

El enfoque sociocultural-profesional en la disciplina Biología Molecular y Celular. Consideraciones teóricas

The sociocultural-professional approach in the Molecular and Cellular Biology discipline. Theoretical considerations

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Resumen: En el currículo de formación de profesores, la Biología Molecular y Celular es básica; su concepción didáctica actual necesita un enfoque sociocultural-profesional que conduzca el aprendizaje de esta disciplina de manera que el estudiante contextualice, aplique y valore el impacto social de los contenidos moleculares y celulares, de manera que sea significativo para que los estudiantes puedan enseñarla con este enfoque en los contextos de actuación profesional donde intervienen. En tal sentido el objetivo del ensayo es acercarse a las concepciones teóricas del enfoque sociocultural-profesional en la disciplina Biología Molecular y Celular.

Palabras clave: Enfoque; Enfoque sociocultural; Enfoque profesional; Enfoque sociocultural-profesional

Abstract: In the teacher training curriculum, Molecular and Cellular Biology is basic; his current didactic conception needs a sociocultural-professional approach that conducts the learning of this discipline so that the student contextualizes, applies and assesses the social impact of molecular and cellular contents, so that it is significant so that students can teach it with this focus on professional performance contexts where they intervene. In this sense, the objective of the essay is to approach the theoretical conceptions of the sociocultural-professional approach in the Molecular and Cellular Biology discipline.

Keywords: Approach; Sociocultural approach; Professional approach; Sociocultural-professional approach

Introduction

According to Perrera, 2000 "(...) *one of the problems of science teaching-learning is: the relevance of science content for life, the need to contextualize science teaching (...)*" (p . 10).

The current level of the problem does not mean that it is new. In the last century, Martí, 1975 wrote: "(...) *It abhors formal, rote, verbal teaching of school notions foreseen in programs of mere informative foresight, detached from factors real life (...)*" (p. 101).

The analysis of the essence of this phrase leads to the criterion that in the science teaching-learning process, more weight continues to be given to memorized learning, disconnected from everyday

life, which means that knowledge, in many times, it is meaningless to the student and therefore is rejected by them.

The problem of students' refusal to study science is a worldwide problem. In relation to this, Kapitsa, 1985 warned: *"when we teach students or schoolchildren, the fundamental necessary condition is the individual's desire to learn (...) to learn the new, it is condition number one to feel that this is useful (...)"* (p. 209-210).

Likewise, González and Mitjáns, 1989 state that *"(...) it has been shown that sometimes students create rejection of certain subjects, not because of their content, but because of the way in which they are taught"* (p.196) .

This has to do with the fact that many teachers do not relate the sociocultural aspects of science and as a consequence their learning is difficult.

Therefore, a sociocultural-professional approach is needed to contextualize the content of science so as to ensure the understanding and explanation of the facts, phenomena and processes and their impact on today's society; what constitutes a new way of learning and teaching.

Regarding the term focus, he agrees with Álvarez, 2014 when defining the concept of focus as *"a theoretical perspective supported by a philosophical conception of the world, assumed and oriented, through scientific principles and methods, to the understanding and transformation of an object, fact, phenomenon or process of nature, society and thought"* (p. 13).

Meanwhile, in relation to the treatment of the sociocultural term in pedagogical research, it has been observed as a trend to include it as an approach in the teaching-learning process of some subjects and careers of different universities in the country (Gil, 1993; Macedo, 1998; Valdés and Valdés, 1999; Rodríguez, Moltó and Bermúdez, 1999; Vázquez, 2003; Zubero and Addine, 2005; Fundora, 2007; Torres and Pedroso, 2008).

As a sociocultural approach, it focuses attention on the social and cultural impacts of science (Torres, 2008), a criterion that is related to another criterion that raises *"(...) if science is a sociocultural activity, with profound repercussions on the development of science. humanity, with various methods and forms of work, so it has to be taught and learned as such, and not as it has been until now, focusing attention, almost exclusively, on specific knowledge and skills"*.

