

2101, SCIENCES & FICTION: A WAY OF DEVELOPING TEENAGERS' INTEREST FOR SCIENCE

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Abstract. Since nearly 30 years, many european studies have demonstrated a worrying decline of young people's interest in science and technical studies. Despite the number of efforts and programs made to reverse the trend, there are still few signs of improvement. We must step up our efforts otherwise this will impact the long-term innovation capacities of our country. We have tried to participate to these efforts with the creation of a digital and interactive comics "2101, Science & Fiction", created by Chromatiques, that explores the connections between reality of science and science fiction. It takes advantage of the new opportunities opened by digital technology and is another way of developing interest in learning sciences. Free access on: <http://2101.fr> !

The goal is to create an new opportunity to popularize science and attract the young generation in different fields of technology and science.

L'e-poster présentant cette BD numérique interactive en français est disponible à cette adresse : http://sf2a.eu/semaine-sf2a/2017/posterpdfs/294_224_66.pdf

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1 Introduction

The growing evidences showing that young people are losing interest in key science studies are all the more worrying that it concerns all European countries. This leads to a decreasing number of students in technical and scientific studies and consequently to a lack of engineers and researchers. So far, the programs developed to foster the young generation have had rather modest results compared to the efforts developed.

Yet, in the coming years, the technological and scientific challenges to be met to guarantee the survival of



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humanity will be enormous. Thus, it's of vital importance to ensure the next generation of scientists. We think that we must harness the power of digital systems to raise young people interest in studying technology or science. That's the case of this digital comics. The goal is to enhance and share humanity's scientific achievements.

Science-fiction work, "*2101, Science & Fiction*" propels the reader in the following century. But the scenario relies on current knowledge and interviews scientists to complete each episode with the aim of giving young people a chance to discover different fields of sciences.

2 Benefit from the potential of digital technology

"*2101, Science & Fiction*" is a digital, interactive and documentary comics opening to sciences and current research. It includes and exploit the full potential of new technologies to catch the curiosity of young people (targeted to the 15-25 year age group), trying to arouse their interest for scientific fields.

The story? it is a free adaptation of the legend of Faust, looking to the future: we are in Paris in 2101, a dramatic climatic environment leaves few future to humanity. Banished from the scientific community, the astrophysicist Fosto lives alone with the artificial intelligence Pandora. Against all odds, the University of Palerme offers him to restart working on the exoplanet Eden 1024, he claimed to be habitable.

The "reader" is driven in the 26-episode story by Pandora, the speaking artificial intelligence of the fiction, materialized by a moving blue sphere on which one must click to trigger the following content. Several interactive elements included in the comics strips take the reader along the story and propose an audiovisual and transmedia journey allowing him to watch short interviews of experts and longer scientific documentaries to learn more and investigate the matter.

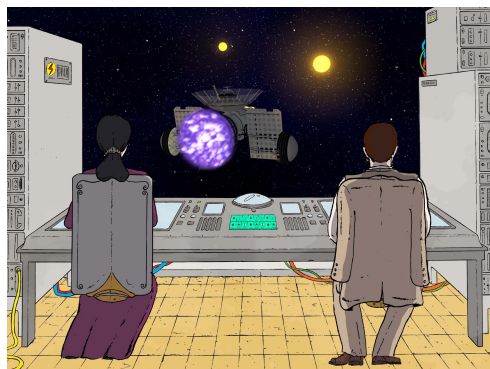


Fig. 1. Left: drawing board of the comics. Right: scientist interview.

3 broadening the openness toward sciences

Space travels and extra-terrestrial life is one of the most popular topics in science fiction. With its strong multidisciplinary character and powerful public appeal, astronomy play an important role in modern science education. Hence an important part is given to astronomy in the comics explaining for example the search and detection of exoplanets, the difficulties of interstellar travels due to the distances in the universe, the (im)possibility for human beings to reach potentially habitable planets...

Each episode includes a number of web-docs such as 2-3 min videos in which a scientist gives his-her point of view on the story and assesses the current state of research on the topic. He or she also imagines how his-her domain will have evolved in 2101. The interview ends with a "Need More Info?" section which contains deepening videos on the topics developed in the episode.

Numerous scientific questions are addressed by specialists, around five main domains:

- Earth science: geophysics, sismology, climatology, energies, ...
- Astrophysics: exoplanets, extra-terrestrial life, astrochemistry, ...
- robotics: autonomous vehicles, drones, ...
- life sciences: DNA, cellular aging, genetics, ...
- computer science: computers for the future, holograms, data transmission, ...

Experts are interviewed to capitalise on scientific and technological progress in each domain, important for tomorrow's society. P. Chiuzzi pushed them to imagine innovating concepts and why they are not yet reachable: because of technological barrier or theoretical one?

Then, in longer videos "readers" can discover scientific points of view in area including climate changes, energies of the future, genetic modification, space travels employing ionic propulsion systems, time-reversal physical process, etc. They can obtain information on the most recent technological developments in many different domains leading to major advances in everyday life such as: what would become our travels with autonomous vehicles, what could be the capacities of the future computers, which possibilities we can imagine with genetics to repair human bodies' damages of the old age...

4 outreach dissemination

"2101, Science & Fiction" has been financially supported by an ESTIM grant (Egalité d'accès aux sciences et techniques, à l'innovation et au multimédia) from Universciences and is available via a total free access website since June 2016 : <http://2101.fr>

Universciences provides also free access to the videos via its scientific webTV pages:
<http://www.universcience.tv/video-2101-sciences-et-fiction-8635.html>

Science plays a major role in our society, both economically, socially and culturally. It's important to give a wide access to all citizens to reliable scientific background and inform the public about the latest advances. We hope that this comics, using digital technologies they like, would impact young people having little interest in, and sometimes a total rejection of, science studies and would contribute to change their mind. Our aim was to stimulate or create their interest in technology and science. The long-term objective is to ensure the existence of a pool of young qualified engineers and scientists because we need them to guarantee our innovation capabilities. With a large number of pages viewed on 2101 website, we hope we have reached our target.

The web comics is nominated in the 17-20 age group category of the 2017 Roberval Prize, an international francophone competition rewarding audiovisual work which goal is to contribute to a better understanding of sciences among young audience.

Chromatiques produced also a feature film screened at the Cannes Festival Film Market. The trailer can be watched from this address: <https://www.youtube.com/watch?v=3LfioCM9VE4&feature=youtu.be>

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