

TEACHING ENQUIRY
with MYSTERIES INCORPORATED

FINAL REPORT

Grant Agreement number: 321403

Project acronym: TEMI

Project title: Teaching Enquiry with Mysteries Incorporated

Funding Scheme: Fp7, SiS

Period covered: from February 2013 to July 2016

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Project website Error! Bookmark not defined. address: www.teachingmysteries.eu

¹ Usually the contact person of the coordinator as specified in Art. 8.1. of the Grant Agreement.

1. Final publishable summary report

1. Executive summary

The TEMI project, funded by the European Commission as part of a scheme to support innovative methods in science education across Europe, has come to an end in July 2016. TEMI, which stands for Teaching Enquiry with Mysteries Incorporated, developed and offered training to 958 pre and in service science teachers across 11 countries. Project partners devised a new teaching methodology which innovation works around the combined use of mysteries deployed following the 5Es concept, together with better showmanship/communication skills and with a gradual release of responsibilities.

The methodology is described in an easy to use booklet entitled *Teaching the TEMI way: how using mysteries supports science learning* available from the project website in 7 languages (English, French, German, Czech, Italian, Dutch and Norwegian).

TEMI teacher trainers, based in 9 different countries, piloted and refined the methodology together with the participating teachers. Very positive results have been reported with this type of training which offers to teachers both professional and personal development. More than 80% of the teachers reported observing a better motivation in their students.

A *TEMI Book of Science Mysteries* was produced. It provides a sample of 30 mysteries developed following the TEMI methodology with tips for teachers and student worksheets. An app was also developed for iPhone and smartphones. It includes 15 mysteries to be solved and offers teachers and students with an extra resource to investigate mysteries from their smartphone. Many more mysteries and classroom resources are available from TEMI partners' websites in their local languages.

Teachers interested in the TEMI training should not hesitate to contact the project partners who have plans in place to carry on with TEMI beyond the end of the project. Alternatively, for an insight into the challenges of science teaching, the fight between old and new methods and the impact of mysteries to stimulate curiosity for the sciences, one can look out for the *Light Mystery*, a theatre play specially adapted for TEMI and rolled out in Italy by partner University of Milan. The scientists turned actors are often on stage to the delight of teachers, students and all inquisitive minds. The script with enriched with useful comments is available from the project website in Italian and English for use by school drama groups.

2. Project context and objectives

Research has consistently found evidence that the way science is traditionally taught is a cause of students' declining interest in the subject with age (Science Education NOW: A renewed pedagogy for the Future of Europe). Enquiry holds out huge promise for science education, to arrest the decline in student attitudes towards science and mathematics, and foster better scientific thinking. Yet, it demands a major shift in existing classroom culture!

The project has involved nine teacher training centres across Europe to develop and implement the pilot programme through 'Enquiry Labs'. The TEMI approach adopts a clear definition of enquiry in terms of a cognitive skill set, and sets out a stepwise progression to push students towards becoming confident enquirers. Teachers were recruited to participate in a series of training sessions where they experimented the core scientific concepts and emotionally engaging activity of solving mysteries, i.e. exploring the unknown. The enquiry labs also used scientists and communication professionals (e.g. magicians, actors, motivational speakers, etc.) to guide teachers through the transition to use the TEMI methodology.

The TEMI trained teachers provided considerable input to the development of the TEMI methodology and resources. They were invited to test the approach and materials in the classroom and feedback on it. As the training progressed, methods and resources could be refined in an iterative design-test-feedback cycle.

3. Main S&T results/foregrounds

TEMI delivered 53 training courses (cohorts) across the TEMI partners in 11 countries, which amounts to 958 teachers recruited. Starting from a common methodology, the training delivery was then adapted by each teacher training centre in the various countries involved to reflect local country specific issues around curriculum, suitability of content and classroom practice.

The TEMI concepts of gradual release of expertise from teacher to pupil, and showmanship skills for teachers to be able to effectively engage students were explored progressively with the TEMI partners so they could impart these skills to their local teachers.

Main project outputs include *Teaching the TEMI way: how using mysteries support science learning* a booklet describing in an easy format the TEMI methodology and the *TEMI Book of Science Mysteries* which provides 30 lessons plans deploying the methodology. TEMI produced *Light Mystery: script with added comments*, a resource for schools and theatre companies. The play explores the world of physics to trigger wonder and curiosity. The play was performed in Italy by the University of Milan partner team and used in the TEMI training with discussion on how to use scientific theatre to engage with young people. The development of a TEMI app is also in its very final stage. It contains 15 mysteries and offers teachers and students with an extra resource to investigate mysteries from smartphones.

4. The potential impact (including the socio-economic impact and the wider societal implications of the project so far) and the main dissemination activities and exploitation of results

Over the last three years, TEMI partners have communicated their results and experience widely at 97 public events and 68 conferences on teaching and education. They got 25 articles in the press (general and teaching related) and 20 articles published in academic journals related to science teaching. TEMI is also listed in 5 international repositories. The list of events is available below in section 2.

Highlights include three TEMI workshops at the high profile European High School Teachers' CPD event at CERN, Switzerland by TEMI partners University of Milan and Sheffield Hallam University in 2015 and 2016. University of Milan was invited to deliver a series of training sessions on the Brout-Englert-Higgs mechanism using the TEMI methodology. They did it over 14 hours to a group of 35 teachers of the CERN Italian teacher programme in September 2015. The delivery of such a complex conceptual project was innovative and a very positive experience for trainers, teachers and organisers. For the second year running, the team from Sheffield Hallam University have delivered a workshop to over 45 teachers at the CERN International Teacher's Programme. In July 2016, they delivered a bespoke TEMI activity entitled the Mysterious Atom, which had been refined through piloting with more teachers over the last 12 months. This well-established international science teacher event has enabled further dissemination of the project, the TEMI philosophy and methodology to a European and International audience.

TEMI also had the unique opportunity to participate to the European Space Agency Summer Teachers Programme in the Netherlands, to talk about the mystery of flat galaxies. During the workshop, 60 European teachers discussed how to explain the concept of gravity to secondary school students by using the enquiry based approach and the TEMI methodology. "It was great to see such a large group of inspiring science teachers, working together with so much enthusiasm on a TEMI mystery!" said Wouter Schrier, TEMI Dutch project manager who delivered the workshop.

The TEMI mascot "Hero's horse" is now on permanent display at the UK STEM centre in York, England. The centre welcomes about 6000 visitors a year, among them many teachers and researchers in science education. Displaying the mascot in key places visited by teachers is a great way to communicate to teachers about the project. The mascot is special and raises the curiosity of visitors who are then invited to explore the TEMI methodology, mysteries and lesson plans.

The project multi-lingual website will remain available and includes the methodology booklet Teaching the TEMI way in six languages, the TEMI Book of Science Mysteries and its 30 downloadable lesson plans, an app with 15 mysteries to explore, a physics play script with resources to support schools and drama groups to explore and engage with science through theatre. Resources are also disseminated to other IBSE platforms and teachers' networks including Scientix.

Finally, the most active piece of legacy remains with the teacher training platforms of the nine TEMI partners. They have plans to carry on with TEMI in different ways.

Part of the TEMI training has become an integral part of a practical course on experiments in chemistry teaching at Bremen University and for the next 3-5 years, all chemistry student teachers will undergo this training. The Weizmann Institute of Science and Sheffield Hallam University intends to dovetail TEMI into other CPD programmes. Leiden University will incorporate the TEMI

methodology in future teacher trainings with Universe Awareness and Space Awareness. In Norway, the TEMI innovations will be part of the ongoing work Hogskolen i Sorost Norge does as a part their national effort (“Science municipalities”) in science education. Additionally, from 2017, teacher training will be a five-year master in education and Hogskolen i Sorost Norge plans to use ideas from the TEMI project both in their courses, but also as a research subject. University of Vienna is launching a follow-up project called Mysteries in Practice. In this project they will run workshops with experienced TEMI teachers to develop inquiry based learning concepts and mystery-based materials. Trainers will accompany the teachers in their classroom, observe their teaching to give them direct feedback on the implementation. University of Limerick is exploring a TEMI training for primary school teachers. Charles University in Prague has a very active group of TEMI trained teachers and will continue to support them in deploying the methodology. They organised a TEMI Congress for the Czech Republic at Liberec science centre on June 10-11, which was a great success, with the TEMI trained teachers leading the workshops together with CUNI academics. It was a real cascade event with the TEMI approach being passed by teachers to teachers. 56 teachers participated and CUNI leaders are confident TEMI will carry on because of the great interest and enthusiasm shown by the teachers themselves.



