

Chespirito's Characters Helping to Physics Learning

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Abstract: In Latin America, especially in Mexico since the 70's, the kids have fun with the characters created by Chespirito. An anti-hero like “Chapulín Colorado” or the adventures of a little boy “El Chavo del 8” provides fun for several generations. On the other hand, it is common in the last years to use superheroes or action movie characters to try to teach science, however these kind of personages have no relationship with the Latin America region. In this work we want to show the use of Chespirito's characters to present some themes of physics, for example waves and sound with the “Chicharraparalizadora” of Chapulín Colorado or equilibrium with the plays of Chavo del 8. The objective is showing to the kids some phenomena in a friendly form like a first step to introduce them to the formal physics themes.

Key words: physics of super heroes, physics education, educational aids

1. Introduction

The use of superheroes is not new to teach science in general or physics in particular, however, in Latin America we do not have an example of our own superhero helping us to learn science. The Chespirito's characters are really “anti-heroes”, but since 40 years are very popular in our region, especially with kids. Our directed proposal was teach some physics themes using these characters because the kids see them more close to them.

Exist several examples use of cartoons, movies, TV shows and literature to teach science in history and different regions all around the world. In the opera, “The Tales of Hoffmann” there is a character named “Spalanzani, the physicist” who develop a mechanical doll, and is possible to use for learn about the perception of science in XIX century¹. Is very know the use of Julio Verne's books like motivation to learn science in the last two centuries, or the influence of Volta on Mary Shelley to write Frankenstein.

In physics education has growing the influence in the last years of cartoons or science fiction, example of this is that The American Institute of Physics consider in their set of PACS to publications films (01.50.ff) and Posters, cartoons, art (01.50.fh)². Another examples are the publications of American Physical Society like Physics Quest (APS, 2008) and Spectra (APS, 2013), both magazines use cartoons to show History of Science and Quantum Mechanics Themes respectively, samples shows in the Figure 1.

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¹ http://es.wikipedia.org/wiki/Los_cuentos_de_Hoffmann.

² <http://www.aip.org/publishing/pacs/pacs-reg00#01>.



Figure 1 Publications with Cartoons to Learn Science

However, this kind of publications are not common in Spanish language in general and in the Latin-American region in particular. Exist some efforts in the research area to introduce cartoons in the physics class, like uses Road Runner to learn projectile motion (Jahafari & Khorasani, 2013) or entropy (Pohlig & Rosenberg, 2012), but this investigation are focus in bachelor and college levels and in region different to Latin America.

On the other hand, there are some works about divulgation of science in Spanish language. For example, in Spain has did the book “De King Kong a Einstein” (Lupiáñez & Pont, 1999), about science in science fiction in 90's (Figure 2), however did not touch specific themes. Furthermore, several of TV shows or movies never were seen in Mexico or Latin America, so do not impact to reader. Also exist communicators of science both Spain and Latin-American like Jordi Pont and Julieta Fierro, but they rarely use cartoons, comics or science fiction made in the region.

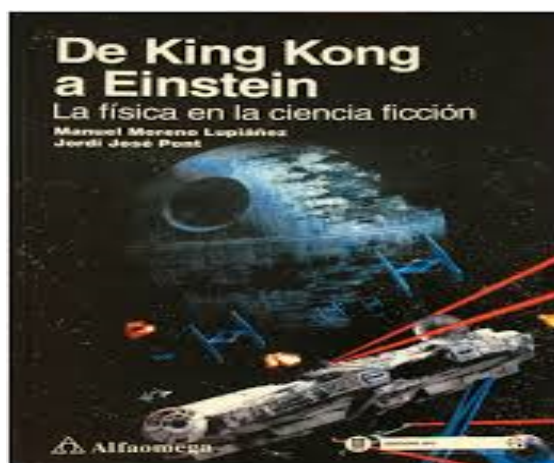


Figure 2 Book “De King Kong a Einstein” The Physics in the Science Fiction

1.1 What about in Mexico?

In Mexico case, in 80's was released a cartoon with the character "Cantinflas" (Figure 3), that was a success with a periodical publication and a TV show. The character spoke with different historical scientist like Einstein or Galileo but don't only, too another historical people like Napoleon or Nero appeared in the periodical publication. Other TV shows in 80s like "OdiseaBurbujas" spoke about historical figures and were focus in children audience, however, did not oriented specifically to show science themes.

However, there are several researchers that has been working trying to use comics to teach physics in Latin America, themes like electric circuits (Orlaineta et al., 2012), general physics (Méndez y Mora, 2011) and science concepts (Gallego, 2007) among others; nevertheless any of this examples used "regional comics", made their proposals with "imported" comics from US or Europe.



Figure 3 Cantinflas Show Comic Magazine

2. Superheroes in Physics

How mentioned above, exist along history examples of use of literature, films or arts in general like aids in teaching/learning of science in general and physics in particular. The Kakailos books (Kakailos, 2009, 2010) are an amazing example of trying explain science since superheroes world (Figure 4), but in Latin America many of characters mentioned in the books are foreign and do not identify with them, furthermore the language is another brick, so do not a real impact in the regular students. However, this kind of proposals arouses interest in the teachers and researchers in Latin America, part because there are not similar works with local superheroes and in Spanish language (Sánchez, 2008).

