



NOVEMBER 2014



Dear Partners,

after the successful meeting of the consortium in Milan, TEMI London have been working hard on pulling together all the information needed for shared calendars and other ways to better capture and disseminate the information in the project. In the meanwhile, the TEMI mini mascot, the Pythagorean cup, made a mysterious appearance at a London art fair, as part of the inside out festival in London, where universities showcase their research work to the public. QMUL ran a Magic Show, where, combined with the usual range of card tricks used to explain mathematical and computer science principles, the cup proved popular. The demonstration of how the ancient Greeks dealt with those greedy enough to want too much to drink engaged the audience. The exploration of how the cup worked was undertaken using a flip chart and pen, where each of the designs for a possible solution was drawn and its properties discussed until, guided by the scientific clues, the true solution was revealed. The segment ended with the history surrounding the apparent design of the cup by mathematician Pythagoras, showing the audience that maths and mathematicians can have a sense of humour too. If you want to hear more to organize a similar presentation, don't hesitate to get in contact with us!

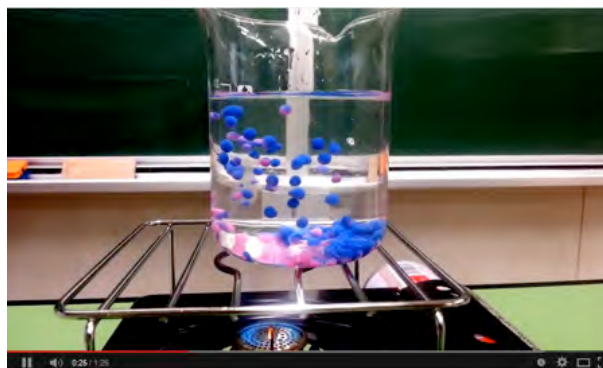
Peter McOwan - TEMI coordinator

WHAT'S COOKING?



TEMI Ireland is recruiting teachers

TEMI Ireland is actively recruiting teachers for TEMI future cohorts. In October, the University of Limerick – TEMI partner in Ireland - gave a short presentation at a national conference for science teachers called ChemEd-Ireland. This reached over 70 second level science teachers. Following the presentation, quite a number of teachers approached the TEMI team at the coffee break, to discuss the project further, and as a result of this, some teachers have asked to be selected to take part in the TEMI workshops over the next year. The recent TEMI “taster” workshops at the national AMGEN and PDST (Professional



TEMI goes to Asia

The first ISER World Conference on science education in Cappadocia (Turkey) was the meeting ground for the University of Bremen (Germany) and Chiba University (Japan) to discuss and exchange ideas on physics experiments that incorporate mysteries. Prof. Shuichi Yamashita from Chiba University presented an interesting mystery based on thermal convection using thermo ikura (alginate) bubbles. This physics experiment is closely related to the chameleon bubbles mystery currently under development at the University of Bremen. The chameleon (alginate) bubbles experiment focuses on acid-



Learning from magicians

TEMI Austria invited magician Tilman Andris to the third workshop of the first cohort in Vienna to present a magic show. During the presentation, Andris took the time to explain the different stages of a magic presentation; he discussed with the teachers the similarities with a classroom lesson and what they can learn from magicians in the context of teaching science with mysteries. The discussion proved to be extremely helpful for the teachers who contributed to a list of ideas, which can be implemented when presenting a science mystery. TEMI Austria is currently busy developing a

Development Service for Teachers) science teachers' conference also proved successful in recruiting teachers for next Cohorts 3 and 4. In total, 73 teachers were reached through these workshops and all of these teachers expressed interest in implementing some aspects of the TEMI teaching approach.

