

## Welcome to the 3<sup>rd</sup> MultiCO project newsletter

### **Coordinator:**

#### **Professor Tuula Keinonen**

University of Eastern Finland/ School of Applied Educational

Science and Teacher Education

tuula.keinonen@uef.fi

### **Partners:**

#### **Professor Shirley**

##### **Simon**

Institute of Education/  
University College

London

shirley.simon@ucl.ac.uk

#### **Professor Annette Scheersoi**

University of Bonn

Fachdidaktik Biologie  
a.scheersoi@uni-bonn.de

#### **Professor Miia Rannikmäe**

University of Tartu/

Centre of Natural

Science Education  
miia.rannikmae@ut.ee

#### **Professor Costas Constantinou**

University of Cyprus/  
Department of Education

c.p.constantinou@ucy.ac.cy

Dear MultiCO friends,

Our project is on its final year course. To this day, we have carried out almost all the intervention studies related to the use of career-based scenarios as to promote students' interest towards science.

Three articles have been published in journals and other three are in the process. In ESERA 2017 in Dublin, MultiCO was promoted through four presentations as part of the project's symposium as well as through several other individual tasks. After Dublin, during the project meeting in Bonn in September, the external evaluators presented their ideas regarding the project's activities, progress and quality of the work and deliverables. Based on this evaluation, the tasks in the project were discussed and developed further after the meeting.

As we approach the end of MultiCO project, we would like to announce that the final conference will be held from 10-12 September, 2018 in the Northern Carelia, Finland. The project's studies will be presented during the conference and researchers, teachers and stakeholders can meet each other and share their experiences. Other EU projects are welcome to participate in the conference, present and share experiences and ideas in developing science education and science education research. Further information can be found in our website.

Greetings from snowy Joensuu.

Tuula Keinonen

Coordinator

### **Inside this issue:**

4th Project Meeting in Bonn: Meeting with Stakeholders	<b>2</b>
University of Tartu team in NZARE 2017 conference	<b>2</b>
Experiences from the interventions: "Save the Polar Bears!"	<b>3</b>
Experiences from the interventions: "Health Alert"	<b>4</b>

## 4<sup>th</sup> Project Meeting in Bonn: Meeting with Stakeholders

The MultiCo project can only achieve its goals through close cooperation between stakeholders from organisations and the industry together with people in science careers and schools in all participating countries.

Without their continuing engagement, the project would not be able to improve and foster young minds' interest in science and to develop more realistic views of careers in sciences.

In this regard, we were fortunate enough to unite representatives from all areas at one of our project meetings in Bonn in September 2017. Under the roof of Bonn's Academic Art Museum and surrounded by beautiful antique statues, stakeholders and partners were officially greeted by the university's Vice Rector Prof Dr Klaus Sandmann. All participants got to know each other better and had the chance to exchange ideas and to discuss relevant topics.

Moreover, students involved in MultiCo got the chance to present their own contemporary science projects with talks and poster presentations.

We would like to thank all those involved for this very successful event.



Two secondary school students present their science project as part of MultiCO.

## University of Tartu team in NZARE 2017 conference

From November 20-22, University of Tartu (Estonia) MultiCo team (Miia Rannikmäe, Regina Soobard, Klaara Kask) attended the NZARE 2017 conference held at the University of Waikato in Hamilton, New Zealand.

During the conference, a poster presentation was made in order to disseminate project results from Estonia. Poster was welcomed nicely and career-related focus in scenarios was warmly accepted with lot of questions indicating strong interest towards this kind of approach in science education.

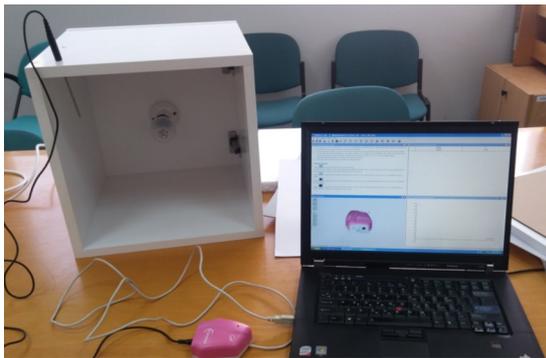


Besides conference, an oral presentation was given in University of Waikato in Faculty of Education. This presentation was made for faculty members interested in this type of approach in science education. In this presentation, emphasis was given on introducing the outcomes from scenario evaluations from all partners. After the presentation, a good discussion was held between listeners (for example Prof Bronwen Cowie, Director of Wilf Malcolm Institute of Educational Research; Dr Simon Taylor; Dr Chris Eames; Dr Beverley C Cooper, Associate Dean Teacher Education) and presenters and this was focused on how to implement similar approach in New Zealand context. Future cooperation plans in science education research were also discussed.

