



SCIENTIX

The community for science
education in Europe

remark:

How Scientix adds value to STEM education

$$\omega = \sqrt{\frac{k}{m}} = \frac{2 \cdot \pi}{T}$$

$$T = 2 \cdot \pi \cdot \sqrt{\frac{m}{k}}$$

frequency) is independent of the amplitude (A)

the time (and therefore





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European Schoolnet's activities are divided among three areas of work:

- Policy, research and innovation: information sharing and evidence building.
- Schools services: enhancing cooperation between schools across Europe.
- Advocacy: how ICT and digital media contribute to transforming teaching and learning processes.

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WHY SCIENTIX WORKS

We need motivated, properly trained, well-equipped science teachers to prepare and inspire the next generation of researchers in Europe. But to make students more motivated towards science subjects in schools and to pursue related careers later in life, educators must have access to high quality training opportunities, follow-up and teaching resources throughout their careers.

By 2020, the European Union wants to invest three per cent of its Gross Domestic Product (GDP) in research and development. An estimated one million scientists and researchers are needed in order to make Europeans world-class performers in the field. High-quality trans- and multi-disciplinary education in science, technology, engineering and mathematics (STEM) subjects drives this innovative economy forward and builds a sustainable knowledge-driven society, with talented, responsible, entrepreneurial, creative young people.

This is where Scientix shows its strengths. Since its inception in 2010, this initiative, supported by the *Science with and for*

Society programme, has established a comprehensive platform which facilitates an in-depth exchange on challenges in STEM education. It has successfully created a network and learning communities with a popular peer-learning environment dedicated to STEM subjects. Thus, Scientix offers a simple and efficient solution that facilitates and improves the work of schools and teachers, gives researchers a chance to present their activities, and supplies policymakers with useful tools to interact directly with the STEM community.

Thousands of educators benefit from Scientix's online community and face-to-face events. Scientix has organised 29 national conferences and two international ones, with more than five thousand participants in total. In addition, it holds regular workshops and networking events that have attracted more than five hundred people. Educators' enthusiasm for the project is steadily increasing, as its online portal, webinars, discussion forums and Moodle courses clearly show. Five thousand STEM educators are now registered on the portal and hundreds have joined webinars since the beginning.

Now that the second phase of the Scientix project is coming to an end, it is time to reflect on the future of this collaboration in STEM education.

The European Commission published in June 2015 a report from the Expert Group on Science Education¹. This declares that inquiry-based and accessible science education has to be a key component of people's learning continuum, covering all stages from pre-school to an active engaged citizenship. Efforts need to be made to improve the quality of teaching, from induction through pre-service preparation to in-service professional development of teachers. In this sense, collaboration among educators, enterprises and civil societies is necessary and vital.

Scientix, as an open science community, increases public awareness and curiosity in STEM subjects that impact our lives every day. It supports methods in Responsible Research and Innovation (RRI), which improve public understanding of scientific findings through extensive cooperation with societal actors in STEM education. Teachers and educators are at the core of this open science community, which is not only European but truly international.

According to the benchmark set by the European Union, the percentage of fifteen-year-olds with insufficient abilities in mathematics and science should be reduced to 15% by 2020². Teachers

must be given all the support they need in order to reach this common goal for Europe and improve pupils' performances in mathematics and science. Positive experiences and testimonials, included in this publication, show that Scientix is a great community for lifelong learning because it shares new approaches to active pedagogy and inspiring best practices in STEM education and research. Hence it is essential that schools, teacher education institutions, universities and ministries (inspectors, advisors) support and stimulate their teachers' innovation and experimentation in the classroom.

Curricula, pedagogy and assessment methods in STEM education are changing and reforms are taking place to support these. It is essential to offer more long-term support to communities of teachers, in particular through formal and informal peer-based learning opportunities built on partnerships involving also companies and civil society. A positive transformation is best achieved when networking, visibility and recognition are triggered and encouraged. Evidence shows us that Scientix is a learning community that empowers teachers and their schools and supports the wide implementation of successful multiplier pilot initiatives in STEM education across Europe.

Marc Durando

Executive Director of
European Schoolnet

1 See the report *Science Education for Responsible Citizenship* (June, 2015) from the Expert Group on Science Education to the European Commission at http://ec.europa.eu/research/swafs/pdf/pub_science_education/KI-NA-26-893-EN-N.pdf

2 See *Strategic Framework for European Cooperation in Education and Training (ET2020)*, Council Conclusions May 2008, OJL 119, 28.5.2009, at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009XG0528%2801%29&from=EN>





THANK YOU

The main aspiration of Scientix has always been to create a European STEM community. For this reason, we have endlessly encouraged and supported networking at different levels (between different countries, projects and STEM education practitioners, among others).

