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## THE USE OF MUSIC AS A STRATEGY FOR TEACHING CHEMISTRY IN SECONDARY SCHOOLS

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**Abstract:** It seems that there is no disagreement that the textbook is undoubtedly a material that has a strong influence in Brazilian classrooms. It is true that it is often the only didactic instrument used by teachers for searching, conceptual questions, planning, presenting exercises, etc. This can result in its indiscriminate use in the classroom and a lack of diversity in teaching resources. It is understood that the use of music in chemistry lessons can be a significant way of attracting the interest and motivation of secondary school students. The implementation of new teaching methodologies and strategies is still rarely applied in Brazilian public school classrooms. However, contact with new technologies and new languages has increased significantly among young people. In this sense, it is becoming increasingly important and necessary to introduce new teaching practices that help and facilitate the student's integration with the lesson being taught. Chemistry is still considered one of the villains in high school and has been the target of many studies in the search for new methodologies and strategies to improve student understanding and facilitate teaching and learning. In this way, we believe that combining music with everyday life and the content covered in the classroom can make learning enjoyable and consequently interesting for the students, proposing the development of a methodology that is different from the conventional one. The use of music can diversify chemistry lessons and arouse interest, in the same way as laboratory (experimental) lessons. Playful activities in the classroom can arouse students' interest in finding solutions and alternatives to solve and explain the proposed topic. This paper is an experience report developed during the course in Nature Sciences and Mathematics (CNeM) at the University of the International Integration of Afro-Brazilian Lusophony (UNILAB), in the subject of

Supervised Internship V, carried out in a 2nd year class at a state public school in the city of Redenção-Ceará, whose aim was to work on an innovative tool for teaching Chemistry, promoting the exchange of knowledge, through a more participatory didactic approach by the students. The activity was carried out in the classroom and was divided into three stages: development of the content on the history of chemistry in the form of a lecture; division of the class into small groups to discuss the content taught; and application of a questionnaire with ten questions on the content. As a strategy for teaching the content, we used the lyrics of a song composed by the CNeM-Habilitation in Chemistry student who was doing the internship, who is also the author of this work, with the aim of addressing historical content about the discovery of the Atom. The results of the experiment showed that music as a language and artistic expression can engage in dialog with science and, in the school context, form the basis of innovative pedagogical experiences.

**Keywords:** Teaching chemistry. Music. Supervised internship.

## INTRODUCTION

The textbook is undoubtedly a highly influential material in Brazilian classrooms. It is true that it is often the only didactic instrument used by teachers for searching, conceptual questions, planning, presenting exercises, etc. This can result in indiscriminate use in the classroom and a lack of diversity in teaching resources.

The lack of new resources for teaching content considered difficult by the students ends up discouraging their interest. Diversifying the use of teaching resources is an attempt to overcome the lack of interest in chemistry and promote the reorganization of content. One promising alternative is the use of music in basic education, which can favor learning, in

addition to its playful nature.

It is therefore possible to see that the use of music in chemistry classes can be a significant way of attracting the interest and motivation of high school students (JUNIOR; LAUTHARTTE, 2012).

Contact with new technologies and new languages has increased significantly among young people, making it necessary for teachers to pay attention to these new pedagogical practices, with the aim of helping and facilitating the student's integration with the content taught in the classroom.

In addition, the school needs to create mechanisms and strategies to attract attention in a pleasurable and stimulating way, favoring the understanding of the concepts covered in a simple and objective manner.

Chemistry is still considered one of the villainous subjects in high school and has been the target of many studies in the search for new methodologies and strategies that will improve students' understanding, facilitating teaching and learning.

According to Sá; Vicentin and Carvalho (2010, p.):

Working in a contextualized way can remove the student from the position of passive spectator, increasing the possibilities for learning. When it is not associated with the students' context, the study of chemistry is usually unmotivating, precisely because there is no relationship with personal life and society.

In this way, it is believed that combining music with everyday life and the content covered in the classroom can make learning enjoyable and, consequently, interesting for the students, proposing the development of a methodology that is different from the conventional one.

The use of music and lyrics can be an important alternative for bringing the dialog between students, teachers and scientific knowledge closer together. In addition,

playful activities in the classroom can arouse students' interest in finding solutions and alternatives to solve and explain the proposed topic (OLIVEIRA; SOARES, 2005).

