THE CONSTRUCTION OF GEOGRAPHIC KNOWLEDGE IN SCHOOL: A BRIEF REFLECTION ON THE ROLE OF THE TEACHER

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Abstract

For some years there have been theoretical debates concerning the role of school Geography. In Brazil, these questions came to prominence during the decade of the 80's in the last century. In Europe, whilst the discussions had started previously, given that the development of Geography as a science started in Germany in the 19th. century, questioning on the role of Geography in schools, its methods and specificities etc. in certain ways served to amplify our references and to question which Geography we want and which we are promoting.

We consider that it is essential to encourage reflection as to what the purposes of an education in Geography are and the role of the teacher in this process so as to think not only about the direction we are giving to this process, but to verify if we are contributing to students being able to construct general and specific scientific reasoning in this area.

The purpose of this article is to present that which, in terms of sciences in general, has been proposed, so that students can construct specific science concepts and to which geographic education can contribute, so that students and teachers can have a significant understanding of the concepts involved in this science.

Key words: *geographic literacy, scientific literacy, teacher training, teaching and the learning of geography.*

Introduction

In some environments, such as degree courses and teachers meetings, it is common to hear that discussions in schools are still light years away from what happens in what is called "the real world". Another phrase common in these environments, reported by university researchers who develop activities with education secretaries, is that universities and research institutes make no effort to qualify professionals who can dialogue with school reality. Still further, and in confirmation of this hypothesis, it is noted that the most recent developments in the scientific and technological field, although taking place in a time and space common to everyone, some of whom are connected by means of communication, take a very long time to become established as a teaching proposal or even as an object of problem solving in the classroom.

Some scientific papers which address these questions, such as Auler & Delizoicov (2001), Chassot (2006) etc., show that these phrases have some basis in fact, and should not be treated as random and meaningless. An example of this are papers that provide evidence of the existence of people who, upon completing the educational cycle, cannot establish any relationship between what they have been taught and daily work or family life.

As regards the teaching of Geography, we can report innumerous studies which point out for example, the difficulty of a student in using a map when not working on questions relative to laterality. These indicate that this difficulty, which might seem small, can become a big problem when the individual, having completed schooling, has to propose a solution

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to a professional problem or even on simple occasions, such as giving information about the location of a particular commercial establishment. We can also find papers that present some outlets for what has been described as the blackboard of Geography teaching, with proposals that value the construction of scientific knowledge from a starting point of the reality lived by the student and the reality of school. These proposals envisage the effective participation of the individual in his environment.

The research carried out in England by Driver (1996), presented in his paper and also presented in the paper from Frost & Turner (2000), corroborates the above, noting that Fundamental and Middle School students have a great deal of difficulty in associating scientific production to scholastic content. These students see scientific knowledge as that which provides the solution to technical problems and powerful explanations; they are unaware of the existence of explanatory models for scientific concepts or when these are recognized, they do not establish a relationship between these models and their world; they do not perceive science as a social product but as an individual result, and scientists are seen as solitary individuals who make their choices randomly in relation to the problems that afflict society. The questions raised by students are current and lead us to believe that scientific literacy in schools is not yet established, at least in relation to the necessary approximation between sciences and society and in the sense of the actual construction of scientific comprehension, since through scientific literacy not only are scientific concepts developed, but the building of citizenship itself.

We consider that it is up to the school to develop in students a critical attitude to the world in which they live, questioning the accepted values, actively interfering in the decision processes (from families to the professionals). Such attitudes may be developed by means of work called scientific literacy and which in this article, will be approached using the scientific literacy of Geography.

When dealing with scientific literacy we should include discussions related to teaching methodologies that have emphasized the need for the school to provide the student with learning, in the sense of scientific reading and writing (Soares, 2004; Carvalho, 2004 etc.). In practical terms, this means that the student should be capable of carrying out the following tasks: distinguishing that which is theory from that which is evidence; selecting problems to be solved; carrying out research; recognizing the different values implicit in their decision taking; and confronting the different visions to which they are introduced.