During the first four years I had my share of doubts about whether we were making it happen. After two large Scientix Conferences, more than 20 National conferences and numerous workshops and other networking meetings, I can proudly claim this is no longer the case.

I have had the honour and pleasure of hosting workshops where project representatives have shared their experiences, struggles and achievements; meetings where teachers have contributed with their knowledge and expertise in their profession and, in every single one of those events, participants have been the ones to come and thank us for making it happen. Well, this is my chance to give back and be the one to thank you.

I am proud. Proud of what the Scientix Community has achieved and proud of what you, who are reading this now, have helped accomplish. Thanks to you, Scientix is now able to provide a platform to get the knowledge flowing: to ensure that no project works alone, that no STEM centre or organisation has to start from scratch, that no teacher faces unaided the hard but most needed task of getting kids to know, like and dream about science.

As the Scientix second edition approaches its end, I wanted to express my greatest appreciation to all of you for being a part of this journey and for, with your warmth and commitment, making our work truly worth it. With my deepest gratitude: thank you!

Dr. Àgueda Gras-Velázquez
Project Manager of Scientix
Science Programme Manager at
European Schoolnet

INTRODUCTION

Since 2010, Scientix has been helping European STEM educators inspire young people to take a keener interest in their science, technology, engineering and maths classes. These teachers have encouraged young minds not only to gain a deeper understanding of these subjects, but also to consider careers within them.

The initiative promotes and supports a Europe-wide collaboration among STEM teachers, as well as education researchers, policymakers and other STEM education professionals.

In its first stage from 2009-2012, the project built an online portal to collect and present European STEM education projects and their results, and organised a series of well-attended teacher workshops. The first Scientix conference took place in May 2011 and proved to be immensely popular – not least as a golden opportunity for STEM professionals to network.

The second phase's key objective, from 2013 to 2015, has been to expand the benefits and achievements of Scientix at a national level. A wide, inclusive network of National Contact Points (NCPs) has reached out to teacher communities and contributed to the development of national strategies for wider uptake of inquiry-based and other innovative, effective and engaging approaches to science and maths education.

Scientix has grown substantially in these last six years and this publication details the results of that growth. It is something of a final report into the successes of the initiative – and also contains suggestions on how to take those successes forward into the future of STEM education in Europe.

This publication deals with all aspects of Scientix, from the resources it provides, to the events the project has made possible and the knowledge and practices it has helped disseminate. In short, it illustrates exactly how Scientix has, is – and is going to – add value to STEM education.

Where possible, we have tried to bring facts and stats alive with testimonials from the education professionals and others who have helped Scientix become such a vibrant and inclusive community for anyone interested in improving the understanding of STEM in our society.



DISSEMINATING STEM EDUCATION

Scientix has set up a whole array of channels to distribute ideas, materials and other resources to help teachers make the most of their STEM classes. This section takes a look at the different media – and what has made them such an outstanding success in dissemination.

Popular portal – how the Scientix website grew and grew

Like the community it serves, the Scientix portal is an organic, growing entity. This website now serves the STEM community

with a huge repository of resources. Its chat-rooms, blogs, Moodle courses and other interactive elements are also the bedrock of a thriving community of educators.

Since its inception in 2010, it has developed in complexity and scale – and in popularity. As an example, from 1 January to 30 June 2015 the number of users grew by 25% compared to the same period the previous year and the number of active sessions on www.scientix.eu increased by 36%.

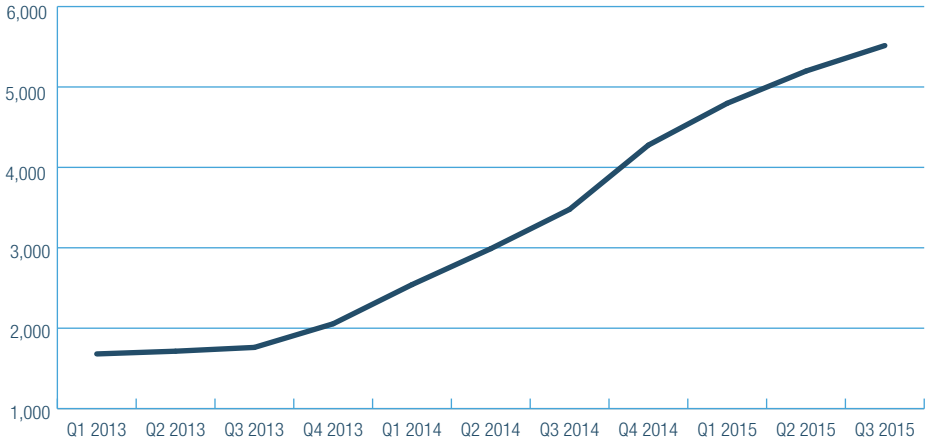
Scientix media channels at a glance



Plus:

Videos, face-to-face meetings

Registrations on the Scientix website



The growth in activity is thanks to an ever-expanding selection of:

- news (over 600 items)
- events (over 700 items)
- projects (around 400 items)
- resources (over 4,700 items)

As the community expands, it brings more ideas, resources and interest to the Scientix family.

