Inclusive Education, and, when not, they end up ignoring the real needs of teachers, with a discrepancy between what is offered by the training

networks and what is desired by teachers. With this, the professors reported that they rely on training carried out autonomously, with the exchange of experiences with other professionals; knowledge gained through books, articles and internet searches.

Therefore, teachers alone carry a responsibility that is structured collectively, from which feelings of failure and guilt arise when they fail to contribute positively to the learning of students who are the target audience of special education. Despite the impeding factors, we reiterate that teachers recognize the need for curricular and methodological adaptations to promote inclusive Science and Biology Teaching.

Finally, we conclude that for there to be an improvement in the effectiveness of Inclusive Education in schools of the regular education network, another scenario needs to be built, first by agents and training spaces, followed by members of the school community as a whole. About continuing education, a new look can be proposed, so that this is a space that considers the urgencies of the school and the means to reverse them. For this, one of the ways can be the creation of a partnership network between universities and schools, promoting real results in union with research and academic extension, positively reaching schools.

With school management participating in these training processes and instructing teachers to also participate, a new school reality can be built, with educational actions and objectives aimed at students, valuing the different life trajectories, difficulties and potential existing in each a. In addition, to make it possible, even more, to understand that methodological plurality can help in the teaching and learning process, since there is no single teaching method that can respond to all school diversity.

During this research, there was no intention to intervene in the work carried out by the Science and Biology teachers, nor in the school management linked to them. On the other hand, it was expected to outline, albeit occasionally, possible suggestions and/or changes that could help these subjects in achieving school inclusion. Furthermore, we hope that these results can be used in academic research and in carrying out training processes, so that we can walk together towards a quality education for all students, without distinction.

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