Langer & Applebee (1997), for example, identify in the writings of students an inability to discuss in any profound way the themes proposed, evidencing the difficulty of the transmission of science, as already mentioned, also linked to the intellectual maturing of each age band and to the fact that reading science is different from understanding it. Frequently students read but do not understand what they read. In reading, the subject should be capable of recognizing the words but more than that, also comprehend the sense of what is being read, although this was not verified in the work of the authors previously quoted.

What would be the processes of this scientific literacy in respect of the teaching and learning of specific content and even the learning of concepts of Geography? What does it mean to be literate in Geography? To what extent can the teacher contribute to the process of the scientific literacy of his students?

Thinking about Geography Learning and Teaching

Throughout this text we have sought to address those questions above, in the sense of reflecting on the action of the teacher as a mediator in the process of scientific learning by the students, based on actual school situations that are encountered.

Thus, if we return to the example of the teaching of Geography as exemplified in the reading and understanding of geographical concepts, the student may even learn about time

zones in the sixth year, but will be unable to comprehend this concept. In respect of Fundamental 1, the student may learn that the East is to the right and the West to the left, but will still not understand due to descentration not yet possessed due to age, if spatial orientation is not worked on specifically and from different reference points.

Understanding scientific concepts – as, in our case, the spherical shape of the Earth or geographical orientation, essential in understanding time zones – means going beyond superficial notions which are part of a formal conceptual explanation. Returning to the example of time zones, a formal conceptual explanation is that which is concerned in providing the information that for countries located to the East of Brazil so many hours should be added, and for countries to the West, so many hours should be subtracted.

The individual is literate when going beyond the identification of indications or the appearance of science. This means that, to achieve scientific literacy, it is necessary to consider the form of scientific work, not lingering for example on loose opinions with no theoretical basis, as if working with the so-called human sciences implies working with mere opinions (Hurd, 1998). Because of this, an important part of the teacher's role is to work with scientific concepts, so as to help the student to construct and give meaning to his or her representations. In this way, the work with citizenship becomes effective, placing the student within the problem solving areas that will be or are being experienced.

As regards the work with scientific concepts, Bachelard (1996) allows us to amplify this discussion, affirming that the subject is continually constructing his or her knowledge. In the production of scientific knowledge, he clarifies that that there are five types of obstacles that need to be eliminated: general knowledge, prior experience, the verbal obstacle, the substantialist obstacle and pragmatic knowledge.

In the case of general knowledge and of prior experience, Bachelard (1996) explains that their utilization – when remaining at only this level of knowledge – tend to present two risks: universal or particular knowledge. In both cases, there is concern for the rigor of the definition and in establishing, based on an observed phenomenon, general explanations. The verbal obstacles are those that come with the first intuition and image in respect of a situation. The substantial obstacles refer to the posture of the scientist in defining a problem solely by that which it represents to him, thus making the considerations very subjective. Finally, pragmatic knowledge may be understood as the extreme generalizations made by means of the utilization of one sole concept which, precisely because this is pragmatic and closed, give rise to ideas that might seduce the observer.

The author considers that for the elaboration of scientific knowledge these five obstacles should be criticized and disrupted. In the absence of this, science becomes a synonym for opinion: "don't think: translate necessities into knowledge" (Bachelard, 1996, p. 18).

When observed these obstacles can be identified within the classroom: difficulties in working with scientific knowledge; the use of inadequate comparisons by the teacher in explaining phenomena; generalizations in respect of a concept; the teacher understanding the student as a subject capable of knowledge, the teacher considering himself as the sole fount of knowledge. In dealing with the construction of knowledge in the first years of schooling, the teacher must stimulate the participation of each student with, for example, constant questioning of that being observed and lived, helping in the formation of hypotheses and in the search for fundamental solutions adapted to that which is expected from that age range. This is nothing more than understanding science as an auxiliary in the way in which we understand the production of knowledge.

