



Teaching mysteries with science incorporated  
Internal Newsletter

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NOVEMBER 2015



Dear Partners,  
as you can see from the photo on the left, the TEMI mascot, the Heron's horse, is currently on display until next Spring at the UK National STEM Centre in York, England and is a great talking point in the resources collection centre. The National STEM Centre houses the UK's largest collection of STEM teaching and learning resources, in order to provide teachers of STEM subjects with the ability to access a wide range of high-quality support materials. The UK STEM Centre is part of the University of York and welcomes 7000 visitors annually. Should you want to display the mascot in a public space in your country, please contact us to discuss it.

Looking forward to meet you in Limerick for the next TEMI meeting!  
We also take the occasion to wish you a merry Christmas and happy new year!

Peter McOwan and Dorothee Loziak

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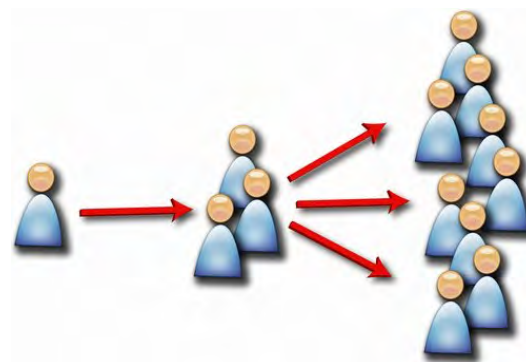
## WHAT'S COOKING?

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### A box for the legacy of TEMI in Germany

In November 2015 the TEMI project in Bremen completed the last two cohorts in Bremen and in Lüneburg/Schwarzenbek. Nevertheless, TEMI in Bremen will continue. In preparation of the legacy phase of the TEMI project, the University of Bremen established a box system that will be further developed over the next months. A set of tested lesson plans will be ready to use to organize TEMI events addressed to teachers interested to know more about TEMI. The pilot boxes contain a set of teacher training cards and digital media that were developed during the TEMI project. The box



### Huge interest in Prague for TEMI workshops

In the last two cohorts, TEMI Czech Republic is experiencing a dramatic increase of the number of participants (from about 15-20 in the first cohorts to about 40 in the last, sixth one). A possible reason is a cascading effect of previous cohorts participants talking to colleagues and other teachers. This positive increase requires a new approach to the workshops. CUNI chemistry lab is designed to host about 20 people and therefore groups must be split in parallel sessions over a two-day workshop. TEMI Czech Republic is also constantly introducing new topics, though the



### Strengthening national partnerships

As a part of a national commitment to mathematics and natural science, several of the TEMI municipalities have been accepted as science municipalities by the Norwegian Directorate for Education and Training, and will receive funds in order to increase the local competence in science. The universities and college universities will help these municipalities, in order to provide training and building networks within each municipality. This is a good way to disseminate some of the key ideas of TEMI, and TEMI Norway looks forward to the future collaboration. On April 6 2016, HBV is

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system will allow trainers to deliver full day workshops with a limited preparation time and will be implemented over the coming years in the MEd science teacher training program at the University of Bremen. Half day events will be given during teacher in-service training events – for example in February in Hamburg – or on request in different schools – for example in Spring in Oldenburg.

approach remains the same – the teachers experience the TEMI methods and mysteries in the same way as if they were students, which makes the training more interesting for them. Some of the new mysteries in November were “Drawing with electrodes”, “Enquiry in the nano-world” and “Construction of a fire extinguisher”.

organizing a conference, with invited TEMI-teachers from all the participating schools, students, colleagues from the science teacher education as well as policy makers. The program of the day will include some of the top speakers in Norway when it comes to dissemination of natural science, and there will be presenters talking about the 5E-method, showmanship and mysteries.



#### **New cohorts in Southern Italy**

In November and December TEMI Italy trained about 40 secondary school teachers in Salerno and Naples, Southern Italy. The introductory lessons focused on various physics topics, including



#### **ENGAGE and TEMI join forces**

Traces is joining forces with ENGAGE France, the Horizon 2020 project coordinated by the University of Sheffield to disseminate the TEMI methodology to French teachers. Teachers who



#### **Spotlight on Israeli teachers**

TEMI Israel delivered cohorts number 4 and 5 and collected interesting feedbacks from the participants. Most teachers implemented TEMI mysteries in their class and shared positive

thermodynamics, mechanics, and optics. The University of Milan planned the second part of the cohorts in a few weeks at the beginning of 2016 to allow teachers to test the TEMI methodology in their classes. More topics will be introduced, starting from electromagnetism, a major part of secondary schools curriculum. Every new cohort helps the Milan team to improve the way TEMI is presented based on feedbacks from the attending teachers, who – as a general impression – are enthusiastic and eager to share their issues and lessons learned.

