



# Promoting Youth Scientific Career Awareness and its Attractiveness Through Multi-stakeholder Cooperation

**Newsletter 1**

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## Welcome to 1st MultiCO project newsletter

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In this issue, the following articles give an overview about the purpose of the MultiCO project, the activities completed thus far as well as those that will follow.

MultiCO project focuses on the well documented need for more scientists as noted in the latest report of the expert group on science education to the European Commission. The available research literature has consistently indicated a considerable decline in students' motivation or interest in pursuing science-related careers. Furthermore, it has been argued that students are not aware of possible career paths that are centered on science and technology.

The MultiCO project aspires to make a contribution in this broader research field, by exploring the potential of a certain curricular approach, to impact on, and increase, students' interest in STEM-related careers. MultiCO involves classroom-based research studies in five different European countries intended to raise students' awareness of the diversity of science-related careers and enhance their interest in pursuing careers in such fields. Toward this end, the project includes working with the same cohort of students for three consecutive years, engaging them with specially designed activity sequences that capitalize on career-based scenarios.

We invite you to visit our official website <http://www.multico-project.eu> and learn more about our project.

Kind regards,  
MultiCO Research Team

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Air traffic controller

**Zoologist**

Physician

*Meteorologist*

**Energy engineer**

**Pathologist**

Software designer

Creativity  
Problem-solving  
Reasoning  
Collaboration  
Career  
awareness

## Aim of the MultiCO project

The aim of MultiCO project is to promote the awareness of a range of careers for all young people that involve scientific skills.

Initially we are working with partners in industry, business and professionals to establish 'stories' from those in work, in order to create interesting scenarios that can be linked to curriculum topics and presented to students in lessons.

The aim is to stimulate students' engagement in science learning through the use of scenarios and at the same time raise their awareness and interest in career paths that involve science. In addition we plan to work with teachers, parents and students themselves to incorporate their ideas in the design of scenarios, so that these are relevant to students from different cultures and communities.

This project aspires to widen the opportunities for students and advance

## Learning through career-based scenarios

Career-based, science-related scenarios are used in teaching as case studies to examine students' perceptions on teaching stimulated by these scenarios. The scenarios are based on science-related careers, mainly in fields related to European challenges e.g. energy, water, waste, climate change, food, health and transport. These issues are interdisciplinary and included in European curricula in secondary school.

Scenarios are intended to initiate the learning process, to be followed-up by science-driven inquiries and possible decision-making. The learning process is planned to develop students' collaboration, creativity and reasoning. The scenarios not only point out science knowledge, but highlight key skills required in working life or careers.

## Consortium Meetings

### Kick-off

#### Meeting in Joensuu (Finland)

In September 2015, the research team of MultiCO project met up in Joensuu at the University of Eastern Finland. The main topics discussed included the main aim of the project and the main deliverables in each work package.



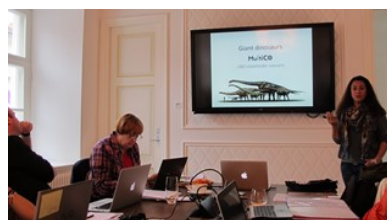
#### Meeting in London (UK)

The second project meeting was held in London, in February 2016. During this meeting some drafts of career-based scenarios were presented and the winner project logo was announced. Emphasis was given to the development of the conceptual framework.



#### Meeting in Tartu (Estonia)

In July 2016, the consortium met up in Tartu for the third project meeting. Main topics of the meeting included the presentation of the first intervention studies held in Germany, the UK and Finland. Some interesting reflections were noted as to revise the scenarios and the methodology.



## Logo Competition

In an effort to engage students in the project from an early stage, the consortium organized a European logo competition that involved all partner countries. The students were asked to design logos for the project according to given instructions and specifications.

The logo sketches had been sent to the national partner by the 5th of February, 2016. In total, about 80 students from the four participating partner countries designed their own Logo to be considered for the competition. After initial evaluation at the national level, twenty of these logos (five from each country) were then submitted for the international competition. This competition took place on the 18th of February 2016 in London and included two rounds of evaluation. Three best logo suggestions (as seen in the picture) were awarded and the corresponding schools were granted the amounts of 600 and 300 euro, respectively, to be used either for buying science equipment or for visiting science centres during 2016. All participants in the competition were given certificates and the winning logo is now used as the official project logo.



