

Physical and science theater

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Abstract

Considering the difficulties encountered by students in the disciplines of exact sciences, specifically physics, it is noticed that learning content by students is apparently inefficient with mechanical lessons in which students fail to see its importance in their lives, thus making them increasingly uninteresting and setting off on a low income

school. The aim of this project is to propose a methodology for effective teaching by scientific theater in which the historical aspects, conceptual and practical belong to this area of knowledge can be presented to learners in a more attractive way, thus encouraging the learning of science by students. The project was developed with students who were in their first year of High school, they staged the play: PHYSICS - THE QUEEN OF SCRAP METAL, in which the results show the effectiveness of this innovative method, with the possibility of physics classes be more enjoyable, relaxed, dynamic and better learning opportunities for students.

Introduction

Of all the living beings on our planet man is one of the few who is capable of producing art, thus it is noticed that since the beginning man is involved in this magnificent universe that shows new ways, possibilities and challenges to overcome and conquer new horizons. Using art we express our feelings, we understand who we are and what is around us and learn to do things previously unknown or difficult. Joining art and science energizes content and student learning.

In the classroom, the several subjects employed as basic to knowledge depends acceptance of students; in the case of Physical, it has been seen as one of the most difficult subjects of the current educational curriculum. Teachers of this subject are challenged every moment, since they are confronted daily with unmotivated students because from the beginning it is given as a decorative discipline in which one should learn their formulas and their application.

Thus, it is often heard that Physics is a difficult subject, leading its teaching to be a challenge in the classroom. However, for the development of skills signaled in PCNS, these traditional teaching tools would be insufficient and limited, it must be looked for new and different forms of expression of knowledge of physics, from the writing, to the body and artistic language (BRASIL, 2002).

According to Bachelard (1996) the classroom should enable the student to reflect upon the beauty of knowledge and be able to expose, create, think, question, talk, train their scientific spirit and participate in the transformation of their social reality.

Considering the difficulties of learning in the exact sciences, especially Physics subject, scientific theater comes up as an innovative tool. By promoting the integration of theater with teaching Physics, demonstrating that, through plays, historical, conceptual and practical aspects that belong to this area of knowledge can be presented to learners in a more attractive way, allowing greater success in the teaching-learning of this subject.

Thus, the theater should be seen as an opportunity to expand and engage the general public, besides constituting a pleasant teaching tool (MEDINA. 2010). The theatrical activities, while working to sensitivity, perception, intuition and emotions, allowed students to make links between everyday content, relations between science and social issues, but also provides the courage to take risks, to discover and articulate their critique, expose their different way of thinking

With such purposes we developed the project Investigating apprenticeship of Physical subject by scientific theater in C.E. Aluisio Azevedo at Caxias/MA, with students who were in their first year of high school and had an income below the minimum needed to obtain approval. It will be reported an interdisciplinary work like this, based on the complex relationship between physical and theatrical art, interlaced content, body expression, discipline, memorization, among other actions inherent of arts led students to develop solid skills, multidirectional competencies and success with academic achievement.

Methodology

The work started with a literature search related to the use of theater in the classroom, reviewing the contents of Physics taught; making and conducting experiments to better explanation of theory that is capable of producing some playful effect (noise, color, volume, etc.). The development of questionnaires and issues which should be further strengthened and adaptation of the play: **Physics: the queen of scrap metal** dealing with the recycling with a proposal for sustainable development based on Newton's laws. Assays with students participants in the project, creation of costumes for the characters and presentation of the play in two schools in the state educational system were conducted.

Results

With the beginning of the project, the students realized that physics can be dynamic and easily apprehended, began to relate to and observe the its effects due the inclusion of experiences, tutoring and research designed to improve the play, Physics: the queen of scrap metal, figure 1. There was a large involvement with the displayed dynamics, URM experiments (Uniform Rectilinear Motion), Newton's Laws, thermometry, thermal expansion and thermodynamics associated with focusing exercises, students realized the changes both in their behavior and in their classmates, besides understanding in subjects taught by teachers in the classroom

After participating in the project, school performance improved such that all students passed by average only with grades of 4 bimesters. This fact, very rewarding, drew the attention of the headmaster and Principal of this school.



Figure 1

Discussion

After the beginning of the activities developed in C.E. Aluisio Azevedo, the students of the project named “Investigating apprenticeship through the physical science theater” ensure that their knowledge has been increasing in Physics. Eugênio Alves B. Neto of 1st year says “it has been improved my understanding of the issues; learned to explain better the formulas; learned experimenting and using formula in the experiments;

I started to lose a bit of shame with puppets, in the play”. Ibirmara de Sousa says “Prior I was shy, I did play at SESC, but I did not like, I'm going back to do for pleasure, I lost the shame and I want to be an actress”. About this can be said that this project has an interdisciplinary nature and leads to new social behaviors, such as expressing and loss of shyness in the classroom and in society.