This method of understanding the production of scientific knowledge should be worked with the students so that they can understand how it happens, that it is not simply chance and in no sense beyond their necessities. On the contrary, it begins with the solution of problems, questions acquired knowledge or even refutes it, so as to understand and know how to employ

scientific arguments. This implies a perception of the day to day work of a scientist being much closer to that which happens in reality, but which, because of the representation around this work or even because of lack of experience or adequate qualification of some teachers in transferring scientific knowledge to the scholar, does not happen.

Therefore, when problems related to phenomena of an interdisciplinary character are not understood, when you do not work with interaction (exchange of experiences) and when work with argumentation is absent, you do not do science. Consequently, the familiarity of the child with scientific knowledge becomes deficient.

All of this takes us back to the need for us constantly to pursue work with the specific knowledge of disciplines, here exemplified by Geography, as well as the skills of pedagogy. Knowledge of one as much as the other is science and it is important that the students see that both are treated with equal rigor, presenting their limits, their contributions etc. In dealing with the science of Geography approaching the child may frequently take place starting from the relationship between the knowledge of human and physical geography, such that an interdisciplinary vision of the phenomena occurring all around may be more easily perceived.

On a daily basis, scientists use language to inform the specialized reader or expert in the subject in scientific articles, informative articles or text books. They seek arguments to meet their necessities, develop different models to help in understanding and in the construction of consistent arguments to be divulged to a determined community. Even though using different languages, adapted to a different public to which the disclosure of science is directed, the scientist must take care not to distort the nature of scientific knowledge. The same work perspective should be present in the classroom. There, there is no need to lose the sense of science. I understand that it is important to use appropriate language, so that the student may understand the reality in which he or she lives.

In respect of the language with which knowledge should be transmitted, some scientific texts (Yore, 2003; Laugksch, 2000) affirm that during some decades in the 20th. Century didactic books presented a type of argument and language above the reading level of the public to which it was destined.

The didactic materials present mediation between the authors and science itself. For the more traditionalist teachers, the function of the text in the didactic materials is to present information to the reader of all the process involved in the construction of knowledge. Discussion on the production of this material frequently sees the scientist/developer of this material talking to another scientist/developer of material – that is, there is no discussion between the scientist and what is called the lay public, not specialized in the subject which is being discussed. An example of this is the recurrent use, in Geography textbooks from the 60's, of terminology and content appropriate to the Academy, guided by a descriptive concept and by concepts from the area of Physical Geography, not taking into account the human factor in the construction of space.

For post modern science, the text presenting scientific ideas and which can be found in didactic materials, presents a social function – that is, it contains implicit messages of genus, class, ethnicity and even power. In this context, scientific knowledge is produced and not discovered. It is impossible therefore, to separate the production of scientific knowledge from its social context.

In this way, learning with reason acquires an even greater importance, since it now demands greater participation from the subject – that is, that he knows how to utilize ideas and make use of science, but also knows how to use words in an appropriate manner, has the ability to construct for himself the scientific arguments to report the content of scientific discoveries and his day to day activities, amplifying in this way his perception of the world from the starting point of scientific language.

When working with scientific knowledge in the classroom, the need for the starting point

of this work to be the life experience of each subject must be borne in mind; guiding students to raise questions that lead to the construction of hypotheses on what is being observed should be emphasized, to understand the world from a scientific point of view, in order to help in developing the argument.

The multiple dimensions currently related to the circumstances of scientific literacy are approached as much from the perspective of human sciences as from the natural and physical (Santos, 2007 e 2008). Among these we can cite: possess basic concepts of science and the nature of science; to dominate the content and the processes related to a determined scientific activity; establish the relationships between scientific knowledge and human activities; know how to use science processes to solve problems, deciding and amplifying knowledge of the world; develop multiple action strategies based on the association between science and technology. Being scientifically literate is also to have an understanding that scientific concepts are historical and socially produced; it is to separate observation and processes and inference in an analysis; it is knowing how to elaborate and test hypotheses (Laugksch, 2000, p. 71-94).