A teacher training programme across Europe

Financed by the Seventh Framework Programme of the European Union
FP7-Miscellaneous-019401-01, Grant Agreement 16101103

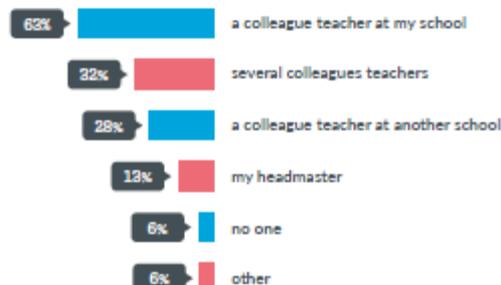
TEMI - Teaching Enquiry with Mysteries Incorporated
teaching@mysterias.eu



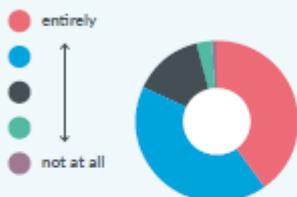
What do you feel you gained from training?



With whom did you share your TEMI experience?



Did the TEMI training match your professional needs?



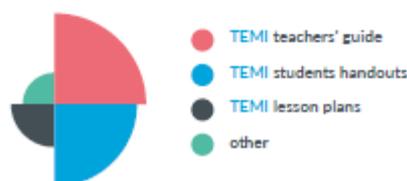
Does the training help you tackle aspects of the curriculum?



Did you feel that the activities proposed were varied enough to fit all levels of teacher experience?



Which resources or classroom material did you use?



Did you get a chance to implement the TEMI approach and techniques in your classroom?*



*Note that some TEMI teachers are not teaching yet or at the moment.

based on data collected during the TEMI project

5. The address of the project public website, if applicable as well as relevant contact details.

More information on the project website: www.teachingmysteries.eu

TEMI was coordinated by Prof. Peter McOwan, Queen Mary, University of London.

The consortium includes partners Università degli Studi di Milano (Marina Carpineti and Marco Giliberti), Universitaet Bremen (Ingo Eilks), University of Limerick (Peter Childs, Sarah Hayes), Sheffield Hallam University (Julie Jordan and Tony Sherborne), Hogskolen i Sorost Norge (Jorn Nyberg), Universitaet Wien (Anja Lembens), Weizmann Institute of Science (Rachel Mamlok-Naaman), Universiteit Leiden (Pedro Russo), Univerzita Karlova V Praze (HanaCtrnactova), Sterrenlab (Cristina Olivotto), TRACES (Matteo Merzagora), Cnotinfor (Secundino Correia).

2. Use and dissemination of foreground

A TEMI Impact and Legacy deliverable report was submitted at the end of the project (D8.2). It describes the project legacy, planned actions by TEMI teacher training partners to carry on with the project methodology and concept. Here is a summary of the actions planned post TEMI.

Universita degli Studi di Milano (Italy) will continue the TEMI trainings as they received requests to do so. In Italy, each teacher has a budget for courses and trainings as part of their CPD. Therefore TEMI trainings could be sustainable and paid through the teachers' CPD budget. The theatre show "Light Mystery" could also become a self-sustained show thus promoting TEMI. UMIL has produced kits to be distributed among the TEMI partners and to schools linked to TEMI. These kits support the local production of the show Light Mystery, through school drama groups.

At **Bremen University** (Germany), part of the TEMI training has become an integral part of a practical course on experiments in chemistry teaching. For the next 3-5 years at least, all chemistry student teachers in Bremen will undergo this training. Additionally, part of the TEMI training has become a course for in-service training in the GDCh-In-Service Teacher Training centre at UniHB. We will offer further half-day courses on the TEMI teaching ideas in the coming years and on request by schools and teachers.

The **University of Limerick** (Ireland) plans to offer taster workshops through the Irish Science Teachers Association (ISTA) local branches in the 2016-17 year. These will be 2 hour workshops at ISTA branch meetings nationally. Additionally, UL intends to bring and circulate copies of the three modules developed as part of the project. These modules have been developed for the Irish Transition Year which is a curriculum free year between our version of GCSE and A-level (Junior Cycle and Senior Cycle in Ireland). UL will continue to disseminate these modules to teachers and schools. We intend to have a TEMI focus during the annual Chemistry demonstration workshops run each summer in UL. This is a week-long residential course run for 10-12 in-service teachers. UL will focus on the TEMI approach, demonstration and showmanship. UL will work to give Irish science teachers access to the bank of TEMI materials (>150) developed as part of the project. They also intend to publish and have TEMI teachers publish TEMI lesson ideas in Irish science teacher magazines (Chemistry in Action & Science (ISTA Journal/Magazine)). We plan to offer the TEMI workshop to 4th year PSSTs each year prior to their school placement. The UL TEMI Google + online forum will be maintained and opened up to teachers who participate in the future TEMI taster workshops and nationally, through fora such as the ISTA, the PDST, and EPI*STEM and SSPC Teacher CPD courses and websites.

Sheffield Hallam University (UK) is focusing on training the trainers. The UK National STEM Centre will host TEMI lesson plans and the TEMI mascot. The SHU team is looking to embed TEMI in other

science education programmes and is working on an event for primary school teachers in charge of development of curricula.

In Norway, enquiry is a part of the national science curriculum, known as the «budding researcher». The **HSN** TEMI team had the opportunity to present TEMI to policy makers in the Norwegian Directorate for Education and Training and built a closer relationship with national institutions. A great investment by the government is put in CPD in science and maths, through the “Competence for quality” project and TEMI has been included in the teachers’ science curriculum. Additionally, 20 million NOK is put into the project «science municipalities», where HSN will also continue to communicate the TEMI methodology. HSN plans to continue using the TEMI methodology in our CPD-courses. This will ensure that approximately 30 new teachers will be introduced to TEMI annually.

In April 2016, HSN arranged a science conference with the aim of sharing the TEMI methodology, with a special emphasis on mysteries, showmanship and the 5E-model. Approximately 400 teachers and HSN students participated in the conference, among them several TEMI teachers and their colleagues. With funding from the governmental investment on CPD in science, the HBV team plans to arrange annual science conferences, where TEMI will be communicated. Teachers will get the chance to test TEMI lesson plans, and get the tools they need to plan their own lessons the TEMI way. It is also thought that TEMI lesson plans or methodology can act as a base for future master theses and research.

University of Vienna (Austria) started a follow-up workshop already in March 2016. ‘Mysteries in Practice’ (MiP) is a continuing professional development course and aims to establish a Community of Practice regarding inquiry-based learning in chemistry education. Four times per semester, the UNIVIE-team works together with former Austrian TEMI teachers. The intentions of the meetings are theoretical deepening on the one hand and the planning and implementation of as well as the reflection on inquiry-based learning on the other hand. MiP offers the teachers the opportunity to extend their professional knowledge and to share materials, ideas and experiences with motivated colleagues in a friendly and appreciative atmosphere.

In addition to MiP, the UNIVIE-team will offer TEMI one-day-refreshing workshops. The first workshop will take place in April 2017 in Klagenfurt (Carinthia). Furthermore, brief education activities for teachers and the publication of further teaching materials based on the idea of TEMI are planned. There will be a presentation on possibilities to create Engage-phases (including Showmanship) at a conference of Austrian chemistry teachers in April 2017. Additionally research on enquiry-based science education will continue at the University of Vienna in the course of a dissertation project, which examines especially the Explore- and Explain-phase of the 5E-model.

