



GEOTRIVIAL PURSUIT: discovering the earth planet

An amazing tool to travel in geosciences having fun

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Abstract

The Earth is a fascinating place that host wonders such as volcanoes, rivers, deserts and more. Our idea has been that to produce a scientific game named GEOTrivial which is a tool to learn more about the amazing world of geosciences by enjoying.

The graphic realization of all elements of the new GeoTrivial game (board, cards, dice) was developed within the INGV by the Laboratorio Grafica e Immagini. Graphic is a fundamental support for the game production because every elements have been deeply studied creating icons similar to the social ones, to create a familiar connection for people. The use of a particular lettering, that strongly connoted the visual aspects, in the main components of the game, is dictated by the need to create a dominant visual element of the entire project that conveys a sense of dynamism, of freedom, but also lightness.

The game revisits the classic trivial but on the game board volcanoes, epicenters, environments and geomovies took the place of the classic elements of the best known trivial, to direct immerse the players on the Earth planet science. This new game belongs to an editorial project dedicated by the INGV to education and outreach.

Introduction

Science has a fundamental role in our culture and can be transmitted both through cognitive and formative values. To make people fully understand and reflect on the themes of science and its concepts, a valid instrument is constituted by laboratories; infact, in the laboratories it is possible to make “science live” and teach “to think scientifically” in a way that is not didactic but intuited. In this regard, to enter the sphere of science, you can use the game as a useful tool to eliminate those abstract aspects of science that can make it less understandable and familiar. The game plays an important and educational role in both childhood and adulthood “is a source of development and creates the proximal development zone” at every stage of human life [Vigotskij, 1981].

The game also has effects on increasing attention span and improving efficiency in thinking and solving problems. Two hours of play per day, for example, can help reduce attention deficit hyperactivity disorder [Elkind, 2007]. Studies conducted in this regard have shown that there is always a greater demand from educators and experts in child

development for the game to be reintroduced. **not only in the early years of life**, [Elkind, 2007; Fisher et al., 2011] but also in the following years, in particular for children who have symptoms of specific learning disorder (DSA) and who have specific educational needs (BES). Precisely for these reasons, some INGV researchers recently dedicated their research to the role of the game and related techniques, **aimed at bringing geosciences closer and learning to a wide audience** [Piangiamore et al., 2014; Musacchio et al., 2016; Faggioli et al., 2017; Locritani et al; 2017; Di Nezza et al., 2016; 2018 a, b, c].

The idea was that the game should be aimed at children aged 11-14. In fact, in this school group you already have basic knowledge on the topics of geosciences, and at the same time, it was a suitable age group to be able, through the game, to consolidate the known topics and face new ones. The modalities of the rules and the contents had to respect the inclusion of students with particular disabilities and/or attributable to symptoms of DSA and BES. This meant that, in moving from the idea to the draft, the researchers had to constantly guide and supervise the progress of implementation.



Arguments

- EARTHQUAKE** In this category the questions are about earthquakes. The waves, where and why an earthquake occurs, their distribution on Earth planet and so on.
- VOLCANO** In this category the questions are about volcanoes. The shape, the eruption style, the eruption products, where and why are they distributed on the Earth planet and so on.
- ENVIRONMENT** In this category the questions are about all concern environment. The Earth planet formation, the atmospheric processes, general information about environment and so on.
- GEOMOVIES** In this category the questions are about movies about all geoscience in general.

Billboard

The billboard is a squared shape. It represents a wheel with 4 radius. Along the radius there are the four arguments represented by the blu star, the red triangle, the green and the orange circles. Moreover on the billboard a scroll is reported which means that you have to roll the dice again. There is also a smile which means that you can decide which is the category you would like to answer.

Dice



The dice shows which are the tests the team has to overtake win the token. Categories are the following:
Orange = Eartquakes;
Red = Volcanoes;
Green = Environments;
Blue = Geo-movies.

Pawns



The pawns are made by 3D printer and are squared divided in 4 parts. Each part represents a category (volcano, earthquake etc etc.). Four different pawns and four different colours are provided by the game.

Cards



The cards are 30 in total. Each card has 4 questions, one for each category: volcano, geomovie, earthquake and environment.

120 questions in total. The question are marked by the symbol reported on the billboard. Two answers are reported but only one is correct and is written in bold.

Rules



Basically the game has the same rules of the classical geotrivial, but, of course, the arguments are about geosciences. Four plastic pawns circular token are positioned in the middle of the billboard. The game is for teams of 2/4 players. The aim of the game is to gain all the Graduation represented on the billboard.

References

Di Nezza M., De Santis A., D'Addazio G. (2016). CityQuest & “Caccia al... Tesoro dei Castelli”. La nuova frontiera della divulgazione formato 2.0. 88” SGI Napoli 7-8-9_09_2016

Di Nezza M., De Santis A., D'Addazio G. (2018 a). CityQuest & “Caccia al... Tesoro dei Castelli”. La nuova frontiera della divulgazione formato 2.0. CityQuest & “Castelli... Treasure Hunt”. The new frontier of scientific dissemination: 2.0 format. Rend. Online Soc. Geol. It., 45, 17-22. ISSN 2035-3008. <https://doi.org/10.3301/ROL-2018.23>

Di Nezza M., Misiti V., D'Addazio G. (2018 b). How could made hand laboratory games be will improve acknowledgement to the correct volcanic risk perception? Cities on Volcanoes 10, Napoli 2-7 settembre 2018

Di Nezza M., Misiti V., Castello B., Amici S., D'Addazio G. (2018 c). Progetto pilota per la scuola dell'infanzia. Laboratori didattico-divulgativi: “A prova di vulcani e terremoti”. Miscellanea INGV, 41, 1-46. ISSN 2039-6651

Elkind D. (2007). The power of play. Learning what comes Naturally. Hachette Books

Faggioli M., Orlando L., Musacchio G. and Piangiamore G.L., (2017). Risk Detective. <https://riskdetective.wordpress.com>

Fisher K., Hirsch-Baek K., Golinkoff R.M., Singer D. G. and Berk L. (2011). Playing around in school: Implications for learning and educational policy. In A. D. Pellegrini (Ed.), Oxford Handbook of the development of Play. Oxford University Press. doi: 10.1093/oxfordhb/9780195393002.013.0025

Locritani M., Garvani S., Di Laura F., Merlino S. and Talamoni R. (2017). Giocando verso uno sviluppo sostenibile: il contributo della sede INGV di Porto Venere nella realizzazione di giochi didattico-scientifici. Miscellanea INGV 39

Musacchio G., Piangiamore G.L., D'Addazio G., Solarino S. and Eva E., (2016). “Scientist as a game”: learning geoscience via competitive activities. Annals of Geophysics, 58 (3), S0328; doi:10.4401/ag-6695

Piangiamore G.L., Musacchio G. and Bocchia M., (2014). Piovo idee! (Cloudy with a Chance of Ideas!): An Interactive Learning Experience on Hydrogeological Risk and Climate Change. In: Lollino G., Aratano M., Giardino M., Oliveira R., Popoloni S. (eds) Engineering geology for society and territory, 121-125, 7. Springer, Switzerland; doi 10.1007/978-3-319-09303-1_20

Vygotskij L. S. (1981). Il ruolo del gioco nello sviluppo mentale del bambino, in Bruner J.S., Jolly A. e Sylva K., Il gioco. Il gioco in un mondo di simboli, vol. 4, Armando, Roma