From the perspective of schooling, scientific literacy may be exemplified as the search for scientific bases together with learning abilities. In order to understand the concept of urbanization in Geography for example, it is not enough to know how the process came about in a specific area. It is necessary to work with the information, trying to understand the interests which were behind the urbanization or why some areas had been chosen for the commercial and financial relationships that were established in the territory, who benefits from the process, the consequences for the geographical space thus occupied and modified, the economic activities developed, and the links of everything that was identified with the physical characteristics of the land. This is much more elaborate and complex knowledge: it is the transformation of information data into knowledge, into structured concepts. It is also to amplify, at the different levels of teaching, the conceptual relationships, associating for example the concept of urbanization to others, such as those of the city, the country, agro industry, and metropolis among other possible relationships.

If we verify the history associated to the scholastic disciplines, specifically the teaching of physical and natural sciences, we can see the emergence of some theoretical-methodological concepts of school scientific knowledge, the purpose of which was to offer means whereby the individuals could become scientifically literate and allow a greater approximation between science and society.

When teaching practices stimulate the use of games and play, in Basic Education for example, they help students to recognize their living space, beginning with the history of the occupation of the place with the characteristics of the physical environment. In any play activity, whether it is something that uses the mechanisms of symbolic construction (in which there is work with language, situation simulation etc.), whether is establishes rules, whether it requires the carrying out of an exercise (undertaking a specific task), the children end up facing problems that later on they will have to know how to solve: how to organize themselves in the environment and adapt to it. The relationship that the child will establish with the environment/society will be very close to reality and will stimulate the exchange of opinions and the construction of hypotheses, which will later be used in the production of scientific concepts (Macedo, 1995 and 2000), thereby contributing to scientific literacy.

Scientific literacy can be stimulated by other means, apart from the use of games and play (in the case of Basic Education). Some authors (Krasilchik & Marandino, 2004) suggest the importance of taking students to informal learning spaces, such as museums. Others invest in experiences related to laboratory practices, still others in the ample use of technology and the necessity of establishing a greater relationship between theory and experimentation (Moraes & Mancuso, 2006; Chassot, 2006). From another point of view, Santos (2008) suggests that science should be worked from the Paulo Freire perspective, taking into account the context

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into which men are inserted and promoting the sense of that which is being read and written.

With regard to Kindergarten and Elementary School, we understand scientific knowledge should be worked much more to procedures linked to the formation of scientific thought, making the child live, for example, situations which will help to interpret the world in which he lives. In the final years of Fundamental I and II, the work should be more rigorous as regards the formation of concepts, increasing the complexity at each scholastic level.

In the area of Geography, we consider that the building of maquettes in the classroom is an example of the extent to which this science can help in the specific scientific understanding of some concepts. The student has the possibility of, by means of explanatory models such as a maquette, of "handling" knowledge, make it his own and work with concepts linked to other areas, such as Biology, History and Mathematics. In observing the model he has made, he is able to perceive the closeness of this model to reality, a vision which paper alone does not allow since it offers a flat image without depths. He is able to infer from the model, for example, why some areas of the Middle East are so dry or why some areas are so cold, establishing a relationship between hydrography, altitude and vegetation.

From this perspective work can contribute to the formation of individuals who can comprehend the world in a scientific way and, at the same time, know how to deal with the non-scientific factors which are behind the scientific decisions taken.

Aikenhead (1997) draws attention to the need to understand science as a cultural product, and that various types of knowledge such as common sense and technology should be worked with the students. For him, scientific knowledge should be incorporated, in the classroom, to economic, social, environmental and political problems. This affirmation is very important, since it implies an understanding of the fact that scientific knowledge is inseparable for the conditions of society at a determined time.

In dealing with scientific theories in the classroom, the teacher should be very careful not to present these in a dogmatic manner; on the contrary, he should show the student that the theories reflect visions of a phenomenon developed during a specific period of history and consequently, on the formation of scientific thought itself.