Current information and materials already published can be found on the website of the Austrian TEMI-team (<http://aeccc.univie.ac.at/>).

The Weizmann Institute (Israel) will incorporate TEMI in their activities and training because it fits perfectly the Israeli curriculum. Teachers who were exposed to TEMI keep using the methodology and disseminating TEMI through their peers.

Leiden University (The Netherlands) is planning to use the TEMI Book of Science Mysteries and the TEMI mysteries lesson plans all now translated in Dutch in their next teacher training programme. Leiden will incorporate the TEMI methodology in their future teacher trainings with Universe Awareness and Space Awareness.

Charles University Prague (Czech Republic) has translated the TEMI Book of Science Mysteries into Czech and will embed TEMI in their training, using the methodology booklet and the mysteries. The legacy carries on as well through TEMI teachers now training other teachers.

TEMI Infographics – Figures and Impact summary



A teacher training programme across Europe

Co-funded by the Seventh Framework Programme of the European Union
FP7-Miscellaneous-019401-01, Grant Agreement 14101103

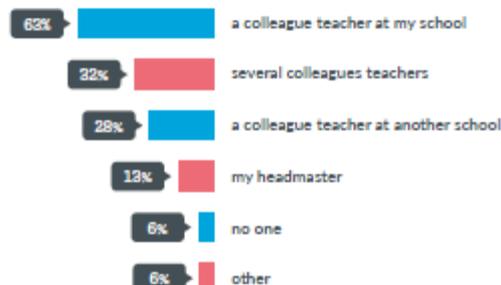
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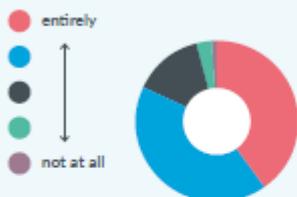
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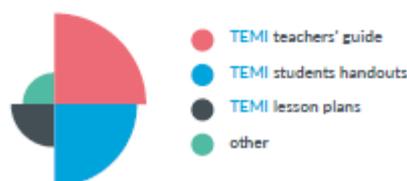
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*Note that some TEMI teachers are not teaching yet or at the moment.

based on data collected during the TEMI project

Section A (public)

This section includes two templates

- Template A1: List of all scientific (peer reviewed) publications relating to the foreground of the project.

TEMI is a Coordination and Support action project and not a research funded project per se. Therefore the table A1 is **not relevant** for TEMI which had a focus on the deployment of teacher trainings. However, whenever project partners had the opportunity to publish knowledge and results about TEMI, as part of their usual academic duties, either in academic journals or through conference papers, they reported it in the table A2.

- Template A2: List of all dissemination activities (publications, conferences, workshops, web sites/applications, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters).

TEMPLATE A2: LIST OF DISSEMINATION ACTIVITIES

Type of Activities	Main leader	Title	Date	Place	Type of audience	Size of the audience	Countries addressed
article	UL	Childs, P. (2013) "TEMI: Teaching Enquiry with Mysteries Incorporated", Chemistry in Action!, Issue 100, Summer 2013, p.45.	01/07/13	Ireland	chemistry teachers and trainee teachers	650	Ireland
article	HBV	Editorial newspaper article in Vestfold Blad	04/09/13	Norway			Norway
conference	CUNI	2nd Market of ideas for chemistry teachers	04/10/13	Tabor, Czech Republic	Primary and secondary school teachers of chemistry (2 days)	45	Czech Rep
conference	STL	Communicating astronomy to the public	14/10/13	Warsaw, Poland	Science communicators and educators in astronomy/physics	200	International
event	UNIVIE	Inquiry day at the Technical Museum Vienna	12/11/13	Vienna, Austria	teachers, laymen		Austria
conference	HBV	Annual conference for teacher educators in science	13/11/13	Hell, Norway	Teacher educators from all university colleges and universities in Norway (3 days)	80	Norway
conference	UL	TEMI poster displayed at International Conference on Initiatives in Chemistry Teacher Training. Topic:Initiatives in Chemistry Teacher Training was funded by the Chemistry is all around Network Project	29/11/13	Limerick, Ireland	European science teachers		Europe
event	UNILEIDEN	Physics Teachers event Woudschoten	01/12/13	Woudschoten, Netherlands	teachers	15	Netherlands
conference	HBV	Building bridges	20/01/14	Trondheim, Norway	Teachers and researchers in science education, policy makers (1 day)	25	Norway
event	UNIVIE	26.02.2015 talk by Anja in Vienna at a teacher conference	26/02/14	Vienna, Austria	teachers	60	Austria

article	UL	The Irish Science Teachers' Association (ISTA) publish a magazine, Science, which is distributed to all members of the association. The TEMI project was publicised in this magazine in early 2014: O' Dwyer, A. (2014) "Teaching science through mystery: TEMI project launched in Europe", Science, 49 (2), March 2014, p.36.	01/03/14	Ireland	Irish science teachers		Ireland
journal	UNIVIE	Publication in a German teacher journal: Abels, S., Puddu, S. & Lembens, A. (2014). Wann flockt die Milch im Kaffee? Mit „Mysteries“ zu differenziertem Forschenden Lernen im Chemieunterricht. <i>Naturwissenschaften im Unterricht - Chemie</i> , 25(142), 37-41.	01/03/14	edited in Germany	teachers		German speaking
conference	UL	New perspectives in science education 3rd edition	20/03/14	Florence, Italy	Science education research community (2 days)	100	Europe
event	UMIL	Light Mystery theatre show performance	20/03/14	Turin, Italy	Extra 3 performances on March 20th, 21st, 22nd	700	Italy
conference	SHU	National Science Teachers Association (NSTA) annual meeting	03/04/14	Boston, USA	Science teachers and educators (4 days event)	30	International
conference	UL	Irish science teachers' association conference 2014	11/04/14	Galway, Ireland	Secondary school science teachers (3 days)		Ireland
conference	WEIZ	Plenary session at the SCITEED 2014 conference	24/04/14	Fethiye, Turkey	Science education research community (4 days)	130	International
event	CUNI	ECTN association general assembly	24/04/14	Madrid, Spain	Higher education institutions, national chemical societies, chemical and software companies from 35 countries (4 days)	170	International
event	UNIVIE	advertisement workshop at the 4th Chemistry days by the association of chemistry teachers, Austria	24/04/14	Salzburg, Austria	teachers	20	Austria

event	UNIVIE	advertisement workshop at the 4th Chemistry days by the association of chemistry teachers, Austria	25/04/14	Salzburg, Austria	teachers	20	Austria
event	WEIZ	Presentation at the "Science on Tap" (Scientists lecturing in bars) event	30/04/14	Israel	General Public	100	Israel
event	WEIZ	TEDX, Science: the biggest drama in class	20/05/14	Israel	Teachers and General public, available online	1700	International
conference	UNIHB	Dortmund symposium TEMI poster	20/06/14	Bremen, Germany	science communicators and educators	120	International
conference	UL	Science and Mathematics Education Conference (SMEC)	24/06/14	Dublin, Ireland	Researchers, secondary school teachers (2 days)		Ireland
conference	CUNI	DidSci (International Conference on Research in Didactics of the Sciences)	25/06/14	Krakow, Poland	Researchers in science education (3 days)	80	International
event	UNIHB	TEMI presentation, STEM teachers' school conference, IGS Lüneburg (comprehensive school, potential future hub for training in 2015), 01 Jul 2014	01/07/14	Lüneburg, Germany	teachers	10	Germany
conference	UL WEIZ	European conference of research in chemistry education (ECRICE)	07/07/14	Jyväskylä, Finland	Researchers, teacher trainers, chemistry educators (4 days)		International
conference	UMIL	GIREP-MPTL 2014 international conference (2 presentations delivered)	07/07/14	Palermo, Italy	Science education research community (6 days)	30	International
conference	WEIZ	Keynote at ECRICE 2014 conference: Inquiry approach to teaching chemistry as reflected in TEMI	07/07/14	Jyväskylä, Finland	Researchers, teacher trainers, chemistry educators	150	International
conference	WEIZ	Presentation at ECRICE 2014 conference: TEMI project from situational to personal interest	07/07/14	Jyväskylä, Finland	Researchers, teacher trainers, chemistry educators	20	International
conference	WEIZ	Presentation at ECRICE 2014 conference: Improving teachers' showmanship to motivate enquiry among students: The Weizmann TEMI training program	07/07/14	Jyväskylä, Finland	Researchers, teacher trainers, chemistry educators	20	International
conference paper	UNIHB	PROFILES Proceedings	16/08/14	Germany	science communicators and educators		International

