



It is possible to teach physics from elementary school?

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Abstract

The following article is a documentary research that addresses the teaching of physics from elementary school or primary grades. It explores first the problem that exists in the teaching of this subject and the importance of having a teacher teach it Physics from elementary school. It begins with an approach to the notions of discovery that a student has in his world of movement, nature and reality to reach the most sophisticated slopes in the laws of physics. Given the importance of this subject and its connection with the world of mathematics, the authors conclude, recommend and suggest as a compulsory subject in the curriculum physics since elementary school.

Keywords: physics, teaching, curriculum

Introduction

Today we live in a society in which science and technology are always present in daily living. The application of scientific knowledge is present in most of the areas of our world today. It is difficult to find events, or everyday activities that are not associated this knowledge, therefore, is of vital importance acquire a scientific culture from an early age to continue to progress and especially to understand our society and our environment as well.

Due to the lack of interest in science and the negative consequences that this situation has, both in the first instance in students, as in the society, in the long term, it is necessary to consider a program of improvements and solutions which arise the interest in the students. To provide a quality education that integrates students that are scientifically effective, that can confront the challenges that may arise in the future, it is required to deal with the issue of the teaching of science at an early age and make the changes that are needed in different spaces. Thus, the family, the school, the scientific community and society will influence the scientific education of the students. Consider the positive and negative environments relevant to these contexts, promoting the first and pretending to settle solutions at a second stage, will promote that they will be the engine of the country and the world in the future.

We must bear in mind that advances in technology are always linked to the application of science, its principles, and laws. These include physics, which comes from the Greek physics and a word which means "reality" or "nature". It is the science that studies the properties of nature with the support of mathematics. For this reason, it has the greater importance that these concepts would be taught in elementary grades. Currently, in intermediate grades will teach students the basics of some properties of physics. But we all know that students have or develop basic notions from their birth and as they grow up to try to justify the reason for what is happening in their world. What happens is that not explained to them in a

scientific manner all laws and the creations that physics has to understand their environment. In that way, it is important that through experimentation and research, teaching the main laws of Physics from early stages in the school to our students.

Why the teaching of physics?

As Furio and Vilches (1997), scientific teaching in the early age first instance, will mean that the vast majority of the population will have the scientific and technological knowledge to manage in everyday life, also it helps to solve the problems and take basic health and survival needs an awareness of the complex relations between science and society and, ultimately, consider science as part of the culture of our time. Physics, as well as science, in general, are essential in the education of students. The presence of this subject in the curriculum is essential for the student because it stimulates curiosity, interest and the wish to learn the unknown facts. It also encourages reflection, criticism about what surrounds us, thus, the child will develop a critical and scientific weighting.

Physics teaching also allows developing brain maturity, helping to open his mind and therefore that the child is able to understand abstract or complex things. Also, it creates entrepreneurship spirit developing attitudes of confidence in himself and therefore strengthens a critical spirit. It manages not only to acquire new skills that will contribute to the cultural education of the student, but he also gets to learn the sense of teamwork (how he can assume it when performing a laboratory experience) and learn to discuss respecting and valuing ideas or points of view of others. It helps to give answers and explanations to thousands of phenomena and experiences of everyday life. In short, these aspects help the student to explain the world in which he lives. Want to or do not want to recognize "there are physics everywhere", so, how it is not essential teaching or study this subject from an early age?

Everything can be summarized that teaching of science as well

as technology, gives us culture, but also forms us as a people. Our contemporary world is moving to a completely digital and robotic era where knowledge in physics will be those who will run the world. In the same way, supported and joined to technology, will be creating a new science that every student should know.

Why teach it from the primary grades?

It is common to see younger children manipulating toys where are acquiring greater management of electronic devices and faster are highly mobile in what they do. They are closer to recent discoveries. But they are not being educated in elementary grades in the laws of science and physics in particular. They do not know a number of properties and rules that physics has that they will greatly help to understand their everyday world.

Lopez (2004), at the conference, presented at the third meeting of Science teachers, held in Cadiz in May 2003 and dedicated to "Science and daily life" examines the educational possibilities of a series of toys and curious contraptions with potential interest to motivate students to study physical principles. Similarly, Valera and Martinez (2005) are convinced that using toys, the synonym of fun for young and old, in scientific dissemination activities and, of course, teaching in physics classrooms, can be an excellent strategy at the moment of getting closer to scientific knowledge to citizens in general, and students in particular. If we follow the line of cognitive thinking of Jean Piaget, a student in the elementary grades are in an operational mental stage, where everything can be taught through the experimentation and the student could better understand their environment of the universe since sometimes technology removes skills of reasoning and analysis to the students. For this reason, it must be linked to the constant practice of how things happen. Salvador (1990) conducted a research with sixth-grade students, where, were used two pedagogical methodologies: the theoretical and the experimental, demonstrating the importance of working with both of them both methodologies in order to get an effective learning in the students.

Why Experimentation?