A blog for the community, by the community

Another popular channel for spreading ideas around the community is the Scientix blog. Its posts are authored by a wide cross-section of the community itself – including dedicated STEM teachers and others involved in the initiative.

Up to 10 new posts appear every month, with a grand total of 83 published as of September 2015. The subjects tackled are as diverse as the readership, including coverage of recent Scientix events as well as opinions and commentaries on current issues in STEM education and educators' own experience on what works – and doesn't – in the classroom and beyond.

Keeping in touch with Scientix Newsletters and Digests

Not everyone has the time to regularly engage online, or go searching for the latest news and insights into STEM education. Thanks to the Scientix's Digest and Newsletters, there have been two popular ways to stay in touch with what's happening – at everyone's convenience.

Blogging Scientix – a selection from inspiring posts

Astronomy and space science in the STEM classroom

“Astronomy, unlike other sciences, can become a hobby... it can be studied nearly anywhere in the world without any technical equipment.”

Virtual laboratories in teaching and learning science

“With virtual labs, students acquire a tool with which to experiment without limitations of space or time.”

Gender in STEM education

“The under-representation of women in science also makes me think about what we could do as teachers to support girls better. Maybe we should start with reconsidering our own perceptions and stereotypes.”

Which do you prefer to practise: STEM or STEAM?

“Why should art be a part of STEM? But when I think about it, I have practised STEAM for years.”

New possibilities of Erasmus+ programme in teachers' vocational education

“The objective of the project is to increase the quality and attractiveness of technical education in the regions where partner schools belong, to share experiences in technology as well as examples of a good professional experience and training in the fields of mechanical and electrical engineering.”

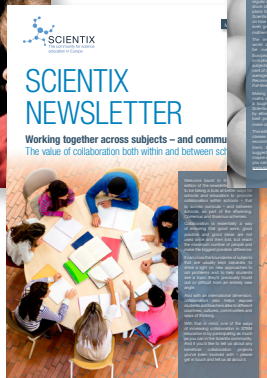
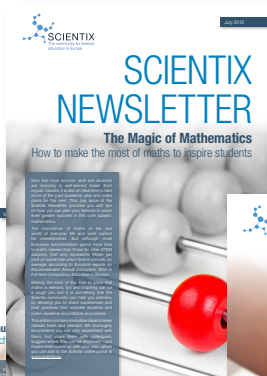
Every two weeks, over a thousand subscribers – 1,400 as of October 2015 – receive the Scientix Digest by email and have the opportunity to read about recent news, resources and events published on the Scientix online portal in any one of eight languages of their choice.

The numbers of subscribers is growing impressively – by 30.8% in just six months from December 2014. 44.4% of the people receiving Digests actually open them. That's much higher than the average for education email newsletters, which is a mere 22.5%. At almost double the average, the Digest must be doing a good job at providing information that educators want and need.

The Scientix Newsletter is even more popular, available both in printed form and electronic versions. It had 2,300 electronic subscribers by October 2015 and an open rate of 39.1%. Each issue has taken up a different topic within STEM education, such as:

- Collaboration across Subjects and Communities
- Space in Science Education
- RRI: Responsible Research and Innovation
- National Initiatives in Stem Policy and Practice
- Teaching Nanotechnology





2,000 copies of each issue are printed and distributed at Scientix events and other relevant meetings, or through National Contact Points (NCPs). If you have missed out on a Newsletter, you can catch up by visiting the archive at: <http://www.scientix.eu/web/guest/newsletter/archive>.



Scientix video interviews bring issues alive

Scientix events provide the opportunity to interview important and interesting people involved in STEM education, not least members of the Scientix community itself. These are edited and made public on YouTube, and some have been embedded on the portal.

The first interview published was with Ewald Breunese, a Manager of Energy Transitions at Shell Netherlands, who discussed the role that industry has to play in the promotion of STEM across Europe, and explained how industry can support STEM teachers. The second one featured Amber Gell, a Spacecraft Systems Engineer at Lockheed Martin and NASA. A key speaker at the 2nd Scientix conference, she is a wonderful role model for women and girls in STEM.

Four more episodes in the Scientix interview series are uploaded and available on <http://www.scientix.eu/web/guest/interview-series>



Reaching out with Scientix social media campaigns

Many in the Scientix community have embraced social media as lively, up-to-the-second communications and dissemination channels – and Scientix has played a key role in nurturing the use of these media amongst STEM educators.