conference	UNIHB/ WEIZ	2nd International PROFILES Conferences	25/08/14	Berlin, Germany	Science teachers, science educators (3 days)		International
event	STL	Scientix teachers ambassadors	06/09/14	Brussels	teachers	40	Europe
event	STL	Scientix networking	07/09/14	Brussels	other EU projects	20	Europe
conference	CUNI	International Conference on Chemistry Education	15/09/14	Hradec Kralove, Czech Republic	Researchers in science education and teachers (3 days)	55	International
conference	CUNI	IOSTE Central and Eastern Europe	15/09/14	Hradec Kralove, Czech Republic	Researchers in science education (3 days)	70	Europe
conference	UNIHB	Annual conference of the Gesellschaft für Didaktik der Chemie und Physik (GDGP) TEMI poster	15/09/14	Bremen, Germany	Science educators, teacher educators (4 days)		Germany
conference	UMIL	100th SIF National congress	22/09/14	Pisa, Italy	Italian physics education researchers and teachers (4 days)		Italy
event	TRACES	RRI seminar	23/09/14	Paris, France	other EU projects	42	Europe
event	UNIVIE	workshop for group leaders Klagenfurt	23/09/14	Klagenfurt, Austria	teachers and teacher educators	18	Austria
event	UNIHB	TEMI presentation, school pedagogical leading team, IGS Wilhelmshaven (comprehensive school, potential future hub for training in 2015), 30 Sep 2014	30/09/14	Wilhelmshaven, Germany	teachers	3	Germany
journal	UNIVIE	Publication in an Austrian teacher journal: Abels, S., Lautner, G. & Lembens, A. (2014). Mit „Mysteries“ zu Forschendem Lernen im Chemieunterricht. <i>Chemie & Schule</i> , 29(3), 20-21.	01/10/14	edited in Salzburg, Austria	teachers		German speaking
conference	CUNI	ECRICE	07/10/14	Jyvaskyla, Finland	Universities & Secondary schools chemistry teachers (4 days)	150	International
conference	CUNI	3rd Market of ideas for chemistry teachers	10/10/14	Brno, Czech Republic	Primary and secondary school teachers of chemistry (2 days)	50	Czech Rep
event	WEIZ/ UNIHB	Seminar presenting work on TEMI to the IDN group at the University of Bremen	22/10/14	Bremen, Germany	Researchers	20	Germany

conference	STL/WEI Z/TRACE S/UNILEI	2nd Scientix conference	24/10/14	Brussels, Belgium	Teachers, educators, policy makers, project officers (3 days)	500	Europe
conference	STL/WEI Z/TRACE S/UNILEI	2nd Scientix conference	24/10/14	Brussels, Belgium	Teachers, educators, policy makers, project officers (3 days)	500	Europe
conference	UNIHB	1st International Conference of the International Society of Educational Research	27/10/14	Cappadocia, Turkey	Science educators, teacher educators (7 days)	150	Internation al
event	UNIHB	October 2014 – Pre-service secondary chemistry teacher workshop (half-day), University of Bremen, Bremen	27/10/14	Bremen, Germany	teachers	24	Germany
event	UNIHB	Module EVC, pre-service ST education workshop, 27 Oct 2014	27/10/14	Bremen, Germany	teachers	26	Germany
article	CNOTIN FOR	BICA, Imagina company newsletter	01/11/14	Portugal and Brazil	Mainly teachers, but also other educational specialists	23000	Portugal Brazil
conference	UNIHB	Annual regional conference of the Verein zur Förderung des Mathematischen und Naturwissenschaftlichen Unterrichts (MNU) TEMI poster, German STA	17/11/14	Bremerhaven, Germany	Science and math teachers (2 days)		Germany
article	UNIHB	article on TEMI local newspaper Hellweger Anzeiger	19/11/14	NRW, Germany	general public		Germany
event	HBV	Introducing TEMI for additional teacher working in Kongsberg municipality	01/12/14	Horten, HBV, Norway	teachers	20	Norway
event	UNIHB	STEM teachers' school conference incl. headmaster, Lise-Meitner-School Stühr- Moordeich (comprehensive school, potential future hub for training in 2015), 01 Dec 2014	01/12/14	Bremen, Germany	teachers	16	Germany
conference	UNIVIE	Educating the Educators (presentation by Anja and Simone)	15/12/14	Essen, Germany	International teacher educators maths and science education (2 days)	40	Internation al
conference	WEIZ	Annual meeting of chemistry teachers in the framework of the National Center of Chemistry Teachers	23/12/14	Israel	teachers	300	Israel

event	HBV	Workshop for 4th year pre-service teachers	01/01/15	Horten, Norway	pre-service teachers	24	Norway
event	HBV	Workshop for Post Graduate Certificate in Education students	01/01/15	Horten, Norway	pre-service teachers	17	Norway
journal	UNIVIE	Publication in an Austrian teacher journal: Abels, S. & Lembens, A. (2015). Mysteries als Einstieg ins Forschende Lernen im Chemieunterricht. Chemie & Schule, 30(1b), 3-5.	01/01/15	edited in Salzburg, Austria	teachers		
journal	UNIVIE	Publication in an Austrian teacher journal: Lembens, A. & Abels, S. (2015). Forschendes Lernen nach dem 5E-Modell und Showmanship. Chemie & Schule, 30(1b), 6-7.	01/01/15	edited in Salzburg, Austria	teachers		
journal	UNIVIE	Publication in an Austrian teacher journal: Abels, S. & Lembens, A. (2015). Genie in the bottle – Der Flaschengeist. Chemie & Schule, 30(1b), 8-11.	01/01/15	edited in Salzburg, Austria	teachers		
journal	UNIVIE	Publication in an Austrian teacher journal: Lembens, A. & Abels, S. (2015). Fest oder flüssig? Nichtnewtonsche Stoffsysteme. Chemie & Schule, 30(1b), 12-16.	01/01/15	edited in Salzburg, Austria	teachers		
journal	UNIVIE	Publication in an Austrian teacher journal: Abels, S. & Lembens, A. (2015). Gelli Baff – Superabsorber, der wieder flüssig wird. Chemie & Schule, 30(1b), 17-19.	01/01/15	edited in Salzburg, Austria	teachers		
journal	UNIVIE	Publication in an Austrian teacher journal: Steininger, R., Abels, S. & Lembens, A. (2015). Der (un)zuverlässige Indikator – vom klassischen Schulversuch zum Mystery. Chemie & Schule, 30(1b), 20-23.	01/01/15	edited in Salzburg, Austria	teachers		
journal	UNIVIE	Publication in an Austrian teacher journal: Lembens, A. & Abels, S. & Reiter, K. (2015). Magischer Sand. Chemie & Schule, 30(1b), 24-27.	01/01/15	edited in Salzburg, Austria	teachers		

