



Report on the 2nd Science Museum and Communicators Online Discussion Event

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1. Introduction

The primary objective of the DESIRE project is to identify how new project results of methods and practices in science education can reach teachers and schools more efficiently. The online discussion events (ODE) of DESIRE are used to facilitate the sharing of experiences between stakeholders in science and math education. The ODEs has the purpose of collecting qualitative material for the DESIRE Project.

This report is a summary of the second Online Discussion Event which took place in the period 20-23 November 2012 and was moderated by Elisabetta Tola, co-founder of the science communication agency formicablu, in Bologna and Roma.

This online event consisted of two teleconference meetings through the Google Hangout platform. Each teleconference lasted one hour, and involved four participants, one moderator and one DESIRE project manager. The participants were science museums education managers – responsible for teacher training – and science communication publishers or developers.

During the teleconferences, the participants were invited to discuss how they use project results and if they use both resources and methodology information from project results. The following sections contain summaries of the discussed themes each of the three days and the outcome of the discussions.

2. First Teleconference

The first teleconference was held on November 22nd 2012 at 10:00am CET. The participants were:

Andrea Frantz, NaturErlebnisPark, Austria

Silvia Grabner, NaturErlebnisPark, Austria

Danel Solabarrieta, Elhuyar Foundation, Spain

Federica Manzoli, social scientist and expert in science education/training projects, Italy

All participants made use of the **results of recent studies and projects researching STEM education** to develop their own projects, but at a different degree depending on the country and on the project.

In the Austrian case, a strong effort has been put by the government to promote STEM research and education. This has been completed with tools, like a national database and the promotion of teacher and science educator networks, which function quite well both to connect people and to redirect them to appropriate sources and references.

In the case of the Basque country, Elhuyar foundation works in collaboration with the local University and selects, depending on the project they are working on, appropriate experts as consultants.

In Italy, teacher networks are strongly focused on practice, experience and very little on research outcomes in the field of pedagogical research. There is a strong distance between the academic environment and the practical world of teachers and trainers. Only occasionally, researchers from the academic environment end up working in close collaboration with teachers and people directly involved in the formal and informal science teaching. There are very diverse situations and, given the dimension of the country and the fact that there are strong differences between regions, it's very hard to describe a common trend. However, there are specific projects where people who are involved directly in formal/informal educational projects might look for research outcomes in the science education field, in particular in the area of action research.

All participants seem to experience that there is **not a straightforward method to reach results obtained at the EU level**. In fact, most of the sources used in their routine work come from **local/national connections**: local universities, national teacher networks, specific programmes and/or projects.

When directly questioned whether they could suggest **one European project and/or tool that is well known** and used as a source for their activities, they could not mention anyone. Most of them will get to EU projects websites only **after having met and talked** with someone who is directly active in such a project (some mentioned the participation at the Ecsite annual conference as an occasion to get much information and hints about potential sources and materials).

General impression of the participants is that anytime you are looking for some specific information (ie. a research outcome, a report, a guideline or some other practical tool to acquire information on the latest results on science education) it's scattered in many different places. When on the web, it's scattered amongst many different websites. There is **not one specific place** to start their research from.

One strong suggestion coming out of the meeting is the idea of building one single EU database, organized in such a way to enable teachers, communicators, trainers to find through keywords and tags straight links to projects, reports and published references resulting from all EU projects related to a certain topic. Specifically, such a unique database would be a perfect starting point for practitioners seeking resources which come from different projects focused on similar topics.

It has been highlighted that the field of research into STEM education is quite recent and that most countries will not have enough knowledge, nor critical mass to get good and sound results within the national boundaries. Such a database would be of enormous value to compare outcomes of strategies and approaches both to formal and informal science education experimented in different countries, situations and within diverse learning environment. One participant pointed out that for example it might be easier to compare rural situations across Europe and urban ones rather than urban/rural within the same country.

Some practical suggestions about the database that could serve as a useful starting point to access EU projects in the area of research in STEM education:

1. it should be a very simple and immediate structure, accessible for the average teacher and practitioner who might not be highly digitally savvy.
2. It should contain very simple description of the projects and work more as a link to the projects website, products, reports, references, published work, and so on.
3. It should always have a brief summary in English even when the materials are published in other languages. At least, at the very first level, people can decide whether to explore a certain project website, using translation tools, if the description is of interest.
4. It has been pointed out that the language barrier might be a strong obstacle. One possible solution it might be that of asking local partners within EU projects from the different countries to act as **local hubs**, putting materials and project results in context and help local teachers/practitioners to access the materials.
5. Tools and materials, other than written reports, guidelines and papers, should be uploaded and/or produced within a few standards of reference: one of the major problem in re-using other projects outcomes is often on the technical side (variety of formats, standards, etc).
6. An effort has to be put to advertise and promote the database (and to organize tutorials to make it accessible) through the teachers/trainers/practitioners networks at the national level. There is no point if the database remains hidden in some website and is left unused.
7. To make sure the database is kept up to date, each project coordinator should fill a standard form (as he/she already does for the reporting) which will be directly feeding the database. In this way, there is no need of any intermediate step to update and keep the database alive.

3. Second Teleconference

The second teleconference was held on November 24nd 2012 at 10:00am CET. The participants were:

Anna Gunnarsson, Navet Science Center, Sweden

Stephen Roberts, National History Museum, London, UK

Guillermo Orduña, Esciencia, ES

Martha Fabbri, Mondadori Education, IT

The meeting starts with a **brief introduction** by each participant.

