



SEPTEMBER 2015



Dear Partners,
the last couple of months, QMUL have been working with other consortium members to finalise the design, proof reading and production of the Book of Mysteries. This has involved identifying and bringing in external experts to proof read and develop the look and feel of the book design. As one of the main legacy products for the project we believe it is important the book has a consistent and professionally designed look and feel. We thank all consortium partners who have now provided their three best mysteries; the book will be a fitting way to present these fantastic examples of enquiry based teaching materials, all containing the TEMI methodology, to the wider world. The QMUL team have also been consulting on and developing the agenda and other supporting documents and arrangements for the upcoming meeting in Paris.

Looking forward to meet you in Paris for the management board meeting!

Peter McOwan and Dorothee Loziak

WHAT'S COOKING?



On tour in the UK

Building on the successes of the TEMI CPD programme and to celebrate the publication of the local high quality curriculum materials, the Sheffield Hallam team will be busy travelling around the UK this term. First stop will be the *National Science Learning Centre* in York in October working with the 5th British cohort of science teachers. Next on to the University of Huddersfield to present at the *Association of Science Education (ASE) Northern Area Conference – Doing, Thinking and Learning Science*, an inspiring event that is focusing on what makes science so involving and exciting for pupils (and teachers). In November, TEMI UK will be working



A multimedia-based learning environment

In September 2015 Daniela Stengel finished her MEd thesis within the TEMI project in Bremen. Daniela developed a multimedia-based learning environment. The learning environment was developed to introduce or extend acid-base-theory for the lower secondary chemistry classroom. It operates the TEMI mystery of the Chameleon Bubbles, an acid-base-experiment made on the formation of alginate bubbles filled with indicator solution in calcium chloride solution (like in Bubble Tea). The learning environment follows the 5E model and allows for guided and structured learning. It includes pictures, PREZI-learning pathways, ideas for experimental inquiries, and



Reaching further

With the French version of the Teach the TEMI way booklet in hand, Traces presented the project to another set of 40 French teachers from primary and secondary school. A few colourful props given by our science explainer to set the scene at the beach helped drawing the attention of the audience and jumping easily into James' story. The appointment was set on September 16th, and more teachers turned up than in June: a little after the start of the school year, teachers are looking for new ideas. Teachers coming to discover Traces projects for and with teachers on this 2nd "forum-aperitif" were interested by the methodology, especially the 5E cycle. They had questions about

with the 6th cohort of science teachers at the *Institute of Education, University of London*. Then to top it off, the team will be running an interactive workshop at the *National ASE conference* at Birmingham University, an event that hosts over 400 CPD science education sessions presented by teachers, leading scientists, researchers and education organisations.

quizzes for students' self assessment. The learning environment will soon be published on both the Bremen local TEMI and multimedia learning websites. It will be used in the future TEMI pre-service workshops, but also will be open for teachers' use in class.

how to keep their students' motivation going after the engage phase and how to guide them into a scientific enquiry.



A TEMI symposium at ESERA

The UNIVIE team disseminated the TEMI project via two conferences this September. The first conference was held by the European Science Education Research Association (ESERA) in Helsinki, Finland. TEMI Austria presented the



TEMI teams up with UNAWE

In October 2015 the International Universe Awareness (UNAWE) workshop will be held in Leiden, the Netherlands. The workshop will bring together educators, teachers, astronomers and members of the UNAWE network to share ideas,



Sharing TEMI mysteries

During the summer vacation, a group of teachers worked with TEMI Israel to develop a new lesson plan. The activity is based on the mystery from TEMI Czech Republic "How to make silver and gold out of copper?" After brainstorming and reading,

lessons learnt from the professional development courses in a symposium with TEMI partners from Germany, Israel and Ireland. The second conference was organised by the German association for chemistry and physics education ('Gesellschaft für Didaktik der Chemie und Physik', GDGP) and took place in Berlin, Germany. The UNIVIE team gave two presentations about the four innovations of TEMI and how they are implemented into the teacher education workshops. In the coming semester three further cohorts will be delivered: one in Vienna and two in Carinthia, Austria.

techniques and resources that have been developed by the programme thus far. The workshop is organised in close collaboration with the European Space Agency (ESA). The TEMI Leiden team will give a workshop session to introduce TEMI and give the participants an idea of how to use mysteries as a method for inquiry based learning in the classroom.

In November 2015, ESA will be organising a training workshop for science teachers in association with the Galileo Teacher Training Programme (GTTP) at ESTEC in Noordwijk, the Netherlands. Participants at this workshop will have the chance to explore innovative ways to use space science and astronomy in the classroom to engage students in the sciences.

teachers prepared an introduction to the experiment based on the real story of the alchemist Nicolas Flamel who lived in Paris, 1330-1418. In September the teachers began to test the lesson plan in the classroom and sent their feedbacks to the Weizmann team, including students' questions, which sparked a fruitful discussion about the learning methodology. TEMI Israel together with their teachers also adapted "the Test Lung Capacity", from TEMI Ireland.

