Celestial Themed Cartoons Captivate Children

Best Practices

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Summary

Attivamente: Big discoveries with Galileo and Phineas & Ferb, an educational entertainment project for children, was a collaboration between Disney Television Italy and the Education and Public Outreach office of the INAF Astronomical Observatory of Padua, Italy. The project started during the International Year of Astronomy 2009 and came to an end in June 2010. It consisted of a cartoon series, several articles in a Disney magazine and an educational kit focused on Galileo Galilei and the Moon. The kit, called the First Astronomical Kit, was distributed to 30 000 children in Italy, and included a board game about the Moon, an observation diary and a lunar fact card. The aim of the kit was to give children some basic astronomical knowledge and to demonstrate the essential role that observation plays in understanding the heavens. This article discusses how a research institute and a major entertainment company — each with very different working practices — were able to work together to form a successful partnership.

What can happen when astronomers have the opportunity to work with a top entertainment company like Disney? The creation of a brand new cartoon series that follows the adventures of Galileo Galilei as he meets two Disney characters called Phineas & Ferb.

The project began in 2009, during the International Year of Astronomy 2009 (IYA2009), when Disney Television Italy wanted to celebrate the 400th anniversary of Galileo's first glimpses through a telescope and to introduce children to astronomy. They decided to use their existing education and entertainment project, aimed at children 8-13 years old and called *Attivamente*, which has a different theme each year. To get some expert input into the project, which had the working title *Big Discoveries with Galileo and Phineas & Ferb*, Disney approached the INAF Astronomical Observatory of Padua, Italy.

The project had three parts: a cartoon series, a series of articles published in a weekly Disney magazine for children (with a circulation of one million copies per week in Italy), and the First Astronomical Kit. The Education and Public Outreach (EPO)

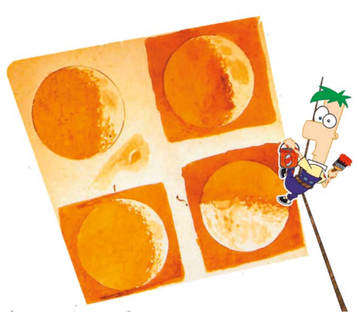

Figure 1. Phineas and Galileo's Moon drawings. Credit: Disney Italy

Figure 2. The Disney characters: Phineas & Ferb. Credit: Disney Italy

office at the INAF Astronomical Observatory of Padua worked on the latter part of the project, drawing on their experience to identify the most appropriate astronomical concepts for children in the target age range. Most importantly, we had to propose the most effective ways of conveying these concepts to children and to define an appropriate language and style.

Attivamente: Big discoveries with Galileo and Phineas & Ferb started in May 2009 and came to an end in June 2010. During that time, 30 000 First Astronomical Kits were distributed to children during visits to 25 INAF observatories and institutes, as well as to Italian science museums.

The stars: Phineas & Ferb, Galileo and the Moon

In order to engage children in this astronomical adventure we needed to find the right characters to explain the concepts. We chose the well-known faces of Disney's Phineas & Ferb — two curious and funny inventors with a love for science and technology — and a new Galileo Galilei cartoon character.

The Moon is the last character, and perhaps the most important. The Moon is the most prominent astronomical object in the sky after the Sun and is the perfect tool for introducing children to observational astronomy. Anyone can easily observe the changes in the Moon's appearance in the sky and realise that they are a periodic celestial phenomenon. Also, the Moon is strongly linked to Galileo, because it was the first object that he observed with his telescope, back in 1609.

With the characters in place, we were able to start writing and editing the texts to be integrated into the Disney layout and graphics. The result of this work is the First Astronomical Kit, which includes a board game about the Moon called Conquer the Moon, an observation diary called Moon-catcher, and a fact card about the Moon called the Moon Identity Card.

The board game: Conquer the Moon

The board game follows a traditional format: to move along the board and reach the Moon, players have to correctly answer "true" or "false" to questions from a deck of cards. The winner is the first player to reach the Moon. The playing cards were organised into four different categories: science, history, "oddball" and "chance" cards, all with questions related to the Moon. In addition to giving the correct answer, a brief explanation of the topic was also included on the card.