Using the @scientix_eu handle, Scientix has been active on Twitter since January 2010, and has gained 3,900 followers and produced more than 3,600 tweets.

Any STEM education enthusiast can join Scientix's brilliant Facebook group, which doubled its membership from 2,000 to 4,000 from January to October 2015. All members are encouraged and invited to share tips and stories about science and classroom ideas.

The group has benefited substantially by focusing solely on information relevant to STEM education. Its members not only get regular updates on science education and relevant teaching methods, but also the chance to network with their peers in Europe and elsewhere.

Since the group was launched in 2014, by 15 October 2015, it had seen 4,900 posts from 447 different authors which received 31,000 "Likes" from other users. From January to June 2015, members posted 12 new items per day on average.

Both have proved a great way of informing the Scientix community of upcoming events and initiatives. They are also an effective way to mobilise educators and others to get involved in those events and become part of the community – if they're not already.

Scientix social media at a glance

Key stats, as of October 2015



Scientix news
shared with **10,000**
friends of
European Schoolnet

Science Teachers in Europe group:
4,900 posts,
4,000 members



@scientix_eu

3,900 followers
3,600 tweets



Judicious use of hashtags, such as #ScientixConf, helps get attendees involved in disseminating information to a wider audience. In fact, the 2nd Scientix conference generated six million impressions across all social media.

The personal touch: sharing ideas face-to-face

Many media are extremely effective at disseminating ideas – but none beat the immediacy and power of face-to-face encounters.

As you can see elsewhere in this publication, Scientix and its community have been instrumental in organising and promoting a wide range of live events – from small, local workshops to large national and international conferences.

These have all been invaluable in ensuring ideas are exchanged and spread into the wider STEM community and classrooms. See the chapter: Networking Events, for more details.

"I really (need to) mention face-to-face events since these events gave me the chance to relax and to think in a different perspective by taking into consideration my Scientix friends' ideas."

- Mehmet Basaran, Turkey



Eighty STEM professionals came to the eighth Science Projects Workshop at the Future Classroom Lab

PROJECTS AND RESOURCES

Making STEM attractive to students by bringing classes alive has been one of Scientix's key achievements, and something we're very proud of.

Educators enthusiastic to bring something new and compelling to their classes now have a ready-made destination. The Scientix portal's repository of STEM resources and index of projects are increasingly popular, and growing in their size and scope.

As of October 2015, around 4,700 resources are accessible through the Scientix portal. Those include 960 teaching materials, 620 STEM reports, 65 training courses and over 3,000 learning resource

exchanges (LREs), which consist of external educational content from many countries and providers. Currently popular downloads from the Scientix resource repository cover subjects as diverse as DNA extraction, modelling the solar system to scale with household items, and practical nanotechnology.

Of the some 400 projects currently available, 50 were uploaded in the first half of 2015. Those generating the most interest at the time of writing include areas such as Responsible Research and Innovation, accessing online laboratories and how people working in science and art can work together to promote creativity and innovation.



Projects and resources supply practical help to STEM educators

Award-winning ideas with Scientix

The Scientix initiative consistently tries to provide the very best in resources to its community. In order to do that, we've also endeavoured to get the best out of our collaborators.

The Scientix awards for Teaching Resources in STEM Education was conceived to help achieve that aim of constant improvement and innovation – and reward the efforts of more than 200 educational sources regularly put into our community.

The awards take place every two months, with seven rounds planned in total. In each round, there are up to four winners, whether for best resource, best material for students or best report in STEM.

They have been outstandingly successful in encouraging STEM education projects to share their resources in the Scientix repository, and in supporting dissemination and uptake of innovative teaching and learning materials among teachers.

Winning resources have been translated into all 24 official EU languages and promoted across the Scientix community. Representatives of the winning projects have the added incentive of being invited to Scientix Science Projects Workshop in the Future Classroom Lab events to present their activities and resources.

Each round of the competition has attracted up to 140 entrants, covering a wide variety of subject areas. Below is a list of all the winners except the seventh one, which is announced in November 2015.

