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Considerations about Chemistry Teaching and its perspectives for teaching practice today

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ABSTRACT *: This article deals with aspects of chemistry teaching since its history in teacher education, ways of evaluating the teaching-learning process and research on the new perspectives in the teaching of this science, through which it is possible to understand the real situation of chemistry teaching. consider new teaching methodologies. A research was conducted in search of bibliographic sources that lead the reader to understand the methodological aspects of chemistry as a fundamental discipline for the formation of citizens and how their teaching should be contextualized and meaningful.*

KEYWORDS *-chemistry teaching, contextualization, forms of assessment, meaningful learning, teacher education.*

I. INTRODUCTION

According to Tardiff and Lessard (2005) [1], teacher education here in Brazil has been going through several transformations, where neoliberal remains, competition and unbridled growth of distance learning degrees have marked this scenario. Rethinking teacher education so that social demands are met is necessary. But to understand the path that education has followed follows a brief history.

The traditional education system has been rated by students as dull and unhelpful, as most students need to record theories and formulas and have a successful assessment or exam. Other assessment methodologies can be taken into account to verify the student's actual learning during the period studied. Teaching through playful and experimental activities, even if alternative, provokes a more favorable learning for students, both in the dynamic and interactive sense, as well as in their learning process.

Chemistry teaching in many schools is traditional, being concerned only with the memorization of names, formulas and calculations totally detached from everyday life and the reality that students find themselves, which ends up distancing them from a pleasant teaching. and significant. Therefore, it is paramount to know the history behind teacher education and the methodological forms available for good chemistry learning.

II. THE STORY IN TEACHER EDUCATION

In the nineteenth century, teachers were trained in institutions called Normal Schools, where they studied specific content for teaching and classroom methods. However, there was a reformulation of the Education guidelines shortly after the Military Coup, where a new vocational High School was created.

With the end of normal schools, teacher training was given as a qualification for teaching, which contributed negatively to teacher training, according to Silva and Farias (2016) [2]. Difficulties began to arise as many teachers were not sufficiently qualified to teach in certain areas. But over time came the CEFAM project (Centers for the Training and Improvement of Teaching) that revitalized the essence of normal schools in the current system.

After the 1990s, primary school teachers were required to be trained at federal universities. The degree programs were then intended for teacher training for the 6th grade onwards. These transformations permeate the history of education in Brazil.

The organization of basic education in Brazil is currently divided among the governments, which are responsible for the school stages. Early childhood education is the responsibility of the municipality where the school is located, primary education is the responsibility of the municipalities and states and high school is the responsibility of the state.

The teacher, in his pedagogical action, has the purpose of cooperating to improve knowledge through his practice. It has the purpose of making students critical, reflective and emancipatory, as well as their own formation. Otherwise, we observe that the pedagogical practice must be based on a critical and reflexive rationality.

Regarding Chemistry Teaching, the teacher should show students that it is as important a discipline as the others in their student curriculum. In addition, it is interesting to look for educational strategies so that students understand and apply the concepts learned to their daily lives in a meaningful way.

Chemistry allows the student to express their ways of thinking, questioning and explaining the world, as it studies the transformations and phenomena that can occur in the subject. For such, the teacher should look for alternatives that enrich the classroom, promoting the collectivity and socialization of content, encouraging research, research, etc.

According to Krasilchik (1987) [3], "Educating for citizenship, without restricting the school's role in preparing the malleable and manipulative individual, is the great task facing science teachers today". It is worth noting that citizenship is a matter for everyone and not just teachers during their pedagogical action. And, as for teachers, it is noteworthy that, whatever their discipline, it must insert a contextualization as to the importance of citizenship formation in their specific teaching.

Researchers (SOARES and SOBRINHO, 2010) [4] concluded, through research conducted with practicing teachers, that the contents seen during the teachers' formation are the basis of support of their craft, however their experiences and the improvement of their knowledge are established with the practice in practice. classroom. The consolidation of all that has been studied is what shapes the teacher, so teaching learning comes together with practice, underpinning the teaching-learning process.

III. DIFFERENT WAYS OF EVALUATING THE CHEMICAL DISCIPLINE TEACHING AND LEARNING PROCESS IN SCHOOLS

From the early years of school, observation is one of the first things children practice, where they admire the world around them, acquire experiences, make decisions and position themselves on events. In this

context, it can be considered that the evaluation occurs at various times in life. But in the school environment the evaluation is intentional and the decision taken may reflect positive or negative aspects. This is usually a successful assessment of a grade or concept that defines how much a student has learned during the term.

That said, it should be understood that assessment should be a mediating and formative learning process and should go hand in hand with the teaching process. A student's assessment is a very deep and broad process to summarize in a single, final step, as it is done in tests or exams, for example. Nevertheless, tests and evidence are relevant instruments, but it is judged whether they will be used as an evaluative form. According to Luckesi (2003) [5], the exam is a punctual assessment regarding the time-space of learning, as it must be performed in a previously determined time and place.

However, assessment implies in diagnosing and guiding students, punctuating positive and negative aspects in order to improve them. According to Villas Boas (2006) [6], although school assessment occurs in different ways and at different times it can be classified in two ways. One is the formal assessment, which is the most practiced, performed through reports, tests, texts, exercise solving, tests and etc., with established dates and times, generating, at the end, a grade. On the other hand, there is also the informal, frequent evaluation, which occurs through the interaction between students and teachers, where the teacher evaluates the student's performance in a given activity, evaluates how much the student is requested and interested in the subject.