journal	UNIVIE	Publication in an Austrian teacher journal: Reiter, K., Abels, S. & Lembens, A. (2015). Chemisches Gewichtheben. Chemie & Schule, 30(1b), 28-31.	01/01/15	edited in Salzburg, Austria	teachers		
event	HBV	Seminar on EU-related activities on the University college	13/01/15	Horten, HBV, Norway	faculty, management	15	Norway
event	WEIZ	Presentation for teachers	14/01/15	Haifa, Israel	Teachers	40	Israel
event	UMIL	Light from the stars show performance	17/01/15	Carpi, Italy	Teachers, students	300	Italy
event	HBV	Workshop for 1st year pre-service teacher	01/02/15	Drammen, Norway	pre-service teachers	13	Norway
article	STL	The Learning teacher part I	02/02/15	Europe	teachers	4000	Europe
event	UNIHB	February 2015 – Pre-service primary science teacher workshop (half-day), University of Bremen, Bremen	04/02/15	Bremen, Germany	teachers	12	Germany
article	STL	The Learning teacher part II	05/02/15	Europe	teachers	4000	Europe
event	UMIL	Under another light show performance	06/02/15	Milano, Italy	Students, teachers	250	Italy
article	UMIL	Sole24ore, national newspaper, article on TEMI	08/02/15	Italy	general/newsreaders	334076	Italy
event	HBV	introducing TEMI for additional teachers working in Sandefjord municipality	12/02/15	Sandefjord, Norway	teachers	20	Norway
event	UMIL	Under another light show performance	13/02/15	Milano, Italy	Students, teachers	230	Italy
event	UNIHB	Staff training at Academic Arab College Feb 2015	15/02/15	Haifa, Israel	teachers	10	Israel
article	UNIHB	article on TEMI published in local newspaper Wilhelmshavener Zeitung	28/02/15	WHV, Germany	general public		Germany
article	UNIVIE	Chemie und Schule', special issue on TEMI with 8 articles and materials	01/03/15	Austria	teachers		Austria
event	HBV	Workshop for 2. year pre-service teachers	01/03/15	Horten, Norway	pre-service teachers	28	Norway
event	UNIHB	March 2015 – Presentation of TEMI within a lecture on Innovations in Science Education, Chiba University, Japan	01/03/15	Chiba, Japan	teachers	15	Japan
conference	STL	INTED conference 2015	02/03/15	Madrid, Spain	Education professionals (2 days)	600	International

event	UNIHB	March 2015 – TEMI workshop at STEM Teacher Study-day (half-day), University of Bremen, Bremen	04/03/15	Bremen, Germany	teachers	20	Germany
event	UNIVIE	advertisement workshop	12/03/15	Graz, Austria	teachers and future teachers	65	Austria
event	UMIL	Light Mystery theatre show performances (with TEMI cohorts teachers)	18/03/15	Turin, Italy	2 shows over 2 nights with participating TEMI cohort teachers in the audience 18th and 19th March 2015	500	Italy
event	WEIZ	Presentation for teachers	19/03/15	Raanana, Israel	Teachers	40	Israel
event	WEIZ	Presentation for teachers and students	22/03/15	Ashdod, Israel	Teachers and students	100	Israel
event	UNIHB	University Kid's Days	27/03/15	Bremen, Germany	Broad public/students	20	Germany
event	UL	taster workshop for teachers at the national ISTA conference run on Saturday 28th March.	28/03/15		teachers		Ireland
event	WEIZ	Presentation in a celebratory jubilee event for the Dept. of Science Teaching	29/03/15	Rehovot, Israel	Researcher, Teacher Educators, Teachers, Administrative staff	150	Israel
conference	UNIVIE	European Chemistry teacher congress by the association of chemistry teachers, Austria (2 presentations by Anja and Simone)	08/04/15	Innsbruck, Austria	teachers	70	Europe
event	STL	4th Scientix Projects Networking Event and ambassadors event	16/04/15	Barcelona, Spain	Project managers	15	Europe
event	STL	5th Scientix Projects Networking event on "materials created in projects"	24/04/15	London, UK	Teachers/policymakers/other EU projects (3 days)	100	Europe
event	STL	TEMI team at London Science Museum, visit & discussion with museum staff	24/04/15	London, UK	Science museum events staff	3	UK
event	WEIZ/Q MUL/ST L/UL/SH U	TEMI Presentations at Scientix conference (QMUL host)	24/04/15	London	Scientix ambassadors and project managers (3 days)	30	Europe

event	CUNI	ECTN association general assembly	26/04/15	Ljubljana, Slovenia	Higher education institutions, national chemical societies, chemical and software companies from 35 countries (4 days)	150	Europe
event	HBV	Presenting TEMI at a seminar initiated by Ministry of Education and Research	04/05/15	Horten, Norway	Representatives from the ministry	10	Norway
conference	UNILEID EN	CAP 2016	16/05/15	Colombia	science communicators and educators		International
event	UMIL	Light Mystery show performance	19/05/15	Napoli, Italy	General public, teachers, students, parents	200	Italy
conference	CUNI	International Conference on Chemistry Education	20/05/15	Brno, Czech Republic	Researchers in science education and teachers (3 days)	45	Czech Rep
event	TRACES	"Mystery, illusion and science" week (with table ronde with UMIL) https://www.espgg.org/Une-semaine-Mystere-illusion-et	25/05/15	Paris, France	teachers/generic educators/broad public	956	France
conference	UMIL	workshop and round table organized by TRACES	27/05/15	Paris, France	teachers	26	France
conference	TRACES	Science and You 2015	02/06/15	Nancy, France	teachers/generic educators/broad public	700	France
event	WEIZ	Taster workshop for at Bar-Ilan University for staff at the Chemistry department who teach in informal settings	07/06/15	Ramat Gan	Researchers, graduate students	30	Israel
conference	TRACES	ECSITE annual conference 2015	09/06/15	Trento, Italy	Science museums and centres professionals, researchers in science communication and education, informal learning experts (4 days)	1100	Europe
event	STL/QM UL	Science on Stage	17/06/15	London, UK	European science teachers (5 days)	350	Europe
conference	STL	END conference	27/06/15	Porto, Portugal	teachers, researchers and lecturers in education	600	Europe

event	TRACES	Presentation of TEMI to French teachers	29/06/15	Paris, France	teachers	15	France
conference	CUNI	Eurovariety in Chemistry Education	30/06/15	Tartu, Estonia	Researchers in science education (3 days)	65	Europe
conference paper	UMIL	Barbieri S, Carpineti M, Giliberti M, Rigon E, Stellato M and Tamborini M, (2015). The European TEMI project involves Italian teachers: first outcomes. In: PROCEEDINGS OF THE GIREP-MPTL 2014 INTERNATIONAL CONFERENCE: Teaching/Learning Physics: Integrating research into practice. p. 759, Università degli Studi di Palermo, ISBN: 978-88-907460-7-9, PALERMO, ITALIA, luglio 7-12, 2014.	30/06/15	Palermo (Italy)	Physics education researchers and teachers		
article	UNIHB/WEIZ	Science in School	01/07/15	edited in Germany	teachers		Germany
article	UNIHB/WEIZ	Science in School	01/07/15	edited in Germany	teachers		Germany
journal	WEIZ	Alchemia, the chemistry teachers bi-annual Israeli journal	01/07/15	Israel	Teachers	600	Israel
event	UNILEIDEN	TEMI workshop at ESA/ESTEC	02/07/15	Noordwijk, netherlands	European teachers	85	Europe
conference	UMIL	GIREP-EPEC 2015 international conference (3 presentations delivered)	06/07/15	Wroclaw (Poland)	Physics education researchers and teachers	80	Europe
event	UNIHB	Open Campus	11/07/15	Bremen, Germany	Broad public/students	20	Germany
event	SHU	CERN summer school TEMI workshop July 2015	21/07/15	Geneva	teachers	75	International
article	UNIHB	article on TEMI local newspaper Wilhelmshaven	25/07/15	WHV, Germany	general public		Germany
conference	SHU	ESERA TEMI poster	31/08/15	Helsinki, Finland	Science education research community (5 days)	1300	Europe
conference	UL/UNIHB/CUNI/UNIVIE	ESERA TEMI symposium & poster	31/08/15	Helsinki, Finland	Science education research community (5 days)	25	Europe