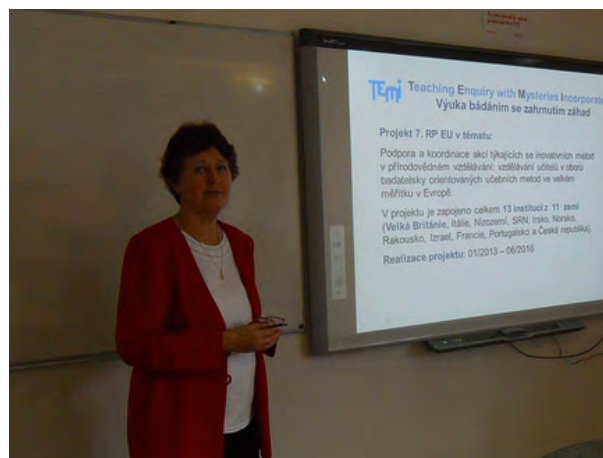
base-chemistry. These parallels initiated discussion and thoughts on collaboration. Chiba University has invited Prof. Ingo Eilks from Bremen to visit Chiba in spring 2015, not only to deliver a series of exciting presentations and workshops, but also to set a framework for future collaboration. Until then, cooperation on experiments with alginate bubbles in chemistry and physics education is very much appreciated and underway from both sides.

strategy to involve key multipliers: during a two hour workshop in Klagenfurt, a group of teachers educators experienced two of the four TEMI innovations – the mysteries and the levels of inquiry (GRR). At the end of February 2015 a complete two day workshop will be organized for multipliers who will in turn offer TEMI workshops in other regions of Austria.



The role of TEMI teachers

After the Milan meeting TEMI Israel got straight to work with the first workshop of the new cohort. The meeting started with a discussion based on



Sharing TEMI ideas in Czech Republic

TEMI Czech Republic is busy working with TEMI methodologies at three different levels: with in-service teachers, with pre-service science teachers



Identifying similarities, establishing connections

Following the annual meeting, TEMI Norway has established strong connections with the Irish team as quite a lot of similarities in the TEMI practices

the classroom experiences of the participating teachers: a few of them took the plunge and had tried out TEMI activities in their classrooms before coming to the workshop. Their positive feedbacks encouraged other teachers to test TEMI methodology and ask for practical advises. The second part of the workshop was dedicated to a new TEMI activity, which was developed and presented by Ben Osher, a teacher who participated to a previous TEMI cohort. The provisional title of the activity is "laboratory under investigation" and it will soon be translated into English. TEMI Israel highly recommends involving teachers from previous cohorts who can act as role models, provide helpful suggestions and inspire the other teachers. In turn, these teachers can benefit from the on-going support of the TEMI trainers and national community.

and stakeholders (university teachers, PhD. students and employees of the National Educational Institute of the Ministry of Education of the CR). In-service science teachers participated to the Market of Ideas for Chemistry Teachers in Brno where they have learned about the TEMI project, discussed the use of mysteries at school and the IBSE method and they have seen several practical examples. Pre-service teachers have participated in two training sessions in November. They have learned about the TEMI project and how to implement TEMI activities in the classroom. Regarding the stakeholders, a meeting of university teachers and PhD. students has taken place in Trnava University (Slovakia) in November, where PhD. students presented a set of classroom resources designed according to the TEMI methodology.

and experiences have been identified. The last two months, TEMI Norway has been busy working on the ideas that were developed during the annual meeting and preparing a dissemination seminar with teachers from the first cohort. The participants will bring their fellow teachers, and the workshop programme will include sessions to share the TEMI methodology with the new group of teachers. Two regional municipalities will contribute to the next 2 cohorts in spring 2015 by providing a number of attending teachers and thus maximizing the impact of TEMI trainings in Norway.



TEMI presented at astronomy conference

TEMI The Netherlands contributed to an astronomy themed conference for high school teachers at Leiden University. Pedro Russo and Johan Neuteboom, one of the Dutch TEMI teachers, presented the project and its methodology. In their talks they focused on training opportunities and Mysteries development.

