Inspiring students to learn physics through stories

TEACHER EDUCATION IN THE 21ST CENTURY: CHANGES AND PERSPECTIVES
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Introduction

Research by psychologists confirms that contemporary media messages 'construct images of existing and desired reality' (Czykwin 2008, p. 341, Sztompka 2005). This is particularly true for children and young people. The way in which children and young people born after 2000 function in the world of the media and in virtual space allows researchers to state that the media are becoming for them a source of knowledge, life and opinion-forming. They become a key in the process of "rationalising everyday life, giving a sense of being informed, a sense of security and a sense of having knowledge about the world" (Michalczyk 2008, p. 319). In addition to the media, in the process of human development from the perspective of developmental psychology (Schaffer, 2014, Tryphon, Voneche, 1996), learning about the world, gaining knowledge about the world through written texts (e.g. novels, stories, fairy tales) is also very important.

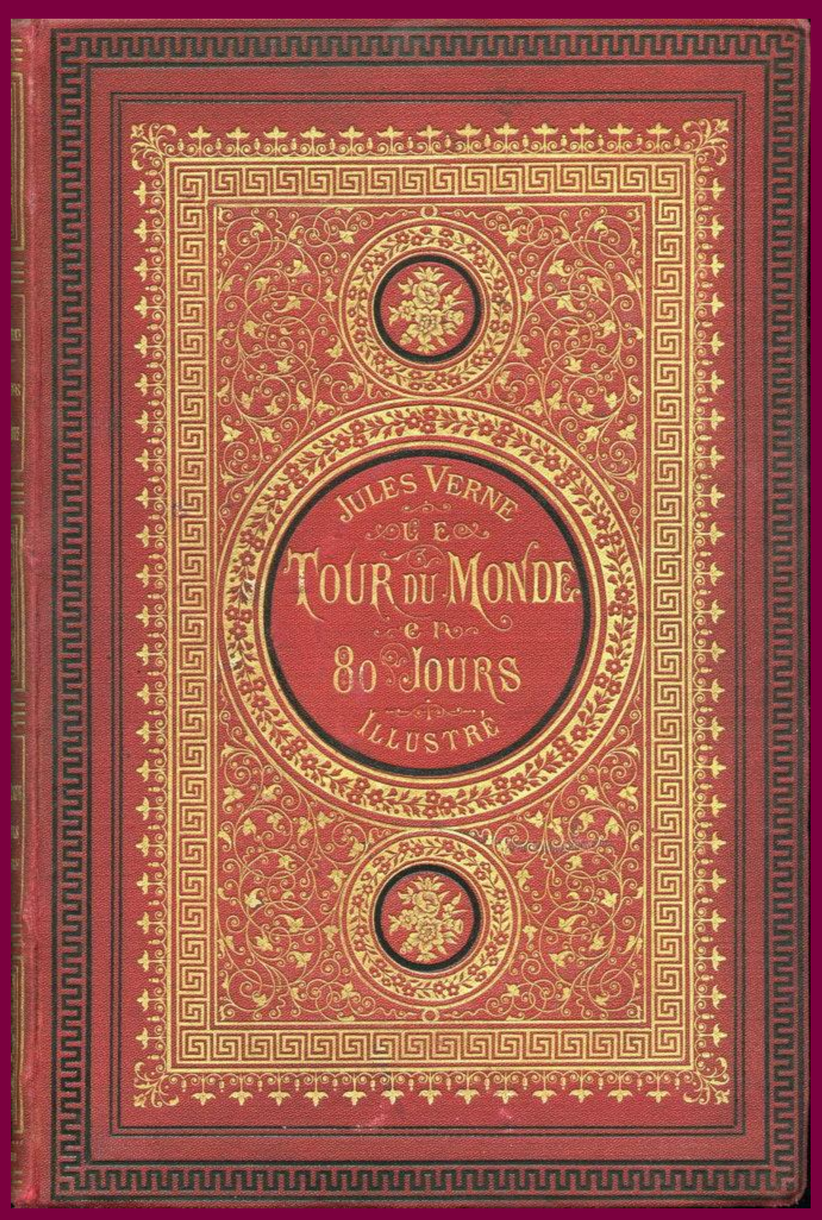
This poster offers a selection of pedagogical strategies that teachers may find useful in their classrooms. It would be reasonable to posit that there are numerous additional examples of physics-related inspiration to be found in literature. It is strongly recommended that teachers search for these ideas and use them in their lessons in order to foster positive attitudes towards physics among their students.

„Up”

In the contemporary era, children increasingly engage in passive visual media consumption, such as film and television. Instead of condemnatory criticism, this phenomenon presents a pedagogical opportunity. One illustrative approach is to demonstrate to students the potential for imaginative engagement with scientific principles, exemplifying how Archimedes' law can be applied to analyze the plausibility of a scenario from the film Up. Such an analysis draws upon fundamental concepts in mechanics and thermodynamics.

„Around the World in Eighty Days”

The works of Jules Verne are generally effective in elucidating scientific principles. However, educators may still endeavor to stimulate their pupils to contemplate the rationale behind the explanations presented in written form. Pupils may endeavor to calculate the actual time required to traverse the globe via the same modes of transportation. This may be the inaugural occasion for students to engage in rudimentary scientific investigation. A lesson may entail the pursuit of the mean velocity of each mode of transportation (which may additionally instruct students in the identification of reliable sources of knowledge online).



Mythologies

According to Walter Burkert's statement, myth is a traditional tale with secondary, partial reference to something of collective importance. Mythologies are designed to explain how the world around us works in a way that is accessible to everyone. they may not be the best example for explaining physics literally, but they work well as a method of getting students interested. You can imagine a teacher talking about Zeus or Thor at the beginning of a lesson on electromagnetism.

In the context of astronomy, students may be interested in discussing Selene, a lesser-known Greek goddess who was identified with the moon. However, in this context, Artemis is a more prominent figure. Another intriguing figure from Greek mythology is Helios, the god of the sun, who can be discussed in the context of solar phenomena.

Star Wars

In the teaching of physics, it is not necessary to focus exclusively on examples that illustrate the principles being discussed. The Star Wars saga is renowned for its disregard for the laws of physics. It is an effective pedagogical strategy to present students with examples of these violations and facilitate their analysis of the underlying assumptions and the logical inconsistencies they entail.

The most frequently cited violations among Star Wars enthusiasts pertain to the nature of sound and fire in space, the establishment of a 'down' and 'up' orientation in the absence of gravity, and the tendency of objects to fall in the absence of gravitational forces.

Teachers can motivate their students to learn by engaging them in the act of problem-solving, such as brainstorming and attempting to solve simple, yet illustrative, tasks. For example, the group could be asked to consider a scenario involving explosions and the possibility of such an explosion occurring in the presence of air on spaceships.

Additionally, the Thrawn series by Timothy Zahn might serve as an inspiring reading material for students. Zahn holds a PhD in physics and makes reference to the correct laws of physics on numerous occasions throughout his books.

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