	/WEIZ						
conference	WEIZ with UL/UNI HB/CUN I/UNIVIE	Presentation at TEMI symposium at ESERA 2015: Introducing chemistry teachers to mystery inquiry-type skills	31/08/15	Helsinki, Finland	Researchers, teacher trainers, science educators, science communicators	40	Europe
event	UMIL	TEMI workshop at CERN	01/09/15	Switzerland	teachers		International
journal	UNIHB/ WEIZ	Journal article submitted to Praxis der Naturwissenschaften Chemie in German language.	01/09/15	Germany	teachers		
journal	UNIHB/ WEIZ	Journal article submitted to Praxis der Naturwissenschaften Chemie in German language.	01/09/15	edited in Germany	teachers		
conference	UL/UNI HB/CUN I/UNIVIE /WEIZ	ESERA TEMI symposium & poster	03/09/15	Helsinki, Finland	science communicators and educators	20	Europe
conference	UNIVIE/ WEIZ/U NIHB/UL	symposium at the ESERA: Biannual conference of the European Science Education Research Association (one presentation by Anja and Simone)	04/09/15	Helsinki, Finland	Science education researchers and educators	30	Europe
event	STL	2nd Scientix Projects' networking event	05/09/15	Brussels, Belgium	EU projects leaders	30	Europe
event	STL	Scientix 2 - Cycle 2 Teachers' panel kickoff 1	06/09/15	Brussels, Belgium	Science teachers (3 days)	70	Europe
conference	UNIHB	NCTCT	09/09/15	Ayvalek, Turkey	teachers	100	International
conference	UNIVIE	GDCP: Annual conference of the association for chemistry and physics didactics	14/09/15	Berlin, Germany	German speaking teacher educators and science education researchers (4 days)	25	Germany
conference paper	UNIHB	VBIO Proceedings	14/09/15	Germany	science communicators and educators		

event	UNIHB	September 2015 - TEMI Presentation at the VBio Annual Conference (German Biologists Association – Educational Division) Poster, Hamburg	14/09/15	Hamburg, Germany	science communicators and educators	all visitors	Germany
event	TRACES	September presentation of TEMI to French teachers	16/09/15	Paris, France	teachers	40	France
Conference	UMIL	2015 SIF (Italian Physical Society) Congress (two presentations delivered)	21/09/15	Rome (Italy)	Physics education researchers and teachers	35	Italy
event	UMIL	Under another light show performance	25/09/15	L'Aquila, Italy	General public, students, teachers	150	Italy
conference	WEIZ	Presentation at ESERA 2015: The mystery of scientific inquiry: Teaching inquiry with mystery stories	30/09/15	Helsinki, Finland	Researchers, teacher trainers, science educators, science communicators	40	Europe
article	UNIHB	Chemistry in Action	01/10/15	Ireland	teachers		Ireland
event	HBV	Workshop for 4th year pre-service teachers	01/10/15	Horten, Norway	pre-service teachers	24	Norway
conference	CUNI	4th Market of ideas for chemistry teachers	02/10/15	Pardubice, Czech Republic	Primary and secondary school teachers of chemistry (2 days)	55	Czech Rep
event	UNILEIDEN	UNAWAWE International Conference Leiden	06/10/15	Leiden, Netherlands	teachers/policymakers	30	International
event	TRACES	8th Scientix Projects' Networking Event (on "Evaluation within projects") and 8th Science Projects Workshop in the Future Classroom Lab	16/10/15	Brussels, Belgium	Project managers, teachers	100	Europe
article	UMIL	Barbieri S R, Carpineti M, Giliberti M, Rigon E, Stellato M, and Tamborini M, (2015). "Good vibrations" a workshop on oscillations and normal modes. Il Nuovo Cimento C, 38 8.	26/10/15	Bologna (Italy)	Physics education researchers and teachers		
event	UNIHB	October 2015 – Pre-service secondary chemistry teacher workshop, University of Bremen, Bremen	26/10/15	Bremen, Germany	teachers	24	Germany
event	UMIL	Light Mystery theatre show performances	30/10/15	Genova, Italy	General public, teachers, students, parents	300	Italy

journal	UNIHB	Journal article submitted to Praxis der Naturwissenschaften Chemie in German language.	01/11/15	Germany	teachers		
repository	STL	Merlot	01/11/15	International	teachers	137000	International
repository	STL	Scientix	01/11/15	Europe	teachers		Europe
repository	STL	OER commons	01/11/15	International	teacers		International
repository	STL	TES connect	01/11/15	International	teachers	4103362	International
repository	STL	UK national STEM center (Mascot and TEMI reference documents)	01/11/15	UK	teachers/other EU project		UK
event	STL	Scientix conference	06/11/15	Brussels	science communicators and educators	60	Europe
event	STL	Scientix Teachers event November 2015	07/11/15	Brussels	teachers	30	Europe
event	UNILEIDEN	Physics Teachers Network (Leiden University, November 2014)	12/11/15	Leiden, Netherlands	teachers	56	Netherlands
conference	UNIHB	November 2015 – TEMI Experimental Lecture at the MNU Annual Conference Bremen (German Science Teachers Association – Regional Conference Bremen), Bremerhaven	16/11/15	Bremerhaven, Germany	teachers	50	Germany
event	CUNI	Seminar for PhD students at Charles University	16/11/15	Prague, Czech Republic	PhD students and science education researchers (2 days)	50	Czech Rep
conference	STL	Science in Society - RRI International conference	19/11/15	Rome, Italy	Science in Society community (3 days)	400	Italy
conference	STL/WEIZ	Presentation and stand at the EMINENT/Scientix conferenc in Barcelona	19/11/15	Barcelona, Spain	Representatives from Ministries of Education, policymakers, researchers, teacher trainers, project officers, scientix ambassadors	260	International
event	STL	EMINENT conference	19/11/15	Barcelona	policy makers	300	International

event	SHU	Association for Science Education Northern Area Conference: "Doing, thinking, learning Science", presentation on TEMI	21/11/15	York, UK	teachers	75	UK
event	UNILEIDEN	ESA/GTTP Teacher Training Workshop	24/11/15	Noordwijk, Netherlands	European teachers	50	Netherlands
event	TRACES	partnering with Engage for competition	25/11/15	-	teachers	950	Europe
event	UNIVIE	Mysteries in Practice Launch event	03/12/15	Vienna, Austria	Science teachers	5	Austria
conference	WEIZ	Annual Meeting of the National Center for Chemistry Teachers	08/12/15	Israel	teachers	300	Israel
article	UNIVIE	interview of Anja by university journal	01/01/16	Vienna, Austria	academia		Austria
event	HBV	Workshop for 3rd year pre-service teachers	01/01/16	Drammen, Norway	pre-service teachers	6	Norway
journal	UNIVIE	Publication in the Irish teacher journal 'Chemistry in Action': Hofer, E., Abels, S. & Lembens, A. (2016, accepted). The 'Austrian Way' of TEMI. <i>Chemistry in Action</i> , 107, 23-32.	01/01/16	Limerick, Ireland	Science teachers		
event	HBV	Introducing TEMI for additional teachers working in Larvik municipality	04/01/16	Larvik, Norway	Teachers	20	Norway
conference	SHU	ASE Annual Conference	06/01/16	Birmingham, UK	teachers, policy makers	2300	UK
event	WEIZ	Workshop for teachers at the Science center in Ashdod	19/01/16	Ashdod, Israel	teachers	12	Israel
event	UMIL	Seminar in Udine about TEMI entitled: "The role of experiment based scientific theatre based in didactics"	12/02/16	Udine/Italy	Uditorium G.B. Tiepolo; Udine	30	Italy
event	UMIL	<i>Under another light</i> show performance	12/02/16	Udine/Italy	General public, teachers, students, parents	350	Italy
journal	UNIVIE	Publication in the Austrian Teacher Journal Plus Lucis: Abels, S. & Lembens, A. (2016). Von Badezusätzen und anderen Kosmetikprodukten – Zum nachhaltigen Umgang mit Kunststoffen. Plus Lucis, 1/2016, 27-29.	15/02/16	edited in Vienna, Austria	teachers		