## Students' interest in science: Surprising findings!

One of the aims of the MultiCO project is to foster students' interest in science. To be able to identify changes in their interest during the project, a longitudinal study is carried out with students in the five partner countries. Based on the project's conceptual framework and the person-object theory of interest, a questionnaire has been developed that is used once before the first MultiCO intervention in class, and once again at the end of the project, after five interventions. Using this pre-post questionnaire, the science interest of 1031 students (13 years old in mean) from the five countries was assessed

in spring 2016. The findings indicate that the students value the role of science for themselves as well as for society. However, they seem not to enjoy science (learning) very much. Furthermore, surprising differences between the countries as well as between girls and boys were found: Finnish students are less interested in science than students in the other participating countries; girls seem to be more interested than boys in all the five countries. It will be interesting to see if the students' interest in science changes after the MultiCO interventions in class and to identify the influencing factors.

### Interview with Sari Kekki — Student counsellor, Savonlinna, Finland



"The students are not that into science careers. Of course, careers like doctor and vet are popular careers and boys are interested in careers in technology. I think inner motivation, success and science teachers are the main factors influencing positively students'

science studies and careers choices.

We don't have that much opportunities to do visits outside the school so I wish the professionals would be more interested in coming to schools. Or at least use the Skype to interact with the students. In fact, we need continuity

from the early childhood when the children are naturally interested and experiencing everything on their own.

Creativity, critical thinking and problem solving skills can be acquired by giving the students real-life problems so they can make decisions and find solutions on their own. Of course, language and social skills are needed more and more in every career.

It seems that we are not allowed to tell the students our opinion. If the students can't hear different opinions and discussions regarding science related problems, how are they going to develop their own critical thinking? The problem is how to discuss with them based on reasoning and not feelings".



## Experiences from the interventions

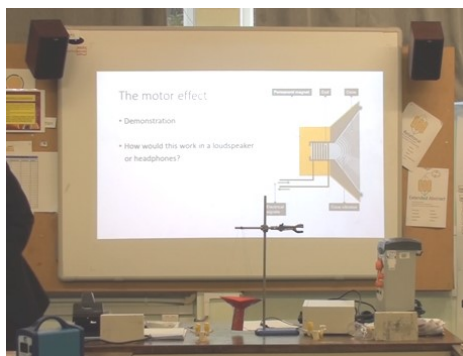
### Building a solar panel: a mission impossible?

Electricity is not considered as an interesting topic for students. Hence, a real life problem was presented to Estonian 8<sup>th</sup> grade students in order to trigger their interest in the electricity unit.

The scenario was a story about a father blaming his kids for the high amount of electricity bill, as they use nonstop their smart devices and thus need to charge them very often. Three occupations related to utilizing solar energy were introduced: an electrical engineer, an environmental protection specialist and a materials scientist. Students' task was to build a solar panel by practicing the work of electrical engineer. Students reported that they gained knowledge about solar energy and developed skills for working with electronics as well as co-operation, problem solving and communication skills. As a student pointed out: "In future, I might need it".



### Designing future sound.



A new scenario was developed for the second intervention, to link to the curriculum for the topic 'the motor effect'. The scenario presented the work of a sound engineer. The intervention covered two consecutive lessons of 1 hour each.

The teacher started asking the students to review the previous lesson, which was followed by a demonstration of the motor effect before introducing the scenario. Students were asked to consider the process of designing headphones, relating to how the engineer in the scenario approaches his designs. They were invited to test their own headphones following an audio check website, and focusing on: frequency response, flatness and dynamic range. Then, stu-

dents were split into two groups and moved onto practical work to build their own speaker: investigating the effect of the number of turns on the coil of wire, and investigating the size of the cone.

Girls expressed more enthusiasm, and mentioned that learning with a scenario was more enjoyable and interesting than with regular lessons: "It's a more interesting way to learn"; "It is quite enjoyable and I liked the bit where we could test out the audio, using our headphones"

## about MultiCO

MultiCO is a three-year project and has started in August 2015. The University of Eastern Finland acts as the project coordinator and the consortium partners represent the following European universities: University College London (UK), University of Tartu (Estonia), University of Bonn (Germany) and University of Cyprus (Cyprus). The main goal of the project is to promote students' awareness about possible career choices in science and technology. [Learn more...](#)

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