Fourez (2003, p. 109-123) provides bases for thinking about this question, when commenting that scientific literacy should be in accordance with its objectives, which are humanist, social, economic, political. Humanist objectives place the student face to face with the techno-scientific world, and should help them in using the knowledge in this sphere. Social objectives are connected to the means (knowledge) that should be offered to students so that they can participate in democratic debates and promote the reduction of inequalities. The economic and political refer to participation in the industrialized world and to technological and economic reinforcement.

For school Geography, the concepts understood to be significant are those that, historically, have been studied and identified as essential for an understanding of the place in which we live; place, territory, landscape, society, nature, region and geographic space (Cavalcanti, 1998; Valcárcel, 2000). For each one of these concepts, scientific literacy should imply understanding of the integration between the natural and social processes; that is, the relationship between the physical and social environments should always be sought.

My starting point is that the key concept is geographical space. This can be identified as the conjunction of terrestrial space in which we can see the relationships, the changes, the different configurations both particular and general (Isnard, 1982; Valcárcel, 2000). From the perspective of scientific literacy, the teacher should promote activity that helps the student to understand it as a materialized product and as natural.

To comprehend the concept of geographical space, others, also enumerated are needed, these being appropriate to the age range for which they are destined. Defining a conceptual body or group of concepts that should be worked on in the classroom, far from imprisoning

us, makes us and the students much freer in taking reflective decisions. On the contrary, the principal function of school – which is scientific literacy and the formation of citizenship, to the extent that it is the place in which the student can have scientific knowledge systemized and can reflect on action in the light of this knowledge – will be neglected.

With this vision, the school could and should promote debates relative to questions of ethics and the environment. We should not however forget the need to provide the students with a scientific base so that they are able fully to participate, with this participation scientifically solid. Returning to the objectives that permeate the scientific literacy to which we refer throughout this thesis, such as the possibility of forming an individual who is truly independent in his decisions and knows how to argue scientifically, including the epistemological dimension, can serve as guidance for the work of the teacher.

The absence of activities aimed at closing the gap between science and society by the students and the difficulty of tackling science in the classroom can contribute to the formation of an individual who does not know how to deal with his day to day problems and, consequently, will have difficulties in taking securely based decisions.

In the discussion on scientific literacy in Geography, the works of Gurevich (2005) and Castellar (2005) suggest, by means of different pedagogical practices, the utilization of geographical concepts directed at what is called geographical education. That is, education directed to the central objective of this discipline, which according to these same authors, is to help the students read and interpret the local and global space, such that they will know how to use the rights and duties of being a citizen.

All this could and should be worked with the assistance of cartographic language throughout the educational process of the individual (Castellar, 2005). Recognizing cartographic symbols, interpreting keys, representing a space, all this goes well beyond the mere decodification of codes. In this sense we affirm the central role of Cartography in the teaching of Geography, as a necessary stage in the process of scientific literacy and in the formation of citizenship, to make possible the interpretation and the intervention in space.

For Geography, apart from reading and interpreting Cartographic codes, we can add that citizenship is associated to knowing how to make use of the concepts that structure school Geography (territory, region, society, nature, place, landscape and geographical space) and principally, articulate the knowledge of the Geography of nature and of man.

In this way the student can be helped during the work with the concepts presented; to recognize himself as an integral part of the geographical space in which he lives, to perceive existing contradictions in the local and global environment, to understand the dynamic of the territorial reordering are some of abilities which can and should be worked, from the starting point of the situation in which he lives, as much in the school space as in non-formal learning environments.