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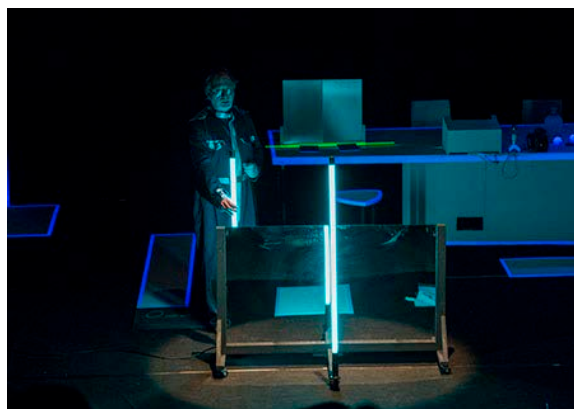
LUMAT

Teaching enquiry with mysteries incorporated: The benefits of involving pre-service teachers

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The involvement of pre-service science teachers

TEMI Ireland published a paper in “LUMAT: Research and Practice in Math, Science and Technology Education”, based on the talk given at the 2014 ECRICE conference in Finland. This current discussion paper explores the approaches taken by the University of Limerick project team to bring about change in Irish second-level science teaching, as part of the TEMI project. In particular, it focuses on the unique aspect of this institution’s approach, which is the involvement of pre-service science teachers (PSST’s) in the project. The role of PSSTs in the project is explored under three main headings: “TEMI and the PSST as researcher”, “TEMI and professional learning communities” and “TEMI and PSST’s collaboration with co-operating teachers”. The paper concludes with a discussion on the benefits of involving PSSTs in the TEMI project. You can find the full article “Teaching enquiry with mysteries incorporated: The benefits of involving pre-service teachers” [here](#).

Light Mystery

The playscript of Light Mystery, the theatre play developed by TEMI Italy, was translated in 6 languages (English, French, German, Portuguese, Czech and Norwegian) and it is now available on Basecamp. The show authored by Marina Carpineti, Marco Giliberti and Nicola Ludwig and directed by Emiliano Bronzino, tells the story of three researchers involved in a mysterious situation. The play makes use of scientific demonstrations to talk about physics and how science is taught at school, stimulating a reflection on the didactics of science and what being a researcher means. The play is more than a simple show but a didactic tool developed in the TEMI methodological framework. The playscript includes comments (scientific, theatrical and didactical) and can be adapted to shorter versions. The theatre company of the University of Leiden (RINO) will work with Marco, Marina to represent the show in the Netherlands. RINO is an association of physics students who will perform in schools and during events. As most of the science faculties have theatre clubs, the University of Milan invites all partners to contact them to establish partnerships.

A witch has come to Prague

A little before Halloween, the Charles University has had a visit from the supernatural. During our TEMI teacher training in September, a witch suddenly appeared out of nowhere! The witch was not an ordinary one. She was a chemist! And while our teachers were completely baffled, she started telling us her sad tale. You see, this witch had always wanted to be a human being. She never wished for flying on brooms and owning a black cat and all that. She just wanted to go have a coffee with friends, drive a car, that sort of thing. She consulted her magic books and decided to learn chemistry in order to make herself a Elixir of Humanity. She finally found out the recipe and went to our university to ask chemistry teachers to help her in her quest. First, she had to consult the four elemental beings representing Water, Earth, Air and Fire. Then, it was just a matter of measuring, pouring and mixing. And finally, the Elixir was done. She drank and disappeared for a while, only to appear again – human! The witch looked in her mirror to see the change and was really disappointed... Next time, she will definitely try to make an Elixir of Youth!



A common framework for the TEMI congress

Among the multiple dissemination actions that are being implemented by Sterrenlab and all the TEMI partners – participation to conferences, publication of articles, partnerships with national and European organisations ... - the April congress will be a major gathering for the science education European community. To ensure the aims of the TEMI congress are agreed and understood, Sterrenlab invites the partners to refer to the congress abstract posted on Basecamp, that includes a short overview of target groups (TEMI trained teachers, teachers trainers, policymakers, sciedu project managers), congress format, draft agenda, budget and what partners are expected to prepare over the next months



Planning the TEMI legacy

HBV presented TEMI to policymakers and the research community at HBV and – upon invitation – to a science conference initiated by the Ministry of Education. Several municipalities in Norway are prioritizing CPD in science, and TEMI provides solid trainings to acquire the required competences. The team has also been working on a Facebook group that hopefully will become a platform where teachers can share and discuss the lesson plans they are working on, during and after the conclusion of the project. HBV received funds from the university college to do research on the effects on motivation for learning science through TEMI and ENGAGE, another EU funded project. This research will help the TEMI to incorporate TEMI in the Norwegian CPD.