journal	UNIVIE	Publication in the Austrian Teacher Journal Plus Lucis: Hofer, E., Puddu, S., Reiter, K., Abels, S. & Lembens, A. (2016). Die geheimnisvolle Flasche. Plus Lucis, 1/2016, 23-26.	15/02/16	edited in Vienna, Austria	teachers		
journal	UNIVIE	Publication in the Austrian Teacher Journal Plus Lucis: Lembens, A. & Abels, S. (2016). Von Knete, Polymeren, Makromolekülen und nichtnewtonschen Systemen. Plus Lucis, 1/2016, 19-22.	15/02/16	edited in Vienna, Austria	teachers		
journal	UNIVIE	Publication in the Austrian Teacher Journal Plus Lucis: Hofer, E., Abels, S. & Lembens, A. (2016). Forschendes Lernen und das 5E-Modell – ein kurzer Überblick. Plus Lucis, 1/2016, 4.	15/02/16	edited in Vienna, Austria	teachers		
event	UNIHB	MINT special interest day, Germany	19/02/16	Hamburg, Germany	teachers	30	Germany
conference	UNIVIE	presentation by Anja at an Austrian teacher conference	24/02/16	Vienna/Austria	teachers	40	Austria
event	UNIHB	University Kid's Days	22/03/16	Bremen, Germany	Broad public/students	20	Germany
event	UNIVIE	2 workshops at the 5th Chemistry days by the association of chemistry teachers, Austria	30/03/16	Linz	teachers		Austria
conference	SHU	Teach Meet Ormiston Academy	01/04/16	Norwich	Teachers,	10	UK
event	HBV	Workshop for 2. year pre-service teachers	01/04/16	Horten, Norway	pre-service teachers	15	Norway
event	HBV	National closing event	01/04/16	Vestfold	teachers and policymakers	400	Norway
event	HBV	National congress April	06/04/16	Horten, Norway	Teachers	400	Norway
event	UL	TEMI Taster Workshop at the annual Irish Science Teachers' Conference	09/04/16	Ireland	Teachers	51	Ireland
event	UMIL	Light Mystery theatre show performances	15/04/16	Leiden/The Netherlands	General public, teachers, stakeholders and TEMI partners	300	Europe

event	STE	TEMI Congress	15/04/16	Netherlands	TEMI teachers, policy makers, STEM ambassadors, communications experts, TEMI partners	200	Europe
event	UL	Taster workshop	18/04/16	Limerick	primary school teachers	20	Ireland
event	CUNI	ECTN association general assembly	23/04/16	Gdansk, Poland	Higher education institutions, national chemical societies and chemical and software companies (4 days)	120	Europe
event	UL	TEMI taster Workshop	25/04/16		Primary school teachers	5	Ireland
conference	STL	PCST	26/04/16	Istanbul	science communicators	500	International
article	UL	Chemistry in action! TEMI special issue	01/05/16	Europe	Irish science teachers and TEMI audience		Europe
article	CUNI	Science in School	01/05/16	edited in Prague	teachers		Europe
article	UNIVIE	article on EBSE, published by the online magazine of the University of Vienna	11/05/16	Vienna/Austria	broad public		Austria
event	UNIHB	Molecular gastronomy in the chemistry classroom (Science in School, issue 36)	20/05/16	-	teachers		Germany
conference	UNIHB	Dortmund symposium	26/05/16	Dortmund, Germany	science communicators and educators	100	Europe
conference	CUNI	23rd Symposium on Chemical and Science Education: Science Education Research and Practical Work	26/05/16	Dortmund, Germany	Science educators, pre-service and in-service science teachers (3 days)	52	Europe
conference	UNIVIE	Symposium on Chemistry and Science Education (Poster)	27/05/16	Dortmund/Germany	science educators and communicators	100	Europe
conference	UL	Oral papers SMEC 2016, Dublin: 'The TEMIfication of science teaching'	01/06/16	Dublin, Ireland			Ireland
conference	CUNI	ScienEdu: Innovations and Trends in Science Education	01/06/16	Bratislava, Slovakia	Researchers in science education and teachers (3 days)	68	Slovakia
event	CUNI	National closing event	01/06/16	Bohemia	teachers	200	Germany
event	UL	TEMI focus at the Irish annual Chemistry Demonstration Workshop	01/06/16	Ireland			Ireland

conference	STL	Ecsite	09/06/16	Graz	science communicators and educators	1000	Europe
conference	CUNI	Final conference for TEMI teachers: Liberec – an attractive place for teaching science the TEMI way	10/06/16	Liberec, Czech Republic	Primary and secondary school teachers from the Czech Republic (2 days)	56	Czech Rep
event	UMIL	Light Mystery show performance	15/06/16	Lecce, Italy	General public, teachers, students, parents	500	Italy
conference	CUNI	Hands on Science Conference	18/06/16	Brno, Czech Republic	teachers		Czech Rep
article	STL	Off the beaten tracks - Spokes (ECSITE magazine)	20/06/16	-	science communicators		Europe
event	UMIL	Seminar in Krakow about TEMI entitled: "Light Mystery - a Play about Physics IBSE"	29/06/16	Krakow - Pedagogical University	Teachers and science education researchers	50	Europe
article	HBV	Facebook page	30/06/16	Norway	Teachers	20	Norway
conference	CUNI	XVII IOSTE Symposium: Science and Technology Education for a Peaceful and Equitable World	11/07/16	Braga, Portugal	Science education researchers (6 days)	200	Europe
conference	CUNI	The 13th annual international conference on Hands-on Science	18/07/16	Brno, Czech Republic	Higher education science workers (5 days)	40	Czech Rep
event	STL	ExceptAcademy	01/08/16	Szakácsi	educators	50	Europe
article	TRACES	Communication to schools with documents from other projects to announce the availability of the Book of mysteries V2	01/09/16	France	teachers	1000	France
journal	UL	paper published in Lumat, based on the talk given at the 2014 ECRICE conference in Finland http://www.luma.fi/lumat-en/3959		Europe	researchers		International

Section B (Confidential² or public: confidential information to be marked clearly)

Part B1

The applications for patents, trademarks, registered designs, etc. shall be listed according to the template B1 provided hereafter.

Type of Exploitable Foreground ³	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Exploitable product(s) or measure(s)	Sector(s) of application ⁴	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
	<i>Ex: New superconductive Nb-Ti alloy</i>			<i>MRI equipment</i>	<i>1. Medical 2. Industrial inspection</i>	<i>2008 2010</i>	<i>A materials patent is planned for 2006</i>	<i>Beneficiary X (owner) Beneficiary Y, Beneficiary Z, Poss. licensing to equipment manuf. ABC</i>

This section is not applicable to the TEMI project.

² Note to be confused with the "EU CONFIDENTIAL" classification for some security research projects.

¹⁹ A drop down list allows choosing the type of foreground: General advancement of knowledge, Commercial exploitation of R&D results, Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.