All participants made use of the **results of recent studies and projects researching STEM education** to develop their own projects, but at a different degree depending on the country and on the project.

The Swedish experience is strongly enforced by the collaboration with the local University, which provides validated contents and a lot of practical collaboration. Also, the science center is well connected with a **national network of teachers**, the National School Board, that has been investing massively in recent years in order to improve effectiveness of Science and Technology education.

Similarly, the Spanish situation is one of a **close collaboration** between a local company, Esciencia Eventos Cientificos, and the University.

Differently from these two examples, the Italian publisher Mondadori is interested in addressing science teachers looking more into teachers' needs and finding a way to fulfill these needs, since teachers are their main target audience. However, despite the effort to foster a contact also with the teachers associations and the people doing research on STEM, there is very little communication between academics as well as the professional teachers associations and the publishers.

Generally, at least for Spain and Italy, language is a barrier in terms of sharing international materials produced by projects developed in other countries. Most teachers will not use English language and thus there is a need for translation and adaptation of any material to the local context.

In UK, naturally the language is not a barrier. There is a big group at the museum, of more than 25 people, working specifically on the teacher training. The Museum is more involved in the informal learning approach than in the formal one, and has a continuous turnover of groups of 60-80 teachers under training. Their work is informed by a good collaboration with the Institute of Education and, in any case, most of the training professionals have a teaching background. This is also seen as an opportunity for a teacher to work in an informal learning context, still working with students but in a very different set than the formal school.

The same experience – having teachers in the training group of professionals – is shared by Sweden. Each person working with teachers at Navet is also a teacher, and that's deemed to be a necessary asset to have connection and understanding.

Very differently, in Italy most science centers do not have teachers amongst their explainers and very few teachers work in museums, even in the training programmes. As with regard to publishers, teachers are involved in the process of producing a book in different ways, mainly as authors of books for high school. However, even in this case, teachers are part of a large group of professionals who take care of the different publishing aspects and yet, their contribution is essential since they are able to see immediately whether the content and the suggested methods are adequate to the class.

In terms of **fostering links with STEM projects** and of improving cross-connection between teacher networks and science communication ones, how do our ODE participants proceed?

The Swedish group tend to be very active in the participation to international conferences (such as the annual ECSITE conference) and meeting associated with specific EU projects. They also keep a very strong connection with the Swedish board and with local universities.

Also the Spanish company takes active part in Ecsite and in other EU projects and network, but the main venues to mix with Spanish teachers and disseminate STEM results would be specific projects on *Science in the schools* and the *Researchers' night*.

In UK, the NHM takes part in many informal networks, in the researchers' ones as well as in the educators one (such as the network of science educators). Very often the museum is used as a set for reading groups, meetings, discussions on new outcomes in the research. There is a strong expertise in house. They are also part of international collaboration, like the SciComPed EU project, along with Germany and Hungary, where a Handbook for teachers was produced and translated in local languages.

The Italian publisher Mondadori has no part in any EU project and its target is specifically national. Most of the cross connection are the outcome of personal contacts. In Mondadori specific case, being part of the Italian science communicators community is an asset to receive relevant information. However the main venues for dissemination and actually meeting other STEM professionals are national fairs, such as the Genova Festival.

All participants to the ODE agree that there is **need for a simple and yet powerful tool to disseminate knowledge** about the STEM research projects developed within the EU. A **database** would probably be a good idea provided that it's simple, accessible, not hidden within another website and difficult to access.

For many (especially countries with a small population, like Sweden) it's a necessity to look abroad for results and experiences in different STEM projects since within a single country the experience is naturally more limited. For countries where English is widely spoken, again like Sweden, it would be an added value if **teachers themselves could actually access** the database and see what's produced within the EU STEM research projects.

In the southern countries, like Italy and Spain, there is some concern as with regard to the **language barrier** experienced by most teachers who do not speak English. They might need a filter. But at the same time, the participants underline that in most countries English has been introduced not only as a compulsory second language in school but also as the language used to teach **some specific subjects according to CLIL** development. In Italy, where this reform is still ongoing, science subjects might be the ones which will be taught in English. Thus, having materials already there would be a plus. Also, the participants suggest that a properly built database does not need to have all materials in one language, as well as it does not need to translate everything. People can search using tags so the database could easily include materials in **different languages**.

For the ODE participants it would be important that a STEM research projects database would be **open to both rating and comments**. Rating from the users might help but comments will definitely make the difference. Most participants underline that the peer comments are the ones that have the highest weight when searching and choosing something online, be it a book or any other product. User generated comments are also the ones that add personal point of views and might be more valuable to the person searching for materials than the description done by the researchers/producers who have actually developed and posted that specific material.

Finally, the ODE concludes suggesting that on one side the strong local connection between different players (publishers, museums, science communicators, universities and teachers associations and networks) is the best way to get and to disseminate knowledge both on STEM research and practical experiences. But having a simple, open, accessible tool which enlists all STEM EU projects might be a great help to know what's there, to get the info on how to find results, experiences and products to be used in one's specific context. Should such a tool be developed, it would be needed to be built as a proper database, automatically updated and enriched with user comments.

4. Conclusion

This teleconference format was very successful. The experience was much more enjoyable and easier to engage with. Thus, the quality of the discussions was enhanced, and participants found out they really met each other, building a beginning of a stakeholder community.