

The Einstein Box for Skills Development in Preschool in Mexico

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Abstract. Physics has historically been seen as a goal and as a media to reach out for other educational skills. Unfortunately, in Mexico preschool teachers lack tools to develop science in their little students. To help in this situation, we propose the use of “Einstein Box,” a set of toys where the kids can select and play with, then teachers explain the general physics concepts involved in the working of the toys. The results for the kids are amazing because they not only learn about basic physics, furthermore, mathematical thinking, social skills and verbal abilities, all around physics concepts.

1 Introduction

In Mexico, Preschool Education consists of three degrees, student starts his education at three years old, and generally graduates at the age of five or six years old. It is governed by the Preschool Education Study Program 2011 [1] (PEP 2011, its acronym on Spanish), this one is national in all the modalities and preschools, on public or private support. This contain several formative fields, one of them is Exploration and Knowledge of the World. Unfortunately, in this level, the formative field Exploration and Knowledge of the World (and the two aspects in which they are organized: natural world, culture, and social life), teachers suffer lack of methodological guidelines and contents to transmit it to the students, particularly related to the physical phenomena, and therefore students can't reach the standards proposed in the PEP 2011 standards [2].

As mentioned, the PEP 2011 contains curricular standards to cover at the end of the preschool cycle in which science standards are highlighted. Inside the science standards are considered the exploration and knowledge of the world, which in turn presents [1]: Submit a vision of a population using knowledge associated with science, which provide them with basic scientific training at the end of the four school periods. They are presented in four categories:

1. Scientific knowledge.
2. Application to the Scientific Knowledge and Technology.
3. Science Associated abilities.
4. Science Associated attitudes.

The progression through the Science Standards has to be understood like:

- The acquisition of a basic vocabulary to advance on the construction of a scientific language.
- The developing of a greater capacity to understand and represent natural phenomena and processes.
- The increasing linkage of scientific knowledge with other disciplines to explain natural phenomena and processes and their application in different contexts and situations of social and environmental relevance.

However, a big number of teachers of preschool level have not instructional materials to address these four categories. In this work, we show the results to build and implement a cycle of inquiry in preschool level, in order to achieve the science standards mentioned above using like tool the named “Einstein Box”, which is a toys set directed to engage the children in science

2 Methodology

Tonucci [3] comments that in the field of the science, schools should allow the kid the contact with the nature and the biological objects, from these and other experiences is expected that the child learns to observe, to listen, to formulate his first hypotheses, to compare them with those of his peers, to take a risk on early theories, to recognize them overcome, etc.

In this work, we put different toys for the children to play-The Einstein Box-, the teacher asks some questions directed to take the children to the concepts of physics. In this process, children develop skills in various fields, such as mathematical thinking, development vocabulary or social skills. An example is the friction cars, the children play with this, they must compare the distance they reach depending on the force applied to the car (physical), they must share the cars (social skills), the teacher speak about of terms like friction, force, distance, velocity (verbal abilities and vocabulary), with this they have a complete learning experience, all around of physics.

The most important fact in this proposal is that it is not just a non-formal education for preschool students, because the results obtained by the children are evaluated by rubrics, comparison list, interviews, etc.

3 Conclusion

Physics is a great way to develop different skills in children as well as to achieve science standards that require Mexican preschool programs. In this project, we discovered that the Einstein box involves children with science learning in the first place, and develops skills requesting by the five knowledge fields in Mexican institutions. On the other hand, teachers made aware of the importance of science in the formation of children, finding a strategy useful, using the play and the physics like a media not like a end.

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