On the back of the board game, there is a short biography of Galileo Galilei and a description of the history of observational astronomy from naked-eye observing to the revolution ushered in by Galileo's first telescope and leading eventually to today's advanced astronomical instruments.

The fact card: Moon Identity Card

The Moon Identity Card gives essential facts and figures about the Moon, such as its diameter, temperature and distance from the Earth. Further information is included on the card, including an explanation of what Galileo saw with his early telescope (accompanied by his famous drawings of the Moon) and what is achievable nowadays. We decided to include this information so as to focus on the importance of observation for astronomy.

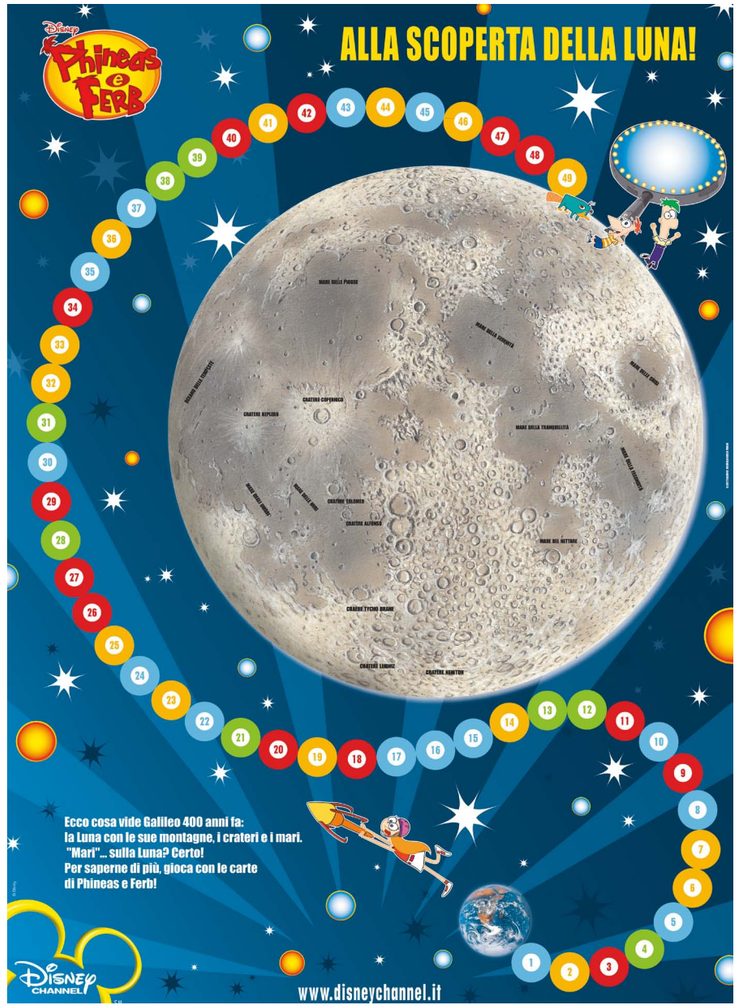

Figure 3. The board game: Conquer the Moon. Credit: Disney Television Italy

Figure 4. The Identity Card. Credit: Disney Italy

The observation diary: Mooncatcher

To inspire children to start looking at the sky, we included an observation diary in the kit, called the Mooncatcher. This diary adds a practical element to the kit, and is a natural follow-on from the informative board game and Moon Identity Card.

The children were asked to look up at the sky every day and night, to observe the Moon, its presence (or not) over the horizon, and its appearance. By drawing what they saw each day in their diaries, they could witness the periodic cycle of the Moon for themselves. And by flipping through the pages of their diaries, they