Round one

- Super Sucker:
Designing A Contraption That Sucks Up Litter
Project: [ENGINEER](#)
- Star in a box: High school
Project: [AstroEDU](#)
- Learning station II: What is light?
Project: [Quantum Spinoff](#)
- Primas guide for supporting actions for teachers in promoting IBL
Project: [Primas](#)



Round two

- Establish IBSE Teaching And Learning Units: Integrated Science
Project: [ESTABLISH](#)
- Inquire Lesson Plan: Plants And Climate
Project: [INQUIRE](#)
- Report On How IBSE is Implemented and Assessed Across Participating Countries
Project: [ESTABLISH](#)





Round three

- How Can We Measure the Volume of an Inflated Balloon? From Medical Problem to Engineering Solution
Project: [ENGINEER](#)
- STEM Challenge: Beat the Flood
Project: [Make the link](#)
- Report on Mapping the Development of Key Skills and Competencies onto Skills Developed in IBSE
Project: [SAILS](#)



Round four

- Universe in a Box
Project: [EUNAWWE](#)
- Plate Restoration
Project: [Mascil](#)
- Report on the Current State of the Art in Formative and Summative Assessment in IBE in STEM- Part II: Digital Assessments
Project: [ASSIST-ME](#)



Round five

- Climatic Refugees the Cypriots: A Fictional Scenario or a Forthcoming Reality?
Project: [PROFILES](#)
- Simulating the Effect of the Solar Wind
Project: [Science in Schools](#)
- Inquiry Learning Space (ILS): Series and Parallel Circuits
Project: [Go-Lab](#)
- Go-Lab: D3.1 Preliminary Go-Lab Requirements Specifications, Needs Analysis and Creative Options
Project: [Go-Lab](#)



Round six

- Feast Workshop 1: Floating and Sinking
Project: [FEAST](#)
- Rosetta – Primary Resource Book
Project: [ESERO-UK](#)
- D3.1 Prototype Toolkit
Project: [FaSMEd](#)
- Moving Schools Closer to the World of Science
Project: [Eduscience](#)



Translation services – supporting STEM education in any language

Helping to ensure that any European educator and their pupils can benefit from Scientix – regardless of their location or native language – has been another big achievement of the initiative. A key tool to enable this has been our translation service.

It's free, simple to use and allows you to have resources translated into a language of your choice, so long as the material is eligible and not off-limits for copyright reasons. Since its launch in May 2010, many teachers have taken advantage of this service, with 530 requests for translations fulfilled in the period from January to July 2015 alone.

Following a suggestion by numerous teachers and the agreement of the European Commission, the translation-on-demand service has been expanded to accept translation requests into any official language from European countries, territories and regions, as well as FP7 associate countries.

Although there have been top-down initiatives to translate and localise resources before, the bottom-up approach of Scientix, where a resource can be translated upon request from the user community, is – at least in Europe – unique.



NETWORKING EVENTS

Bringing members of the Scientix family together to meet in person is a great complement to all the online and social media activity. There are opportunities for education, dissemination networking and reinforcing why progressive STEM education is so important to the young people of Europe.

Scientix has hosted, organised and supported dozens of local, national and international events. These range from workshops with around 20 participants to conferences with close to 800 attendees.

Scientix conferences bring together the European STEM community

Scientix has had two international conferences, attracting enthusiastic STEM professionals from Europe and around the world. Both were landmark events for anyone seriously interested in improving STEM education – including teachers, academics, project leaders, researchers and policy makers.



The 1st Scientix Conference took place from 6-8 May 2011 in Brussels, Belgium and attracted almost 400 participants from over 40 countries. Its scope was wide, dealing with everything from the role of science education in tackling current societal problems to the EU's Europe 2020 strategy, cross-border collaboration, school curricula, assessment models, learning resource repositories and teacher training.

At that time, Scientix had taken its first steps in the effort towards a European science education community. The lively discussions and committed attitude of all the participants assured us that we had set out in the right direction.

The 2nd Scientix Conference built on that success, and took place from 24-26 October 2014, also in Brussels. The programme featured 70 talks, 14 workshops, seven roundtables and 25 exhibition stands – a significant increase on the first conference.





But the most important growth was in the entire Scientix community that had occurred in the three and a half years since the first event. This helped ensure that not only was the second conference larger – with roughly 600 teachers, project managers, policy-makers and science education researchers attending, with 800 more on a waiting list – but it was one of the major networking events in STEM education in Europe. The conference also saw the launch of the Scientix publication, the first Scientix video and the Scientix Resource awards.

The Scientix projects' networking events

The goal of the Scientix Projects' Networking Events (SPNEs) is to allow project coordinators, managers and other representatives from European and national science education projects to share and exchange their experiences, present their work and to facilitate the creation of new collaborations and partnerships. And that's exactly what they have helped achieve for dozens of individuals and organizations.

By September 2015, 147 STEM professionals had benefited from the SPNEs, and, on average, 21 participants from 14 projects came to each one. SPNEs have been held in London, Brussels and Barcelona. They have covered a wide range of subjects, including Involving Other Third Parties, Organisations and Advisers in European Projects, Responsible Research and Innovation and STE(A)M, and Communication and Dissemination Activities.

