Learning science through serious gaming

Article by: Franca Sangiorgio, Sara Montinaro, Savina Gjoni
Franca Sangiorgio has a permanent position in University of Salento (Italy). She works in many national and international research programs of Ecology Laboratory (Responsible A. Basset). Author of 40 publications. Research interest: ecology of aquatic ecosystems, science dissemination and environmental education.

Serious gaming activities propose 'game based features' to support learning and education (Kiili, 2005).

A serious game is a role-playing game where players take on the role of "researchers" who have to perform a study in order to test specific research questions. Players have access to information from various different resources including: books, notice boards, computers with internet links, video conferencing calls to lecturers and calls to advisors. Serious games respond to situated learning and learning by doing approaches, and use typical gaming features as learning tools: i.e. a narrative structure, competition, feedback and reflection.

This kind of games might be particularly useful in different topics such as health, natural sciences, business, history, project management and user requirements analysis. In education they generally target students of secondary schools, but can be addressed also to younger ones, and can be played by everybody who is interested in. Serious gaming is a user-friendly way to increase the interest of students and citizens in all aspect of science, and raise their awareness on the importance of science for our society.

The serious game we are developing within the ENVRIplus project focuses on the scientific method (i.e., the learning goals) and, more specifically, will be designed on scientific topics related to the Research Infrastructures contributing to ENVRIplus project.

Serious gaming is a user-friendly way to increase the interest of students and citizens in all aspect of science, and raise their awareness on the importance of science for our society.

Student "scientists" will be trained by members of ENVRIplus project into the different field of science. Research Infrastructures of the ENVRIplus project, being involved in research to address open key questions on atmosphere, geosphere, hydrosphere and ecosystem science, will provide user-friendly training material and emblematic examples. The students in the ENVRIplus Research Game, organised in teams by their teachers, will be asked to run their own research project on one of the areas of interest of the Research Infrastructures. They will study the basic concepts of the selected topic by searching for explanations, deepening the topic, formulating questions, making scientific hypotheses, planning an experimental design, carrying out research activities, and finally analysing and describing the results. They will learn by doing, while running their project, they will produce their final research products in the form of papers, presentations or videos, they will share their research findings with other groups all over Europe, making comparisons and exchanging information with other European teams.

In a second phase, the participants will be evaluated for their actual understanding of the methodology, procedures, and role of the European Research Infrastructures, through an online serious gaming competition, where, they will have to demonstrate their understanding of the scientific method and their acquired knowledge on the topic of interest and the (social) relevance of the Research Infrastructures.

Players, as student "scientists", will be asked to answer questions, solve problems, drag and drop images in the proper Research Infrastructure category, analyse figures and tables

For more information click "Scientific Gaming" on our ENVRI training platform acessible at: http://training.envri.eu/

about research show cases, read and understand summaries of scientific papers. Although it is everyone's participation that matters most, at the end of each phase the teams with the highest scores win the competition, and the best research products delivered during the first phase will receive special awards.

For more information about the manuals for students and teachers and the instruction for participating and playing the game you click Scientific Gaming on our ENVRI training platform acessible at: **http://training.envri.eu/**

References

Kiili, K. (2005). Digital game-based learning: Towards an experimental gaming model. Internet
and Higher Education, 8(1), 12-24.