⁴ A drop down list allows choosing the type sector (NACE nomenclature) : http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

4.1 Report on societal implications

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

A General Information *(completed automatically when Grant Agreement number is entered.*

Grant Agreement Number:	321403
Title of Project:	Teaching Enquiry with Mysteries Incorporated
Name and Title of Coordinator:	Professor Peter McOwan

B Ethics	
<p>1. Did your project undergo an Ethics Review (and/or Screening)?</p> <ul style="list-style-type: none"> If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports? <p>Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 'Work Progress and Achievements'</p>	<i>No</i>
<p>2. Please indicate whether your project involved any of the following issues (tick box) :</p> <p>RESEARCH ON HUMANS</p> <ul style="list-style-type: none"> Did the project involve children? Did the project involve patients? Did the project involve persons not able to give consent? Did the project involve adult healthy volunteers? Did the project involve Human genetic material? Did the project involve Human biological samples? Did the project involve Human data collection? <p>RESEARCH ON HUMAN EMBRYO/FOETUS</p> <ul style="list-style-type: none"> Did the project involve Human Embryos? Did the project involve Human Foetal Tissue / Cells? Did the project involve Human Embryonic Stem Cells (hESCs)? Did the project on human Embryonic Stem Cells involve cells in culture? Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos? <p>PRIVACY</p> <ul style="list-style-type: none"> Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)? Did the project involve tracking the location or observation of people? <p>RESEARCH ON ANIMALS</p> <ul style="list-style-type: none"> Did the project involve research on animals? Were those animals transgenic small laboratory animals? Were those animals transgenic farm animals? 	YES

• Were those animals cloned farm animals?	
• Were those animals non-human primates?	
RESEARCH INVOLVING DEVELOPING COUNTRIES	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	
• Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	
DUAL USE	
• Research having direct military use	0 Yes 0 No
• Research having the potential for terrorist abuse	

C Workforce Statistics

3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).

Type of Position	Number of Women	Number of Men
Scientific Coordinator		1
Work package leaders	5	3
Experienced researchers (i.e. PhD holders)	11	6
PhD Students	5	1
Other		

4. How many additional researchers (in companies and universities) were recruited specifically for this project?

Of which, indicate the number of men:

D Gender Aspects

5. Did you carry out specific Gender Equality Actions under the project? v Yes No

6. Which of the following actions did you carry out and how effective were they?

- | | Not at all
effective | Very
effective |
|---|---|---|
| <input type="checkbox"/> Design and implement an equal opportunity policy | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| <input type="checkbox"/> Set targets to achieve a gender balance in the workforce | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| <input type="checkbox"/> Organise conferences and workshops on gender | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| <input type="checkbox"/> Actions to improve work-life balance | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| <input type="radio"/> Other: <input style="width: 300px; height: 20px;" type="text"/> | | |

7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?

Yes- please specify

No

E Synergies with Science Education

8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?

Yes- please specify

No

9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?

Yes- please specify (Teaching the TEMI way, methodology booklet for teachers, TEMI Book of Science Mysteries, TEMI Mysteries App)

No

F Interdisciplinarity

10. Which disciplines (see list below) are involved in your project?

Main discipline⁵:

Associated discipline⁵:

Associated discipline⁵:

G Engaging with Civil society and policy makers

11a Did your project engage with societal actors beyond the research community? (if 'No', go to Question 14)

v Yes No

11b If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?

No

Yes- in determining what research should be performed

Yes - in implementing the research

Yes, in communicating /disseminating / using the results of the project

⁵ Insert number from list below (Frascati Manual).

11c In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?	V <input type="radio"/>	Yes No
12. Did you engage with government / public bodies or policy makers (including international organisations)		
<input type="radio"/> No <input type="radio"/> Yes- in framing the research agenda <input type="radio"/> Yes - in implementing the research agenda <input checked="" type="radio"/> Yes, in communicating /disseminating / using the results of the project		
13a Will the project generate outputs (expertise or scientific advice) which could be used by policy makers? <input checked="" type="radio"/> Yes – as a primary objective (please indicate areas below- multiple answers possible) <input type="radio"/> Yes – as a secondary objective (please indicate areas below - multiple answer possible) <input type="radio"/> No		
13b If Yes, in which fields?		
Agriculture Audiovisual and Media Budget Competition Consumers Culture Customs Development Economic and Monetary Affairs Education, Training, Youth Employment and Social Affairs	Energy Enlargement Enterprise Environment External Relations External Trade Fisheries and Maritime Affairs Food Safety Foreign and Security Policy Fraud Humanitarian aid	Human rights Information Society Institutional affairs Internal Market Justice, freedom and security Public Health Regional Policy Research and Innovation Space Taxation Transport

13c If Yes, at which level?		
<input checked="" type="checkbox"/>	Local / regional levels	
<input checked="" type="checkbox"/>	National level	
<input checked="" type="checkbox"/>	European level	
<input type="checkbox"/>	International level	
H Use and dissemination		
14. How many Articles were published/accepted for publication in peer-reviewed journals?	20	
To how many of these is open access⁶ provided?		
How many of these are published in open access journals?		
How many of these are published in open repositories?		
To how many of these is open access not provided?		
Please check all applicable reasons for not providing open access:		
<input type="checkbox"/> publisher's licensing agreement would not permit publishing in a repository <input type="checkbox"/> no suitable repository available <input type="checkbox"/> no suitable open access journal available <input type="checkbox"/> no funds available to publish in an open access journal <input type="checkbox"/> lack of time and resources <input type="checkbox"/> lack of information on open access <input type="checkbox"/> other ⁷ :		
15. How many new patent applications ('priority filings') have been made? <i>("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).</i>	N/A	
16. Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).	Trademark	
	Registered design	
	Other	
17. How many spin-off companies were created / are planned as a direct result of the project?	N/A	
<i>Indicate the approximate number of additional jobs in these companies:</i>		
18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:		
<input type="checkbox"/> Increase in employment, or	<input type="checkbox"/> In small & medium-sized enterprises	
<input type="checkbox"/> Safeguard employment, or	<input type="checkbox"/> In large companies	
<input type="checkbox"/> Decrease in employment,	<input type="checkbox"/> None of the above / not relevant to the project	
<input checked="" type="checkbox"/> Difficult to estimate / not possible to quantify		
19. For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (FTE = one person working fulltime for a year) jobs:	<i>Indicate figure:</i>	

⁶ Open Access is defined as free of charge access for anyone via Internet.

⁷ For instance: classification for security project.

Difficult to estimate / not possible to quantify	<input type="checkbox"/>
I Media and Communication to the general public	
20. As part of the project, were any of the beneficiaries professionals in communication or media relations?	
V Yes	O No
21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?	
O Yes	V No
22 Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?	
<input checked="" type="checkbox"/> Press Release <input type="checkbox"/> Media briefing <input type="checkbox"/> TV coverage / report <input type="checkbox"/> Radio coverage / report <input type="checkbox"/> Brochures /posters / flyers <input type="checkbox"/> DVD /Film /Multimedia	<input checked="" type="checkbox"/> Coverage in specialist press <input checked="" type="checkbox"/> Coverage in general (non-specialist) press <input checked="" type="checkbox"/> Coverage in national press <input type="checkbox"/> Coverage in international press <input checked="" type="checkbox"/> Website for the general public / internet <input checked="" type="checkbox"/> Event targeting general public (festival, conference, exhibition, science café)
23 In which languages are the information products for the general public produced?	
<input type="checkbox"/> Language of the coordinator <input checked="" type="checkbox"/> Other language(s)	<input checked="" type="checkbox"/> English

Question F-10: Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

FIELDS OF SCIENCE AND TECHNOLOGY

1. NATURAL SCIENCES

- 1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]
- 1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)
- 1.3 Chemical sciences (chemistry, other allied subjects)
- 1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)
- 1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)

2. ENGINEERING AND TECHNOLOGY

- 2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)
- 2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]
- 2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as

geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

3. MEDICAL SCIENCES

- 3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immuno-haematology, clinical chemistry, clinical microbiology, pathology)
- 3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)
- 3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

4. AGRICULTURAL SCIENCES

- 4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)
- 4.2 Veterinary medicine

5. SOCIAL SCIENCES

- 5.1 Psychology
- 5.2 Economics
- 5.3 Educational sciences (education and training and other allied subjects)
- 5.4 Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary, methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

6. HUMANITIES

- 6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)
- 6.2 Languages and literature (ancient and modern)
- 6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]

2. FINAL REPORT ON THE DISTRIBUTION OF THE EUROPEAN UNION FINANCIAL CONTRIBUTION

This report shall be submitted to the Commission within 30 days after receipt of the final payment of the European Union financial contribution.

Report on the distribution of the European Union financial contribution between beneficiaries

Name of beneficiary	Final amount of EU contribution per beneficiary in Euros
1.	
2.	
n	
Total	