National Conferences

Getting together at country level at Scientix National Conferences has been a highly motivational experience for hundreds of teachers across Europe.

They have also benefited from learning about innovative STEM teaching methods and being introduced to national and European collaboration in science education policy and practice in their own country.

Organised by the Scientix National Contact Points, these events usually take place over two days and attract anything from 100 to 800 teachers and other professionals in STEM education. A total of 29 national conferences have been organised as part of the Scientix project.

Scientix National Conferences have proved themselves to be a great opportunity to spread contemporary ideas on STEM education throughout a nation and for educators to network at a national level.

"I think the 2nd Scientix Conference was a unique experience for me. I had the feeling that Science Education in Europe has the greatest representation that I could imagine. The conference had two great impacts for me, as an educator and as a Scientix Ambassador."

- Chrystalla Lymbouridou, Cyprus

NATIONAL CONTACT POINTS

In 2014 Scientix established a network of National Contact Points (NCPs) covering 30 European countries. Since that time these varied organisations, including Ministries of Education, science centres, universities and training centres, have provided a much-needed link between the national and European levels of STEM education.

They have been highly effective in reaching out to national communities of STEM education professionals and getting involved in organising national workshops, webinars and networking events. This map shows where the Scientix National Contact Points are located. See the full list, including contact details, at <http://www.scientix.eu/web/guest/in-your-country>.



Austria

Ministry of Education and Women's Affairs, Department it/3

Switzerland

Swiss Media Institute for Education and Culture

France

La Main à la Pâte Foundation

Portugal

Directorate General for Education, Ministry of Education and Science

Spain

The Spanish Foundation for Science and Technology

Denmark

National Centre for Science Education

United Kingdom

National STEM Centre

Ireland

Professional Development Service for Teachers

"National Contact Points are key actors in establishing a community for science education in Europe. Through their active involvement in Scientix activities, they are instrumental in developing innovative policies and practices for science education, on the basis of participatory processes."

- Ana Arana Antelo, Head of the Science with and for Society Unit, European Commission



Sweden

Teknikföretagen
– The Association
of Swedish
Engineering
Industries

Finland

University of Helsinki,
LUMA Centre

Norway

Norwegian
Centre for
ICT in
Education

Estonia

Estonian Research
Council

Latvia

Center for Science and Mathematics
Education of the University of Latvia

Lithuania

Education Development
Centre

Netherlands

National Science and
Technology Platform
(Platform Beta
Techniek)

Poland

Institute of Geophysics,
Polish Academy of Sciences

Belgium

Flanders
Technology
International vzw

Czech Republic

Centre for International Cooperation in Education

Slovakia

University of Zilina

Hungary

Educatio Public Services Nonprofit LLC

Slovenia

National Education Institute

Romania

University of Bucharest

Croatia

Croatian
Academic
and Research
Network

Bulgaria

Institute of Mathematics and Informatics
at the Bulgarian Academy of Sciences

Italy

National Institute for Documentation,
Innovation and
Educational
Research (INDIRE)

Greece

Computer
Technology Institute
and Press "Diophantus"

Turkey

Directorate General for
Innovation and Educational
Technology, Ministry of
National Education

Malta

Directorate for
Quality and
Standards in
Education, Ministry
of Education and
Employment

Cyprus

Learning in Science Group,
University of Cyprus

Israel

Makash

TRAINING

Communities of practice provide specialist teaching in STEM

The Scientix Communities of Practice (CoP) are where dedicated educators come together to teach and learn about a particular subject, online. These have proved to be very popular and regularly attract 50-100 comments from enthusiastic participants, all keen to increase their knowledge in STEM education.

Led by one or more experts in the field, these moderated forums have attracted hundreds of participants who, over a two-week period, have the opportunity to go in-depth on a topic that interests them, discuss it with their peers and receive a series of useful resources as topic guidelines.

Scientix Communities of Practice

Topics that have proved to be popular include:

- Citizen science
- Use of science fiction in science classes
- Responsible Research and Innovation
- Gender in STEM education

Moodle courses

Yet another educational tool in the Scientix armoury is its Moodle courses (Moodle is an acronym for Modular Object-Oriented Dynamic Learning Environment).

23 Moodle courses have been developed for the Scientix community by its Ambassadors and Deputy Ambassadors. They explore various tools and techniques to use in the science classroom.

The Moodle courses are translated and uploaded in all the 24 official languages of the European Union. Among course topics are subjects such as augmented reality, GPS in STEM teaching, electrical engineering and 3D printing.

Scientix Moodle categories

Here are some examples of subject categories in the Scientix Moodle that might interest you:

- STEM tools for teachers
- ICT tools for teachers
- Classroom management lessons
- Office tools for teachers
- Web2 tools for teachers
- Moodle training

“For two weeks we are going to work on citizen science, as a way to enhance the relationship between individuals and the scientific community and examine by which means this relation can be reinforced and which are the challenges that we, as society and individuals, must face.”