Hence, Valdés, P. and Valdés, O. (1999), together with other researchers, have developed a didactic conception where the content of a core of didactic ideas fundamental for science education can be specified:

1. Print a sociocultural approach to science teaching. This idea implies, first of all, attention to the social nature of the sciences; for the students to appropriate the scientific knowledge of their time and educate themselves in a scientific conception and attitude towards the phenomena of natural reality that allows them to project themselves towards an increasingly better world.
2. In this context, science, as part of culture, will not be able to continue teaching with the traditionalism of treating, only specific knowledge, ignoring its social character, its place in culture and, above all, its social impact turning around. to the traditional way of their approach to education. In the context of the Molecular and Cellular Biology discipline, this methodological idea means revealing, in the teaching-learning process, the social nature of molecular and cellular contents, explaining the practical utility of its knowledge.
3. The research orientation of scientific education. This means the planning, orientation, development and evaluation of the teaching - learning process as a scientific - investigative activity as a way to solve the difficulties that science teaching - learning faces.

In the context of the Molecular and Cellular Biology discipline, it involves the formulation and solution of learning situations related to the practical application and social impact of the teaching-learning of molecular and cellular contents, in which they develop hypotheses; search, process and expose the information obtained from different sources of information; among other investigative skills.

4. Consideration of the distinctive characteristics of human psychic activity during the teaching-learning process. It supposes the preparation of teaching tasks that is organized, structured and developed on the basis of the peculiarities of the sociocultural approach and factors: didactic-methodological, logical-psychological and epistemological with the function that the students appropriate the molecular and cellular contents as a way for them to learn it and learn to teach it.

That is why it is licit to intentionally capture the sociocultural approach in the programs of the Molecular and Cellular Biology discipline, which has the particularity of considering certain

characteristics of the two forms of the CTS approach and constitutes a mandatory alternative that allows the achievement of the objectives. Contained in the professional model; Furthermore, in this context, it insists on the need to contribute to training aspects. For this, it is licit to prepare the training teachers in the way of learning to teach and to teach how to learn the molecular and cellular contents from this perspective.

However, in the methodological documents of the Molecular and Cellular Biology discipline such an approach is not defined, only some features of it are pointed out, which do not allow measuring its scope so that the teacher can be consistent with it, hence it is necessary to specify what is understood by sociocultural approach to the teaching-learning process.

In this regard, the definition of Torres, R. (2008) is an important antecedent when it states:

By sociocultural approach to the teaching-learning process of science, it is understood the direction of the teaching-learning process that considers not only knowledge and know-how, but also especially considers knowing how to value and the fact that Science is a cultural vehicle which develops in students a reflective attitude that empowers them in understanding their environment and allows them to consciously participate in decision-making to achieve sustainable development.

It materializes on the levels: economic, environmental, humanistic, technological, ideopolitical and historical, in systemic interaction. It must contribute to the formation of scientific thought, not only by the rigorous mastery of the knowledge system approved by the contemporary scientific community, but by reproducing in the construction of knowledge and skills: the methods, ethics and work style of the scientists.

The previous definition serves as an antecedent to define, in the context of the Molecular and Cellular Biology discipline, the sociocultural approach as the direction of the teaching-learning process of this discipline that allows teaching to learn the molecular and cellular contents, in a way that allows the student contextualize, apply and assess the social impact of molecular and cellular content, in a meaningful way, which will favor the quality of the teaching-learning process and positively influence learning results.

The characteristics that typify the sociocultural approach in the Molecular and Cellular Biology discipline stand out from the previous definition: scientific, technological culture, its history, the

way of doing science collectively, its social nature, its most important figures, its impacts or repercussions on the sustainable development of society, on services, on industry, on environmental conservation.

On the other hand, in the context of teacher training, the student must appropriate the knowledge of the science he imparts with depth and rigor, and appropriate the knowledge of his teaching with depth and rigor. Hence the focus is closely related to the professional approach.

Related to this, the criteria of authors such as Addine (1997), Perera (2000), Jiménez (2007) and Torres (2008) have been systematized. Based on their contributions, we define a professional approach, in the context of the Molecular and Cellular Biology discipline, as the teaching learning of molecular and cellular contents so that, intentionally, students are encouraged to teach how to learn these contents at school average and with it that they acquire the ways of professional performance.