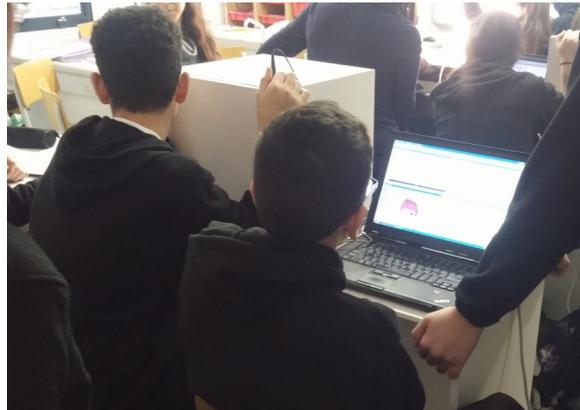
## Experiences from the interventions: "Save the Polar Bears!"

As part of the 4<sup>th</sup> cycle of interventions, UCY team developed a new scenario for the teaching unit of Heat Transfers in grade 8. The scenario concerns climate change and the implications it has in the environment stressing out the need to save our planet. In particular, the scenario presents how climate change threatens polar bears' life due to the rise of the temperature and the melting of sea ice. The scenario helps classroom discussions to make the case that climate change affects the entire planet. The link to the teaching unit pertains the need of using energy more efficiently by reducing losses resulting from heating and cooling processes of our houses. The students also establish the link that extensive energy needs for heating and cooling our houses comes from fossil fuels power plants increasing carbon dioxide levels in the atmosphere which consequently increases the global temperature.

The career aspect was introduced presenting the profile of a company with architects and engineers specialized in energy efficient building, providing information on their educational background, job duties and skills. The students were then called to assume the role of architects and engineers and design and test energy efficient model-houses. Throughout the teaching unit, the students were taking notes about the materials they should use to make their models more energy efficient by reducing heat losses. Two lessons after the presentation of the scenario, the students were given wooden boxes modelling a typical house. Students were called to form hypotheses by choosing specific kind of



Simulation of a model-house and software.



Students during experimentation.

materials (insulator/conductors) they should use as house-wall material in order to reduce heat losses from and towards the house. Various materials were tested by making temperature and time measurements using a temperature sensor and a software.

The following lesson the students had the chance to interact with the architects during their visit to their school and find out more about their job and specifically the design and building of energy-efficient houses. The students also gained information on how to proceed with their mission. By the end of the teaching unit, their task is to reconsider their initial choices and use other materials for further investigation. This will provide them more information to draw conclusions about what properties a material must have to be suitable for energy saving home design.

Thus far, it can be assumed that this intervention has foreshown the need to include experimentation tasks in science classes in order to induce and sustain students' interest. Further, the choice of this socio-scientific issue seemed to be relevant and attractive to them raising environmental consciousness. The way the teaching topic was linked to architects and engineers, enabled the students to get more information options about different science-related career options that someone could branch out to.

## Experiences from the interventions: “Health Alert”

In December 2017 the UCL team developed an intervention which had three parts and centred on a local water laboratory. First, the teacher and two researchers went to the laboratory and met three female scientists who had been working at the company for different lengths of time. Each had a diverse focus to her work and we were shown around the facilities. All three scientists were keen to share and the team learned some interesting facts, such as the necessity for the water scientists to have a good sense of smell! Throughout the visit the team concentrated their questions on possible scenario ideas.

Once the visit was completed, the researcher drafted a scenario PowerPoint which was then finished with the help of the teacher, ready to be presented in early January 2018. The scenario, called ‘Health Alert!’, introduced students to local members of the public, who had become ill due to a local water contamination. It was the task of the students to discover what contaminated the water and how this contamination could have possibly occurred. Students used a range of chemistry experiments to isolate the relevant pollution and then drew on their text books for the final analysis. Overall, the students’ feedback was very positive and the class felt that the intervention has been interesting, relevant and realistic.

As a follow up to the intervention, the group of students will visit the water laboratory’s education centre a week after the ‘Health Alert!’ lesson took place. We are hoping that the visit will add an extra relevance to the intervention and that students will enjoy the interaction with the scientists on site. Overall, we have found that the close interaction between real life scientists and the teachers and researchers has enabled us to produce a creative and holistic intervention which has been enjoyed by all.



### 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...](#)

The MultiCO project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 665100.