Thus, for conceptual learning in Geography, it is important that the social processes interfering in the spatial dimension, modifying and transforming them, should be understood. That it is understood that each person, within a community, has his own representation of space and interferes in it in accordance with his own concepts. Our activity in a space as teachers and that of each student are individual and collective: there is individual interference and that of organized economic, political and social systems, such as those organized around cultural productions that they themselves experience in the area of music, of art etc. The student should be stimulated to observe these relationships in a spatial and temporal dimension. He should think about the significance of that which he observes and afterwards, look for the bases for the perception that these spaces are different and consequently, the territory, the region, the place, the society, nature and landscape are also different. The actions involved in observing and understanding the geographical space are essential to the learning process, starting from Infant Education and should not rely on one discipline, but comprehend that there is a relationship to

all areas of knowledge, thereby stimulating the formation of reasoning from the starting point of different actions, such as games and play.

In dealing with education in Geography, this way of thinking allows reorientation not only in the work that the students in formal and informal learning environments develop, but also in the theoretical and methodological mechanisms which the teachers incorporate and use. The methodologies used by the teachers should permit this formation, such that concepts on the local and global scale can be perceived at the same time.

This helps us to understand the difficulties that the teacher can experience in his work, both in evaluating himself and the performance of his students. In the context of the qualification courses destined mainly for teachers in Infant Education and Fundamental Teaching I, some deficiencies are noted, when carrying out work experiences with scientific knowledge. It can be understood that some part of the difficulties that the teachers find in the work originates in the poor preparation for dealing with the content and methodological procedures of their discipline during their own graduation (Gaite, 2008).

In developing activities in informal environments for example, the teachers carry out the contextualization and approximation to science using diverse environments, but if they do not possess conceptual domination, it is unlikely that what is being worked will be learned adequately by the students. This does not happen due to the fault of people or institutions, but involves the whole educational system and the way in which it is organized.

Concerning the geography graduate, his qualification should allow him to understand that he himself must structure the union of knowledge of different disciplines, even though frequently these have been learned separately. This means that activities can be stimulated which allow him to develop the conceptual dominion of that which is the object of the science which he studies, as well as enabling him to articulate with the concepts of his science the specific knowledge of others – as for example, studying the population of a determined territory based on the cultural and physical conditions of the environment in which it is found; to comprehend the direction of the urban blight and the reasons for it etc.

The teacher in Infant Education and Fundamental I should stimulate action that encourage activities within and without the children's group and also that these are constructed on solid bases on which, later, the specific concepts of Geography can sit. This brings us back to the need to verify how some Pedagogical courses are structured, in the sense of thinking about modifications. We observe that qualifying graduate students in, at best four months in the specific content of Geography, History, Mathematics, Portuguese and Sciences methodologies does not guarantee that the teacher can develop his teaching role well.

In this way, we can highlight as an example of procedure aligned to this concept for Basic Education the use of games and play. The perception of place from the relationship of an individual with determined space and time stimulates and provides a basis for the formation of a much more authentic citizenship, since it allows the continuous formulation of hypotheses, the confrontation of perceptions, contact with all of cultural creation, seeing in this the production of scientific knowledge, of Mathematics, of Biology, of Geography etc as an integral whole (Nicolau, 2000, p.24).

It is from this point of view that we should often question action implemented by the school that constitute classic activities and which may be found in different school contexts, public as well as private. The choice of working with trash and the awareness of the need to separate into recyclable materials, organic trash and so on; learning the norms of traffic; collecting perishable materials for an event; the building of a vegetable garden, among others – all this work should be sustained by conceptual work. If not, the school loses its function: not working with the knowledge that the students will face through the media or even their peers, such that the student will not understand what to do or why to do it.

The same is true of action transformed by the school into projects. Many times, a big

advantage can be seen in something that has become a problem or which is taking place (the installation of a hydroelectric plant, lack of energy and water, the world cup and Olympic games, to cite a few examples), but the activities are restricted to knowing about these or proposing measures which are in fact superficial.

For the examples given here the impact that hydroelectric plants cause on the environment where they are installed, or the benefits that they bring are neither discussed not worked; the student does not have the spatial dimension of the areas, of the town in which he lives that does not have water, nor any notion of the political, economic or social motives to which this is linked; He does not know how to find on a political map the countries that will take part in a sporting event, nor will he learn to perceive the reason why some countries have naturalized players, nor further, establish the relationship between this fact and the lack of opening of many European countries as to the acceptance of immigrants.