According to Loch (2000) [7], the classroom is a collective place and a permanent learning and accompaniment, consisting of educators and learners in constant dialogue in the creation of self and the other, advancing together in the construction of knowledge. It is a place permeated by questions, problematizations, interventions and mediations, characteristic aspects of a formative evaluation. For Harlen and James (1997) [8], this type of assessment is conducted by the teacher and takes into account the process of student's personal progression, effort and dedication.

Lemos and Sá (2013) [9] found, through an investigative research with high school chemistry teachers from public schools in the southern region of Bahia, who practice school examinations instead of learning assessment and it is considered urgent and necessary that teacher training in the various areas of knowledge emphasize the assessment theme in their subjects, aiming to train teachers who develop multiple learning assessment resources. Thus, the assessment will be mediating and committed to student learning and not a punitive and classificatory, as currently performed.

The National Curriculum Parameters (Brazil, 1997) [10] and the challenges encountered in the classroom itself pronounce a new approach to teaching, using different pedagogical practices and assessment mechanisms, motivating the development of teaching and learning, in favor of a more contextual development. and meaningful to the student.

In chemistry, more specifically, resources such as low-cost chemical experiments, educational games, and music can be used to great advantage because it holds the student's attention, evades the traditional teaching style, close student-teacher relationships, contextualizes the chemistry of relaxed and playful way and can be followed by a formative assessment. These resources motivate the teaching of the discipline and reap good results, as students are more involved with these types of activities. In addition, certain experiments can still be performed at home by the student himself, as long as their materials are alternative (low cost and easy to purchase) and their practice poses no risk to both the performer and the performer of this show that is experimental chemistry.

IV. THE NEW PERSPECTIVES IN CHEMICAL TEACHING

It is a great challenge to build a bridge between school knowledge and the everyday world of students. Taking into account this deficiency in chemistry teaching in basic education, this paper aims to raise and present

methodologies that are useful to the teaching-learning process, facilitating and complementing the acquisition of students' knowledge and showing them the importance of chemistry.

Not opposing, the National Curriculum Guidelines for teaching defend the need to contextualize the teaching contents in the reality experienced by the student, with the aim of giving meaning and contributing to their learning (BRAZIL, 1999) [11].

In addition, in Basic Education, we have a teenage audience and it is quite appropriate to research the motivation of these students. To analyze this aspect, one must investigate strategies and didactic resources in the teaching of chemistry, considering the need of the educator to look for alternatives that make possible the learning of the students.

As pointed out by Santiago et al. (2010) [12], an alternative may emerge through games, which allow students to understand chemistry knowledge interactively and in a direct relationship with their social context. The field of play is a broad field for research, and it is important to analyze how much an activity such as a game can help learning.

Research on the use of inexpensive classroom experiments is also crucial for the discussion of the potentials and limits of the contribution to the teaching and learning processes of the natural sciences. Experimentation plays an important role in the appropriation of scientific concepts, besides arousing the students' interest, fact attributed to its playful and motivating aspect (GIORDAN, 1999) [13]. It is known that there are no appropriate classrooms or didactic laboratories for the development of experimental practices in the vast majority of elementary and high schools. Thus, the use of inexpensive experiments is one of the alternatives to contribute to the learning process. It does not necessarily have to be experiments that demand high purchasing power, but rather an alternative material in which students are able to understand. chemistry without difficulties and that they, if they wish, are able to repeat the experiments at home and even pass on what they learned to those who did not have access to this kind of knowledge.

Besides experiments and didactic games, other proposals that contribute to the change of this traditional teaching are the elaboration, production and use of poetry, music, theater, etc. These learning tools stimulate student interest by developing different levels of personal and social experience and building new discoveries.

It is worth highlighting the relevance and need for teachers to understand that even without access to great technologies, there are several possibilities and teaching strategies that can be used within the classroom. There are several convenient teaching techniques and methodologies that could be developed and applied by the teacher, so that it would make the space where the class is taught a relaxed, stimulating and challenging environment, seeking meaningful learning (HARTWIG, 1985) [14].

In the search for an effective chemistry teaching, one must start from something problematizing, challenging and stimulating, so that its purpose is to lead the student to the construction of scientific knowledge. One can no longer devise a chemistry teaching that only provides preconceived questions with finished answers. Chemical knowledge needs to be exposed to the student in a way that enables them to interact actively with their environment.

In general, teaching through playful activities allows students to develop many skills that contribute to making the classes more enjoyable, more interactive, seeking to increase the taste for chemistry, as well as achieving educational goals necessary to build their knowledge.

V. FINAL CONSIDERATIONS

In addition to seeking new methodologies for the classroom, it is important for the education professional to remember or learn new content through extension and specialization courses, to increase their skills, broaden their field of knowledge, improve their studies, exchange experiences and live together with people of the same interests and field of action and thus broaden their knowledge.

The types of teacher-student interaction / relationship through the didactic strategies discussed here also help to strengthen the relationship between students and teachers in the classroom, leading them to have a good school life. All of this contributes to an improvement in teaching and learning, as a good relationship between the parties and the application of valid and attractive methodologies are essential aspects for good conversation, interaction, connection and knowledge transmission.

To make chemistry teaching more interesting for students is to seek to contextualize and give meaning to what is being taught, seeking direct relationship and applicability in daily life.

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