The internalization of such an approach can be achieved through the modeling of teaching and learning situations, where students are consciously involved. It is necessary to consider that the teaching learning of molecular and cellular contents with a professional approach should promote in the education professional:

- Mastery of the knowledge system of the Biology discipline in basic and pre-university secondary education.
- The direction of the biology teaching-learning process in middle school.
- Resolution of biological and didactic problems related to the teaching-learning of molecular and cellular contents, transferring learning in new situations of daily life
- Greater motivation and professional orientation towards the career.

From this perspective, in the context of the Molecular and Cellular Biology discipline, the aim is to contextualize the molecular and cellular contents, explaining their practical utility, their impact or repercussions on the sustainable development of society, services, and industry. , in environmental conservation, so that students are taught to learn these contents from this perspective and learn to teach them in a way that transforms the direction of the teaching-learning process of

the Biology discipline in middle school, which articulates the two dimensions of the approach: the sociocultural and the professional.

Thus, it is our criterion that the sociocultural-professional approach in the discipline of Molecular and Cellular Biology, is the direction of the teaching-learning process of this discipline that allows teaching to learn the molecular and cellular contents, in a way that allows the student to contextualize, apply and value the social impact of molecular and cellular content, in a meaningful way, so that students can learn to teach these contents with this approach in the contexts of professional performance where they intervene.

Bibliographic references

- Addine, F. (1997). *Didáctica y curriculum. Análisis de una experiencia*. Asesores Bioestadísticos. Bolivia.
- Fundora, J (2007). *Orientación sociocultural de las Ciencias Naturales*. Revista Varona No. 45, 63-68. Disponible en <http://www.redalyc.org/articulo>.
- González, R y Mitjás. A. (1989). *La personalidad, su educación y desarrollo*. La Habana: Pueblo y Educación.
- Gil, D. (1993). *Tendencias y experiencias innovadoras en la enseñanza de las ciencias*. Biblioteca virtual de la OEI. Disponible en URL: en <http://www.oei.es/>.
- González, R y Mitjás. A. (1989). *La personalidad, su educación y desarrollo*. La Habana: Pueblo y Educación.
- Jiménez, L. (2007). *La interdisciplinariedad desde un enfoque profesional Pedagógico (Tesis doctoral)*. Universidad de Ciencias Pedagógicas Enrique José Varona. La Habana.
- Martí, José. (1975). *Obras Completas*. T. 5. La Habana: Ciencias Sociales.
- Macedo, B. (1998). *Tendencias actuales en la enseñanza de las ciencias. Conferencia impartida en el V Taller Internacional sobre Enseñanza de la Física*. IPLAC. La Habana. Disponible en: <https://www.google.com/search>.
- Perera, L. F. (2000). *La formación interdisciplinaria de los profesores de Ciencias: un ejemplo en el proceso de enseñanza-aprendizaje de la Física*. (Tesis doctoral). Instituto Superior Pedagógico “Enrique José Varona”, La Habana.

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- Rodríguez, M., Moltó, E. y Bermúdez, R (1999). *La formación de los conceptos científicos en los estudiantes*. Academia. La Habana. Disponible en:
http://www.estudiosindigenas.cl/educacion/ed_ciencias_formacion_conceptos-científicos.pdf.
- Torres, R. (2008). *Las tareas docentes con enfoque sociocultural-profesional* (Tesis doctoral). Universidad de Ciencias Pedagógicas Félix Varela. Villa Clara.
- Pedroso, F. (2008). *Diseño Curricular de la Disciplina Física con un Enfoque Sociocultural para la Formación de Profesores de Ciencias Exactas en la Enseñanza Media Superior*. (Tesis doctoral). Instituto Superior Pedagógico Enrique José Varona. La Habana.
- Valdés, R. y Valdés, P. (1999). *Tres ideas básicas de la Didáctica de las Ciencias*. Soporte electrónico. La Habana. Disponible en:
<http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Havana/images/didaticasdelasciencias.pdf>.
- Vázquez, C. (2003). *Actualización con enfoque sociocultural del proceso de enseñanza-aprendizaje de la física nuclear para la formación y superación de profesores* (Tesis doctoral). Instituto Superior Pedagógico Enrique José Varona.
- Zubero Ma. D. y Addine, R. (2005). *La orientación sociocultural del proceso de enseñanza-aprendizaje*. MINED. La Habana. Disponible
<http://www.bibliociencias.cu/gsd/collect/tesis/index/assoc/HASH01d3.dir/doc.pdf>