TEMI Levels of enquiry

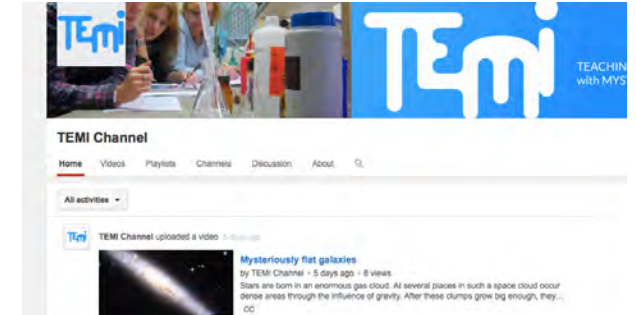
		In Explore, Explain or Extend, who takes responsibility for:		
Harder ↑ Easier	Level of enquiry	Formulating the problem / task	Deciding how to solve / do it	Carrying it out
	Level 3 Open enquiry	Student		
	Level 2 Guided enquiry	Teacher	Student	
	Level 1 Structured enquiry	Teacher		Student
	Level 0 Demonstrated inquiry	Teacher		

TEMI Enquiry labs – owner’s manual version 2

TEMI Sheffield has updated all the workshop materials for teaching the four TEMI innovations, based on recent pilots in 2014. In particular partners might find useful:

- Workshop presentations on each innovations
- Scaffold sheets for teaching skills by GRR

The second version of the owner’s manual is available in Dropbox.



Looking for a name for the TEMI app

Cnotinfor invites all TEMI partners to visit the Youtube TEMI Channel and the TEMI Flickr account, where a small but increasing collection of TEMI videos and photos has been uploaded. Please share with Sterrenlab and Cnotinfor videos and pictures that are relevant to the project and can be shared on social media.

Youtube: <https://www.youtube.com/channel/UC62-j3UpwF-Z5yh84umnxIQ>

Flickr: <https://www.flickr.com/photos/107822507@N08/sets/>

TEMI Portugal welcomes suggestions to name the TEMI app that will be soon circulated with a completely new design.



The magic science of TEMI at Scientix

The Scientix conference that took place in Brussels the 3rd weekend of October was the first major opportunity to present TEMI to the European science education community. Partners from Sterrenlab, Traces, Weizmann Institute and Leiden University collaborated to set up and man the stand. The TEMI stand was constantly visited by teachers and project managers as we provided not only TEMI informative material but also practical demonstrations that gave teachers an idea of what the TEMI methodology is about. The TEMI stand received appreciations from TEMI EC Project



Updated questionnaire available in Dropbox

Following discussions in Milan, TRACES is currently polishing the new version of the teachers final questionnaire and the questionnaire for partners to complete after the last meeting with a group of teachers. TEMI France is also fostering reflections of the consortium on students' major gains allowed by the use of TEMI and looking at the tools that could help volunteer to observe their students' attitudes in the classroom. TRACES invites you to use Doc 3 (available in Dropbox, version 3 of the evaluation toolkit) "teacher satisfaction grid" in all workshops after each



The TEMI annual meeting

The annual TEMI meeting that took place in Milan, from 5 to 7 November has proved to be an excellent occasion to discuss the successes and challenges of the project in preparation of the second round of cohorts. An important part of the meeting was devoted to the importance of showmanship as one of the four TEMI innovations. The magician Tilman Andris illustrated the analogies between a magic show and a science while the actor Andrea Brunello introduced his idea of scientific theatre, and present his show "The principle of uncertainty" to the TEMI

Officer and we were recommended to participate and support similar events as they are widely recognized as the best occasions where teachers, educators, policy makers and project managers can learn from each other and share best practices and ideas. The conference was also an important occasion for internal reflection on the best ways to present TEMI to teachers.

“session”. Please note that in this version, the “relevance” criterion, considered too blurry, has been modified for a “clarity” criterion. Partners starting with a new group of teachers, shall use the update form and, after the workshop: enter the results online using this link: <https://fr.surveymonkey.com/s/temi-doc3v2-answers>.

consortium. TEMI Italy is pleased to announce to the other partners that their new show “Light mystery” will debut in Turin coming March in occasion of the International Year of Light. During the show three characters, a teacher, a lecturer coming from the university, and a physicist from the future, will convey to the audience some key messages of the TEMI methodology. The show will be translated in other languages for the benefit of the whole project.