3. Chespirito Character's Like Aids in Physics Learning

How mentioned in the introduction of this work, Chespirito's Characters have been very popular in Latin America since 70's, anti-heroes like "Chapulín Colorado" still are following by kids and adults today. Chespirito is the artistic name of Roberto Gómez Bolaños, creator and producer of many characters, furthermore acting in a very success TV Show³. The TV Shows of Chespirito started in México, but in short time was a phenomenon all around Latin America.

³ Unfortunately Roberto Gómez Bolaños died last December 2014.



Figure 4 Books of Kakailios about Physic of Superheroes

However, despite of this success, this popular characters have been not used like an aid of learning, or at less in a widely form. By this reason a group of physics education researchers (that grew up with these TV Shows certainly) decided made a proposal using these Characters to introduce physics themes.

The process consisted in select a particular scene of an episode where is possible make “a connection” with a physical concept, to give a short introduction about the context of episode and introduce a generator question about the possibility or not of the history. With this question is possible to create a “cognitive conflict” in reader; later is possible introduce (in divulgation or formal form) the “real” concept. We show a pair of examples of this proposal, in first place focused in waves and sounds:

Waves and Sound “Paralyzing Cornet”⁴



Figure 5 Example of Use of Chapulin Colorado to Introduce Waves and Sounds

A young friendly woman farmer have a happy chat with her father, work together in a cowhouse surrounded of thatch and everything looks perfect. Nevertheless, do not; the shadow of an evil super millionaire that want to

⁴ The original title in Spanish language is “ChicharraParalizadora”.

force the girl to married with he is clouding their happiness. Suddenly and without previously announcement, the evil millionaire appears to kidnapping the girl! what will happen now?

The girl says: Oh, Who could help me?

Me!!!

The Chapulin Colorado;⁵

Our hero has been submitted, however, the super villain is laughing of Chapulin Colorado, is bigger and strong of him, he goes to kick him, now, Who can help him?

However, before to kidnaping the girl and be knocked, Chapulin use his “Paralyzing Cornet” and off course the bad boy is paralyzing when hear the sound. One more victory thanks to another of amazing devices of our hero.

In this form started episode 36 of first season of Chapulin Colorado in 1974 “The return of Paralyzing Cornet”.

This Paralyzing Cornet will be in many episodes one of the favorite weapons of Chapulin Colorado, how did not be? , paralyzing people and things in the air, just aim at people or stuffs that want paralyze do not matter if another people or things are close when hear it, of course is the perfect weapon; and finally Chapulin Colorado “unparalyze” any objective only with two cornets, don’t matter bullets, swords or people!

There are not few heroes that use devices that work with waves or sound to turn on; even in Bible, we can found the Walls of Jericho collapsed thanks the action of horns!

Actually, with sound we can paralyze people or objects? Is possible use sound like a weapon?

To answer these questions in first place we need to know the basic principles of waves and sound

What is a wave? What is the sound?

The next example is focus in concept of equilibrium, and use “Chavo del 8”⁶ like central character:

THE EQUILIBRIUM, “THE BROOM OF CHAVO DEL 8”



Figure 6 El Chavodel 8 Using A Broom to Play: The Children Can Identify the Forces Acting in the System Easily

⁵ A nearby translation could be “Red Cricket”.

⁶ A nearby translation could be The Boy from 8.

Don Ramon is trying to put for fourth time a lightbulb in the entrance to the neighborhood, because Chavo del 8 has broken it 3 times in this day. When he is finished, Chavo del 8 is entering from the second courtyard with his broom threatening to break the new lightbulb again. Is a game that Chavo del 8 enjoy very much, try to put in equilibrium the broom, of course, generally the broom is in vertical equilibrium in his hand or foot just for a few seconds before of go down and induce an accident.

That situation happening in the episode 122 of the first season of Chavo del 8 in 1971 "The change of lightbulb". Is clear that Chavo del 8 just can by some seconds to maintain balancing the broom before of go down and knock the lightbulb again.

Why fall out the broom?

How maintains the equilibrium Chavo del 8?

What forces are involved?

These are just two examples of possibilities of use of Chespirito Character's like aid to learn physics, however, exist many chances of introduce different themes, don't only in physics but science in general. Themes like Hook's law and collisions (Figure 7), solve questions how: Is possible change the size of people? (Figure 8), among others.



Figure 7 In This Picture We Can Appreciate "Chipotechillón" the Chapulin's Hammer: It Is Like A Spring-Hammer, Perfect to Show the Hook's Law



Figure 8 Chapulin Colorado Use to Take a Pill Named "Chiquitolina" that Makes Him Reduce His Size to Do "Special Missions"

This kind of examples are very attractive to kids, however young students of high school or college level are very interesting too. Right now this material is in a testing stage, however, the results shows that it is very accepted by little kids and their teachers, in first place because is near to their context, is close to them, and secondly, the material is in Spanish language and this is very important.

4. Conclusions

In Latino-America region is very important increase the interest by science learning, but in many cases, the materials to do this are foreign to our context and culture, furthermore that generally these proposals are in English language. Characters like Chapulin Colorado or Chavo del 8 are known widely since many years and could represent good options to create material and proposals to introduce themes of science in general. In this work we shows some examples focused especially in physics, directed a kids audience and their teachers in first place, but exportable to another audiences later. The result show that the proposal had a good acceptance, in particular because is a material characteristic of the region, with our expressions and in Spanish language, handy to every people in the Latin America. Finally, this proposal has future with a widely rage of themes in science with this and others Chespirito Character's like Dr. Chapatin (medicine and Health themes for example), El Chanfle (physics of soccer) among others.

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