- Citizen Science Community of Practice

Webinars

Scientix webinars are popular online training courses that invite experts in particular subjects in STEM education to share their knowledge and demonstrate through live connection various solutions for STEM classes. Anyone can register and attend these webinars for free. They also give attendees the chance to put questions directly to the presenter or the community.

More than five hundred participants registered for fourteen Scientix webinars since they were launched in January to September 2015, with five to six more to be held for the remainder of the year.

The one-hour-long webinar sessions are an ideal opportunity for Scientix community members to explore exciting STEM-related topics, such as 1:1 computing, language learning in the science classroom, STEM in lower grades and online science simulations in Inquiry Based Science Education (IBSE).

Webinars that work for STEM

Here are some webinars that have inspired the Scientix community:

- What Augmented Reality Can Do for Science Education
- Inquiry Based Stem Teaching with Online Labs
- Using Digital Tools to Help Develop Language Skills in the Stem Classroom
- Multiple Intelligence in Teaching Stem at Young Ages



Participants in the Scientix webinars receive a certificate of attendance. Opinion polls show that more than 98% thought the webinars were of good value to them.

Science Projects Workshops in the Future Classroom Lab (SPWatFCL)

These regular two-day events bring teachers together to learn about using new technologies in the classroom to encourage STEM learning.

By the first half of 2015, seven different events had been attended by hundreds of educators from dozens of countries across Europe, organised by or in collaboration with Scientix. Some meetings were aimed at specific groups of STEM professionals, such as the sixth and ninth Science Projects Workshops at the Future Classroom Lab, in which head teachers and heads of schools were invited to learn more about the Scientix community and projects in STEM education.

At each event, participants hear about and discuss various projects in science education and resources available for classroom use, and they have been able to make new connections with international peers. Scientix Resource prize winners also attend the events to explain and disseminate their materials.

Hands-on training Scientix Workshops at non-Scientix events

A great success in enthusing teachers about Scientix and innovation in STEM education, workshops have taken place in various European cities, with more planned in the second half of 2015. Their function is either to present Scientix services to teachers and project managers, or other relevant science education actors, or to serve as facilitators for the presentation of other science education projects.

"My experience in disseminating Scientix during the annual eTwinning meeting was great, because of the big audience (more than 120 teachers) and the sufficient time to explain the ins and outs of the project."

- Mohammed Oubella, France



COMMUNITY BUILDING

Building an online STEM community

One of Scientix's main aims is to help build an organic, growing community of STEM educators. And one of the most powerful and effective tools to create such a network is the user interface and registration for the Scientix portal.

By the beginning of January 2015, there were 3,990 users registered on the Scientix portal. By October 2015, the figure was 5,000. This represents a growth of 25% in just 10 months – and illustrates the popularity and interest Scientix has generated.

Once you register, you become part of the Scientix **public profile directory** – a database that allows other portal users to search for particular people or organisations. And there are a number of tools that educators, project leaders and others use to get in touch with individuals,

organisations and initiatives that have shared goals and interests.

The Scientix **match-making tool** was launched in November 2014 and allows project managers to identify and contact teachers and members of the Scientix community for specific purposes, such as to invite them to collaborate on projects in STEM education. Users regularly search for partners based on their country of origin, language or role in the project.

"Looking back at Scientix it is not only the resources, projects, etc. that are available through its portal. Above all it is about the community of teachers. Sharing knowledge and teaching (and learning) experiences were the most significant aspect of participating in this great community all over Europe. Hope it will keep going!"

- Stavros Nikou, Greece



Meet the Scientix family – online

Need a place to meet online? Here's where you do it. Any project included in the Scientix repository can request to schedule an online meeting, webinar, online workshop or other event for up to 200 participants at once. And in the first half of 2015 alone, 51 different groups took advantage of this handy resource.

The Scientix Ambassadors

37 European countries have from one to four Ambassadors and Deputy Ambassadors. These dedicated STEM teachers present Scientix activities in

schools and national teachers associations, at conferences and workshops.

They advise teachers on how to get involved in European collaboration in STEM. In addition, they assist in developing and testing the various tools and services of Scientix and ensuring the pedagogical quality of the Scientix repository.

They are actively involved in promoting Scientix to their peers – STEM teachers across Europe – and keep them informed about activities.

“The most profitable aspect of Scientix for me has been to meet such a group of smart, motivated and friendly ambassadors, most of them teachers like me. Working together and sharing knowledge in a supportive atmosphere to meet the goals of Scientix was a successful experience.”