According to Santana (2008), playful activities trigger thought and memory, generate opportunities for the expansion of emotions, as well as sensations of pleasure and creativity, since the conditions of seriousness, commitment and responsibility, rather than being lost, are now felt. Music can therefore be a motivating and facilitating element in the process of teaching and learning scientific concepts, not least because of its playful nature.

This work is an experience report developed during the course in Nature Sciences and Mathematics at the University of the International Integration of Afro-Brazilian Lusophony (UNILAB), in the subject of Supervised Internship V, in a 2nd grade class at a state public school in the city of Redenção-Ceará, whose objective was to work on an innovative tool for teaching Chemistry, promoting the exchange of knowledge, through a more participatory strategy for the students.

In the activity developed, the use of music aimed to contextualize teaching, giving greater meaning to the concepts or knowledge it conveys. As an initial reflection, the song was sung along with a slide show in which a brief analysis was made of the knowledge of the discovery of the atom.

Students at all levels of learning are immersed in new technologies and new languages, resulting from the vast and unrestricted dissemination of information. Even so, in chemistry teaching, the use of new materials and teaching strategies, although widespread, is still not widely practiced, especially in state schools. In today's context, it is important that lessons are made more dynamic using different teaching tools, given

that the world is becoming increasingly globalized and technological.

In the classroom, music can go beyond a simple instrument, being “capable of promoting the development of the human being through awareness of the interdependence between body and mind, reason and sensibility, between science and ethics; and not through training and alienation” (MARTINS et al., 2009, p. 82). In this sense, it can mediate the development of skills such as perception, imagination and critical analysis, among others.

The progress made in discussions, expectations and interest in approaching chemical knowledge through the medium of certain songs makes it clear that a second path can be taken, not only through lectures, but also by increasing sensitivity and creativity in establishing relationships between the context of the song reflected in the lyrics and scientific knowledge.

## **MUSIC AND CHEMISTRY: A POSSIBLE PARTNERSHIP**

The activity was organized in the classroom and was divided into three stages: developing the content on the history of chemistry in the form of a lecture; dividing the class into small groups to discuss the content taught; and applying a questionnaire with ten questions on the content.

As a strategy for teaching the content, we used the lyrics of a song by the singer, composer and graduate student in Nature Sciences and Mathematics with a major in Chemistry, with the aim of addressing historical content about the discovery of the Atom:

I've got electrically positive protons / I've got electrically negative electrons / I've got electrically charged neutrons / for a neutral charge of course you're on / (2x)

Before we got to where we are now/ we went through several stages and everything improved/ great philosophers only imagined/

that the universe was made up of earth, fire, air and water/ but in all of this we can assume/ that the atom means it can't be divided/ that's why it's an indivisible particle/ but for Aristotle it was possible/ even though he was wrong it's been over two thousand years/ everyone accepted it even though it was a big mistake/ the first experimental atomic model/ came with John Dalton and he thought he was the one/

I've got electrically positive protons / I've got electrically negative electrons / I've got electrically charged neutrons / for a neutral charge of course you're on / (2x)

*I was established by one of the models created/ by Joseph John Thompson listen well to my message/ Ernest Rutherford also collaborated/ he did great research to tell you who I am/ this model puts the most massive protons and neutrons/ in a very small nucleus listen well to what I tell you/ this means that the nucleus contains/ all the positive charge and almost all the mass too/ I went through many scientists I'll tell you who the guys are/ Dalton, Thompson, Rutherford, Bohr, Sumerfeld, Broogie, Resemberg/*

*I've got electrically positive protons/ I've got electrically negative electrons/ I've got electrically charged neutrons/ with a neutral charge, of course you're on/ (2x) (SOUZA, P. R, 2015)*

Through the observations made in the classroom, some students found it difficult to understand the chemistry content, and showed no interest or desire to learn.

In an attempt to bring chemistry teaching closer to the reality experienced by young people, the aim of music as a teaching tool is to arouse students' interest in the subject, bringing it closer to their reality, without the intention of simply memorizing concepts. In the case of the lyrics, the intention was to present the history of the discovery of the atom, covering knowledge from the ancient Greek philosophers to the most recent scientists. It also explains that the atom is made up of

protons, neutrons and electrons, and that they have positive, neutral and negative charges. As a rhythm, the funk beat was used, which is well known among young people today.