This brings us back to the necessity of thinking continuously as to what we wish our students to learn of geographic content, the conceptual dominion he should have, the situations he will find or face in real life, requiring from him the taking of decisions. This will clear the way for scientific literacy to take place in a significant way.

It is principally in the city that the individual can detect the inequalities, the differences; place himself in the space and reflect on the human action that at one and the same time permits the exercise of citizenship and suffocates it; perceive the relationship between the local and the global; recognize its actors; have the historical dimension of the processes that influence this and provoke modifications.

In the city it is also possible to see the different organizations in the world of work, the functions of individuals; how transformations in nature, in the organization and movement of population, the flow of merchandise and information take place.

From the point of view of school Geography, it is important that the teacher undertakes the selection of content and methodological procedures that allow the student to understand the phenomenon from a temporal and not a fragmented perspective, in which human as much as physical aspects are privileged, which will influence the process in a determined space. As regards the educator at the Infant Education and Fundamental I level, as already presented in this text and to reinforce the example, his main concern should be, in the first place, to allow the comprehension of space, starting with his own body. In this way, we believe that work with the question of citizenship will be theoretically better based, allowing the student to recognize himself as a participant and transformer of society, permitting the child to understand notions of orientation and laterality starting from his own experience.

We understand that the notion of citizenship is associated not only to content treated by the discipline of Geography, but to the concept that teacher and student should go on acquiring, in a multidisciplinary dimension. There are many elements therefore, that the teacher should take into consideration in dealing with the learning of scientific knowledge in the classroom.

To work from this perspective, it is necessary to bear in mind first, the real interests of the students, if this knowledge is in fact a demand. Then, it is necessary also to work with the school community (with all those who are part of the school, both inside and outside its walls), verifying by means of the participation of the community in the school space, what are the relevant questions brought by it, in the sense of influencing the process of teaching and learning.

Some Considerations

The reflections presented in this article are not intended to answer questions that are complex and will demand a great of effort on the part of all those involved in the teaching and learning process, such as teachers, coordinators and students.

However, I emphasize the importance of, from the starting point of some of the points raised here, investigating the school Geography that we desire and that which we in fact provide in formal and informal environments, including outside the walls of the school. The last two environments were not discussed here since in this article, we prioritized a reflection of more general questions that underlie some teacher actions, the theoretical principles that are behind certain attitudes of teachers in respect of their students and how the process of teaching and learning is conceived.

An important point in this case is to promote the constant recovery of proposed activities to be developed within the school space. The activities developed by the teacher should have as a principal concern making possible, by different routes, the taking of ever more appropriate decisions by the citizens, through making use of the capacities, knowledge and values that science and technology offer, through work with contextualized problematizations (Cachapuz et al., 2008, p. 45).

One concept concerning the knowledge necessary for the instructor to work with the teaching of Geography, as we propose here, suggests another form of curricular structure, since it requires constant rethinking as to how he articulates his knowledge, the reality that his students are living and how to undertake this mediation, so that scientific knowledge is not distanced from the student.

Knowing science and handling it is much more than knowing specific concepts. It is for example, knowing how to interpret the world from the point of view of its multiple languages, to make use of these and reflect on and propose solutions to the problems that exist in his space. This principle should permeate the work of whoever deals with science in the school space and principally, should be the purpose of the construction of geographical concepts that make sense to the student.

This can be achieved as we facilitate the handling of scientific knowledge in a school context from the starting point of incentives in constructing explanatory models of the complex reality in which the students live. In this article we present some possibilities of this being done with the use of maquettes, the work with concepts in an interdisciplinary perspective (as in the city case), as well as many other possibilities here described and even those that the teacher knows from his own reality.

For the process of teaching and learning to be significant for the student it is important that the teacher reminds himself that he is in fact teaching, what his objective is for his students and if his procedures encompass a geographical education.

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