are part of the ENGAGE community can participate to a sweepstake and win tickets to attend the TEMI congress in Leiden. Traces hopes the ENGAGE community teachers will feel empowered and supported to take the risk to introduce innovations and Responsible Research and Innovation (RRI) in their classroom. In parallel, they will be introduced to TEMI, its tools and lesson plans that can complement the ENGAGE ones. Traces looks forward to introduce 2 motivated French teachers to the TEMI teachers' community.

impressions related to the experience. Some teachers, who are more conservative in their way of teaching, were supported from colleagues who tested TEMI in the classroom and felt more confident about some of the innovations, especially storytelling or showmanship. Some of the more experienced TEMI teachers pointed out the need of ongoing support to keep improving the TEMI experience with their students. Three groups of trained teachers will present TEMI activities at the Israeli Chemistry teachers' congress on December, a proof they acquired enough knowledge to act as active elements in the cascading process to reach more teachers.



### A special issue of Chemistry in Action! about TEMI

TEMI Ireland is finishing off the 5th cohort and will have one more in the New Year. For the last 2 cohorts (4 and 5) the University of Limerick has involved a new person to talk about showmanship for teachers, Paul McCrory. Paul will also be a plenary speaker at the Leiden conference.

As agreed in Paris, Peter Childs will collect and edit a set of papers from partners giving an overview of the TEMI project. These will be published in a special issue of the Irish journal Chemistry in Action! The pdf version will be made available to partners for their websites and some hard copies will also be sent. It is hoped that this special issue will be ready for the Leiden congress. The deadline for papers to be sent to Peter Childs is January 10th. The UL team looks forward to welcoming all the partners to Limerick in January for the project meeting!

### Keep on reflecting!

One of the dissemination actions expected from the TEMI project is to facilitate the interaction with appropriate policy makers and national science centers, important stakeholders in the science education and communication community. In this context, Sterrenlab is happy to inform the consortium that TEMI was invited to participate to EMINENT, the Experts Meeting in Education Networking annual event organised by European Schoolnet (EUN). The conference took place on November 19th and 20th in Barcelona and brought together experts in education, Ministries representatives and other stakeholders to discuss the latest trends in education and technology. Regarding science centers, the TEMI session proposals were reviewed and accepted by the ECSITE (the European Network of Science Centers and Museum) and PCST (Public Communication of Science and Technology) conferences that will take place in Graz and Istanbul respectively in Spring 2016. Ecsite and PCST are the most important conferences for science communication in Europe. The abstract of the ECSITE conference "Keep on reflecting! The glories and miseries of spectacular science" is available on Basecamp.

### TEMI @ CERN

TEMI was very positively received at CERN in July, when John Walker from TEMI UK visited to facilitate a workshop for science teachers from across Europe. They were visiting for several weeks of immersive professional development about nuclear physics, and he had a comparatively short two-hour session in which to win them over to TEMI. The proposed activity "The Mysterious Atom" contained the essence of a good mystery, had some hands-on activity, and was relevant to both CERN and the school curriculum. Each group had a different mystery shape, cut from wood and hidden from their view. This shape was analogous to the nucleus. The shape, and its cunning shield, were placed on a piece of flat paper, and bombarded with a marble, which had been coated in ink. Each time, the marble left a trace showing its trajectory. Eventually, enough trajectories were obtained for the group to estimate the size and shape of their mystery object. The idea was to convey the idea that scientists often have to rely on indirect evidence to formulate theories. The teachers were greatly enthused by this activity and by the ideas contained in the TEMI project. The lesson plan is available on the TEMI website.

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### Discover Leiden

On 24 November TEMI Netherlands gave a TEMI workshop together with Tilman Andris for 20 international teachers during the Galileo Teachers Programme training at the European Space Agency. The workshop focused on seasons and sparked an interesting discussions about the issues of introducing showmanship and enquiry in the classroom. The next appointments - cohort 4 and 5 – have been prepared in collaboration with Groningen University and the Cosmodrome Genk in Belgium. The University of Leiden will support your stay during the April congress; if you plan to stay longer, they will be happy to give some useful tips about places to visit, such as the Boerhaave museum or the Naturalis Biodiversity Center.

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