Feelings for pleasure and enjoyment were part of the comments related to the project, as Patrícia Ingrid B. da Silva said “I felt it was great leave the routine of my day by day and that physics is much more than a discipline is a way to have some fun and to feel that these lessons will stay with me forever”. Physics classes in an energized way place the student near the theory and create excitement to interact with content, thus showing an effective way of teaching and learning.

However, students always say "I am able to learn some things that I could not learn in the classroom" this speech is from a student that adds later “Practicing by experiments the content of the subjects makes the learning to be performed with greater success”.

A very interesting fact that concerning the academic performance is that from the 10 disciplines in this class, Physics was the only one subject that had an increasing performance achieved by the students during the year. The most significant was the increasing in the school performance observed from the first to the second bimester, in which was the beginning of the project in this class.

The correlation between Physics and arts is also noticeable in these results. The increasing yield percentage occurred in a discontinuous way, it can be observed an increased results of the first to the second bimester and also the third and fourth bimester as shown in Figure 2.

Using theater is part of the new working methodologies, since, according to Peixoto (2005, p. 10) “which becomes the social and real life men is what determines changes in philosophical conceptions as in the artistic representations”, thus it is crucial to realize that artistic expression in the classroom develops the imaginary side of the individual, leading it to develop skills that will assist in their educational development.

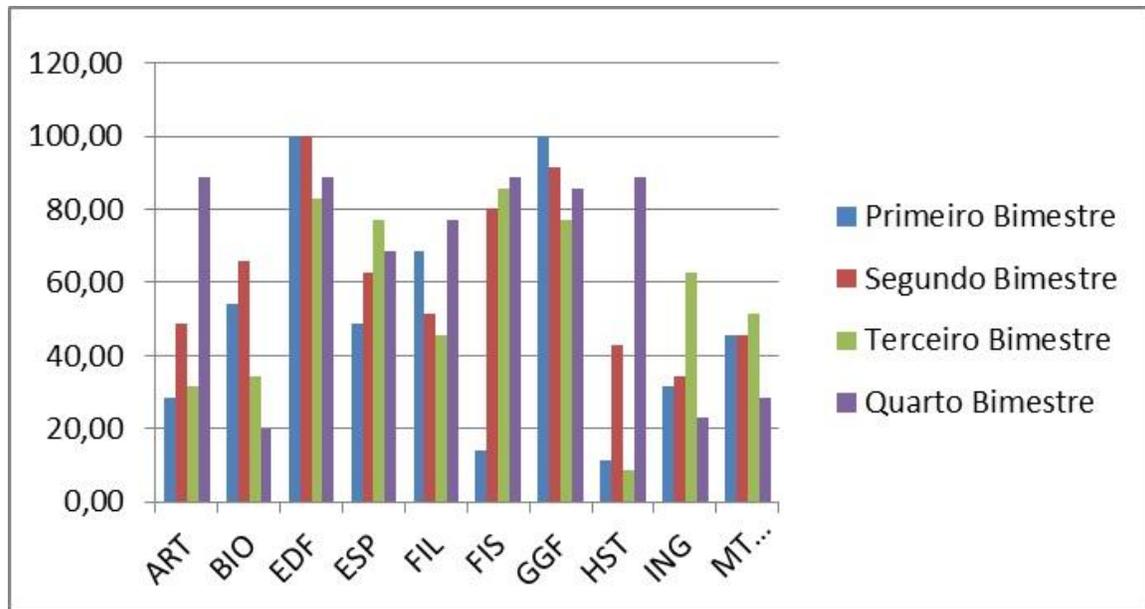


Figure 2

Conclusion

There are several detected reasons that lead the deficit in science learning by students in the high school and elementary however most of these reasons are related to the mechanical way in which the subjects are taught by teachers causing a lack of meaning and interest in scientific practice, disheartened even teachers in the area. With these difficulties students acquire a diffuse view of science that leads to inappropriate attitudes and lack of motivation for learning, triggering on low incomes to these disciplines because they do not really see the utility of scientific practice in their lives.

The theater is an art of feeling, perception, knowledge of oneself and others, viewing provides feeling and both culminate in learning and it is this goal that put in evidence, once the project: "Investigating the learning of physics through theater" proposes a wider pedagogical practice by contextualizing content allowing the student to establish a logical connection between science and their everyday life providing the discovery of the true meaning of the utility and applicability of science, raising the necessary motivation for learning. Therefore the theater is an excellent teaching resource, which promotes the theory / practice integration successfully

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