Figure 6. The cards. Credit: Disney Italy

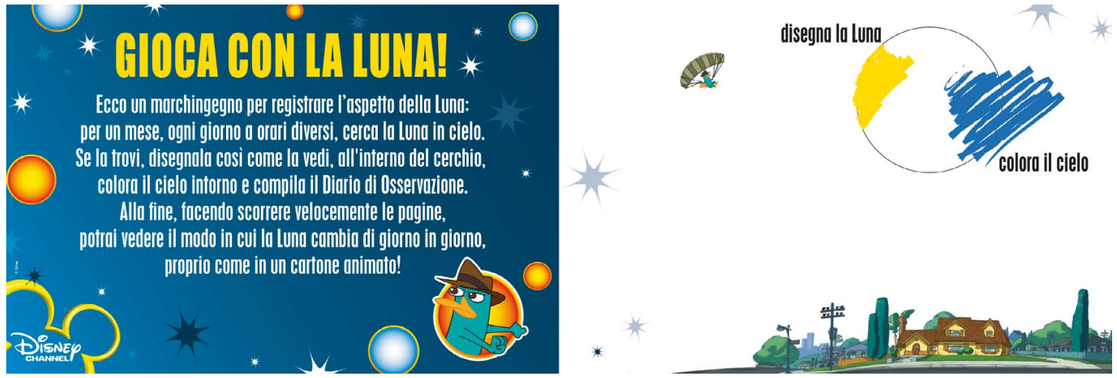

Figure 7. Part of the game. Credit: Disney Italy

were able to observe the lunar cycle as an animated cartoon.

Communicating with Children

We decided to simplify the language, wherever possible, but never when this made the science incorrect. For example, to explain the concept of lunar eclipses, the Italian text says, "*La luce del Sole non riesce ad arrivare fino alla Luna perché la Terra le fa ombra.*", which translates as "Sunlight doesn't manage to reach the Moon because the Earth casts its shadow on it.". The expression "*fare ombra*" ("cast its shadow on it") has a definite meaning, which is easily understood by children.

We also avoided unnecessary technical words, but we kept those that could not be accurately replaced with everyday language, such as gamma rays, black holes, orbit, galaxy and satellite. When technical words were used, we paid particular attention to simplifying the sentence structure. Often, technical words can be easily understood if the context is made clear.

We had to keep the texts short and to the point to fit them onto the small cards, so we only introduced one concept on each card.

Figure 5. The booklet. Credit: Disney Italy

However, it should be noted that the brevity of text does not mean that it is clear and easy to understand. Sometimes it is better to give a more detailed explanation in order to clarify a concept.

Last but not least, we needed to incorporate the language style of the cartoon characters Phineas & Ferb, and where possible, we used jokes and quotations appropriate for the cartoon characters. For example:

Phineas celebrates the anniversary of the landing on the Moon... and the party lasts too long! Step back two boxes!

The main issue we had to face was connected with the language: we had to make sure that the smart and young linguistic style of Phineas & Ferb was the best to communicate astronomical topics. We had to attract the children, be clear and keep the accuracy: this was the hardest task to solve.

Lessons learned

Just as in a Disney story, our tale is coming to its happy-ever-after ending. Following our collaboration with Disney, we strongly believe that a balance between education and entertainment is possible. But to achieve success, the various stakeholders need to work together and be willing to understand the differences in the ways that they approach a project.

We put a lot of effort into finding a balance between the needs of our research institute and those of Disney. We had different ways of working, points of view and goals, and we had to respect both. Going by the responses of the children who visited our observatories and laboratories, we think we have succeeded in this challenge and created a positive synergy between Disney and INAF Astronomical Observatory of Padua.

Finally, we found that using different media — a board game, observing diary, magazine features, cartoon series — was beneficial, with each different part of the project helping to reinforce the astronomy concepts.

Credits

The *Attivamente* First Astronomical Kit project was developed by Leopoldo Benacchio, Valeria Cappelli and Chiara Di Benedetto, INAF — EPO Office & Astronomical Observatory of Padua, and Elena Baldini and Francesca Visini from Disney Television Italy.

Biographies

Valeria Cappelli studied communication at the University of Padua (Italy) and has a master's degree in publishing. She was involved with the IYA2009 — Italian National Node and managed the official communications and coordination of the IYA2009 in Italy. She is interested in science education for children and writing.

Chiara Di Benedetto studied communication at the University of Padua (Italy) and has a PhD in linguistics. She teaches writing courses at the University of Padua and collaborates with the research centre Observa — Science in Society. Since 2007 she has worked at the Astronomical Observatory of Padua and is engaged with science communication, and in particular events and activities for children and social research.

Valeria and Chiara are freelance workers in science communication. During IYA2009 they collaborated with the INAF — Italian National Institute for Astrophysics — to manage communication for the IYA2009 in Italy and they developed outreach projects like the activity for Disney Channel; as members of the local secretariat, they organised the IYA2009 closing ceremony in Padua.