This activity has brought several benefits to the educational process, above all the acceptance of the students involved, improving the relationship between the subject and learning. This method is considered important for making teaching and learning more dynamic. It's worth pointing out that the trainee's inclusion in the school made it possible to get a more real and possible insight into teaching working conditions.

From this point of view, the Supervised Internship subject has made an important contribution to the training of future teachers, because through it, the intern has gotten to know the reality and difficulties encountered by students in their ability to understand the content.

It also gave future teachers an insight into how to offer more interactive lessons using music. According to the data collected, an analysis was made of the group's opinions, which brought up considerably important statements, so that this method can be used more and more.

According to some of the interviewees, it was suggested that there should be more songs with lyrics focused on education, as it is viable and indispensable for understanding many concepts that involve all areas of teaching. However, it is difficult to find teachers with the vocation to sing and compose songs of this nature.

It can therefore be seen that such an activity is not very common in classrooms, regardless of the subject. For this reason, working with music was a very positive aspect of the proposal presented here, since the students showed interest and concentration in the presentation.

The students, for their part, characterized

this class as satisfactory and enjoyable, and they were very participative, asking questions and making contributions related to the proposed content.

## FINAL CONSIDERATIONS

From the experience presented, it can be concluded that the use of music as a learning object aroused great interest and acceptance among the students interviewed, providing teaching that is closer to the reality of young people. Developing proposals like this is fundamental to the growth and development of education.

The Supervised Internship course provided the undergraduate with experiences and learning that are crucial for professional growth and development. And it is through bridges like this that a new horizon is reached, where new ideas can be assisted and worked on in search of a better future for our society.

It is worth noting that music is very attractive and seeks to generate interest and motivation, as we use melodies that are known and appreciated by young people. Despite the fact that it is a strategy little used by teachers to stimulate students' attention, the importance of making teaching more dynamic and looking for new tools to facilitate learning is becoming necessary in this new teaching and learning scenario.

In addition, songs with lyrics like these should be considered, as they reinforce the view of chemical knowledge. This corroborates positively, as it is believed that through this method students improve their ability to understand and memorize.

In this way, it was observed that by having an experience like this in class, the students were able to incorporate science as an integral part of their general culture and, in the particular case of chemistry, realize that the subject can go beyond simply memorizing the history of chemistry.

## REFERENCES

SÁ, M. B. Z.; VICENTIN, E. M.; CARVALHO, E. A História e a Arte Cênica como Recursos Pedagógicos para o Ensino de Química - Uma Questão Interdisciplinar. **Química Nova na Escola**, v. 32, n. 1, p. 9-13, 2010.

PONTES, A. N; SERRÃO, C.R.G; FREITAS, C.K.A; SANTOS, D.C.P; BATALHA, S.S.A. **O Ensino de Química no Nível Médio: um Olhar a Respeito da Motivação**, 2008.

OLIVEIRA, A. S.; SOARES, M. H. F. B. **Júri químico**: uma atividade lúdica para discutir conceitos químicos. *Química Nova na Escola*, n. 21, p. 18-24, 2005.

MARTINS, N. B.; SCHUTZ, M. D.; RIGO, M.; TROIAN, A.; RANGEL, E. F. M. A utilização da música como prática de ensino nos livros didáticos. *Vivências: Revista Eletrônica de Extensão da URI*. v. 5, n.8, p.77-83, 2009.

FRANCISCO JUNIOR, W.E.; LAUTHARTTE, L.C. Sociedade Brasileira de Química. *Uso de Paródias no Ensino de Química Orgânica: Uma Ferramenta Útil na Avaliação do Ensino-Aprendizagem de Alunos do Ensino Médio*. 2012. Disponível em: <<http://www.s bq.org.br/37ra/cdrom/resumos/T0470-1.pdf>>. Acesso em: 12 mar. 2016.

SANTANA, E. M. **A Influência de atividades lúdicas na aprendizagem de conceitos químicos**. Universidade de São Paulo, Instituto de Física - Programa de Pós Graduação Interunidades em Ensino de Ciências - 2006.