According to the theory of John Dewey (quoted in Hook and Sydney, 2000), the child learns by making and performing their own experimental tasks. Physics from the primary grades provides a series of experiments that could bring students a great knowledge in terms of the universal laws. Through the simple level early educational game, for example, rolling or pushing a car, and asking them to tell how much it takes to make a small tour, we could give the notion of speed in a simple way and in terms that they can go interacting with things in the environment. Doing simple experiments, we could speak about of Newton's laws. There are currently many elementary demonstrations that should be carried on in the classroom at this level. The commitment would be; that teacher adapts the appropriate language to give a law so that these children can assimilate it. In the sciences to experiment several times, gives the proper certainty of the experiment.

According to Skinner's learning theory, (1972), repetition of the exercises, in this case, the experiments, would give a high learning opportunity to a student, Once the student has on the

environment the experimentation opportunity he can reach an absolute argument and high analysis. He will also acquire knowledge, giving meaning to his learning. Ausubel (1978), points out that meaningful learning is one that is recorded in the mind of the student and that will endure longer helping his learning journal and more even if this knowledge is accompanied by an experiment as it should be in the physics courses. In addition, says psychologist Lev Vygotsky that to the extent that the student is exposed to the experimentation takes place the next learning and which at the same time learning something also child develops other skills, analytical capacity and enforcement of the nature and of those phenomena which were not of great importance will be taking great relevance in the child.

The analysis and measures of the public insights into science is not a simple matter. It is impossible do not realize that we live in a society in which science and technology are present in a very significant way in our every day. We should not think this situation has a greater interest in the acquisition of a scientific culture that facilitates the social appreciation of the science that surrounds us. Currently, the picture is not so. Some young people not only do not see science as a source of solutions, a way of getting knowledge, and progress but the most of cases see it just a class, which should be afraid of, due to its complexity of thought that it brings.

Says Perez (2015) that allows a critical thinking based on Science, as well as the formation of skills, to gather evidence and process information construct generalizations. The development of attitudes oriented informed skepticism, as well as the search for rational explanations for the world's problems, are purposes pursued by the teaching of Physics in high school. Similarly, Morales, Mazzitelli, and Olive (2015) point out that the constructivist model, focused on learning and the student considered knowledge as a social construction in constant changing, where teachers and students are responsible for organizing and transform this knowledge. The role of the teacher is the facilitate the student's learning, therefore, is so important to take didactic-pedagogical training and know the subject and to be updated. According to the article, the teacher uses different strategies and resources to motivate and involves students in the construction of knowledge, and thus encourage their autonomy so that students learn how to learn. It also takes into account the student's concepts and he uses the exposition complemented by interactive methods (dialogue and group work techniques). Learning is based on a personal building process, shared and negotiated with others. The student learns when he succeeds in making a significant understanding which allows conceptual and personal change. The knowledge acquired will help the student not only to approve the class, but also to interpret the reality in which he lives.

How would help in the upper grades of the school, teaching Physics in elementary grades?

If we follow the educational theory of Brunner (1995), we will see that learning is interwoven and that teaching must be shown in a spiral, so that, what the student acquires in his elementary levels, will set him as a basis for the intermediate grades.

On the other hand, the perception in general in relation to

science is viewed with indifference. A large portion of the population, shown little concerned both the benefits and problems of science, but they recognize that scientific progress is associated to improve their quality of life and economic development (FECYT 2012). The low or little interest may be associated when there is a comparison between the reflection (in the hands of experts) and information (in the hands of the media) (Muñoz, 2004). According to Muñoz, the information received about science and technology comes from little attractive to citizens and is transmitted by a staff of the mass media, which, generally, it has little or no relationship with the subject to be treated. In addition, the spaces dedicated to scientific content in the media have a poor relationship. Due to this, it is claimed by the citizen's more and better quality of information about science.

In this sense, it is essential to strengthen the presence of the science and technology in education, increasing the scientific culture of our youth and our scientists approaching society, with the objective of valuing the task they are carried out. We must do everything possible so that citizens increase their scientific culture, which is very low due to the low importance is given to physical science, which we all know that it has transformed the world with their discovery and contributions to new systems of knowledge in the world.

Conclusion

Physics as a science that studies the properties of nature and that in one way or another its principles, laws, and theories have enabled different scientific advances that have achieved that at present the quality of life of society has increased, should be regarded as a discipline that should be taught from the first levels of schooling. So new generations will find it more important for their cognitive development and their skills to create and design.

As Varela says, (2005) the toys with which children are often entertained can be used as laboratory materials, to go bringing them little by little in the way of the physical sciences. Simple explanations, but without losing sight of the physical background which would encourage a more scientific culture that so much needed new generations. It is the knowledge that children enjoy every day more and more the use of physics with its application in the technology; it would not be negative that they have the capacity to understand it more efficiently. For this reason, it is recommended to advise that education systems incorporate the teaching of physics or the physical sciences as a compulsory subject in all its curricula, adapted to each level of education, since

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