- Toni Soto, Scientix Ambassador, Spain



SCIENTIX STEM RESEARCH

Encouraging interest and involvement with research into aspects of STEM education is an important investment in its future – and has been a growing element in the Scientix project.

The Scientix Observatory

The online observatory provides short, informative articles, focused on one or several related themes or initiatives. There are also insightful reviews on the state of play of different topics related to science education. This expanding resource includes a broad cross-section of research reports.

Its audience is continuing to grow, with several more articles in the pipeline at the time of writing.

Assessment of the situation of science education in each Member State and monitoring of national strategies

Getting a country-by-country insight into the efforts to encourage interest in STEM education is the goal of this report. It is an update of European Schoolnet's Insight Report: *Efforts to Increase Students' Interest in Pursuing Science, Technology, Engineering and Mathematics Studies and Careers*.



The Scientix community has had a key role in providing the data behind the report. NCPs have come forward to provide in-depth information about initiatives in their specific countries – from the point of view of the Ministry of Education, where possible.

The 2015 report updates the information for the 21 countries in the original investigation,

as well as adding facts about recent, ongoing or planned initiatives since 2012 for the nine countries which did not feature in the earlier document.

It gives a clear, authoritative picture of the ever-increasing efforts to encourage effective STEM education in Europe.



Scientix is a growing community with much to do

THE NEXT PHASE OF SCIENTIX

As of the time of writing in October 2015, Scientix continues to go from strength to strength. More and more teachers are registering for the portal and increasing numbers of STEM resources are being uploaded, downloaded and used in classrooms across Europe.

Educators are becoming part of this growing network after attending local and national conferences, and workshops organised by Scientix and its team of NCPs and Ambassadors.

What's more, the existence and continued evolution of Scientix complements Europe's "Open Science" agenda, promoting a culture of openness and cross-country collaboration at primary and secondary education levels.

It's no surprise then that the vast majority of those involved in the Scientix initiative would like it to continue into 2016 and beyond.

Suggestions for Scientix 3 and beyond

One of the great advantages of having an active community like Scientix's is that it is constantly suggesting improvements. Looking at various forums, and speaking to teachers and other Scientix supporters, there are a number of ways the initiative could go forward. The following are a selection of bright ideas on the future direction of Scientix.

"I still feel there must be more work done as I want more and more teachers in Slovakia to be involved in Scientix."

- **Gabriela Krížovská, Slovakia**

"Looking forward to Scientix 3, that could bring even more active communication and sharing between teachers!"

- **Irina Vasilescu, Romania**

"Project ideas, useful resources, information about European studies, blog posts, face-to-face events, etc. It goes on... They are really great. I think all of them should continue in a new Scientix 3"

- **Mehmet Basaran, Turkey**

"Many new and original ideas might appear for how we could work during Scientix 3."

- **Biruta Pjalkovska,
Riga International School of Economics
and Business Administration, Latvia**

"We hope that this 'science adventure' will continue."

- **Natalija Aceska,
Former Yugoslav Republic of Macedonia**

"I wish I could introduce all teachers in Bosnia and Herzegovina to Scientix and for that I need more time and I hope there will be a continuation of Scientix as 3, 4, 5 ..."

- **Ivan Derek, Bosnia and Herzegovina**

Resources

The more resources the better, is the general consensus. But what type of resources best serve teachers and their students? An in-depth analysis of what the teaching community needs was a popular suggestion. Others include:

- Resources more closely aimed at specific syllabus areas and age groups
- More interactive resources
- Less text and more video
- Further improvements to the Scientix Moodle and online forums

Teacher training and professional development

A concentrated effort focused on STEM teacher training would be a popular initiative among the Scientix community, it appears. Many correspondents see it as an opportunity for Scientix to make a big difference to the profession and they think both student teachers and experienced educators would benefit from training and professional development, courtesy of Scientix.

There are also comments that less experienced teachers assume Scientix is not for them – and that the initiative should specifically address student teachers and recently qualified educators, encouraging them to get involved with the Scientix community.



“Perhaps, if teachers were asked in a questionnaire what resources they would like to have at their disposal, and what depth of treatment, what age group, etc. they would like to have available. Then Scientix could look for specific resources to fill the gaps that are there already.”

- Michael O’Leary, Republic of Ireland

“We need to attract students from the universities who will be future science teachers to the ideas in projects of the Scientix platform. This will give fast access to the necessary information and ideas and make them better professionals.”

- Tsetsa Tsoleva Hristova, Bulgaria



SCIENTIX

The community for science
education in Europe

For more information about the best way to get involved – or increase your involvement – with Scientix, please get in touch:



www.scientix.eu



[newsletters: www.scientix.eu/web/guest/newsletter](http://www.scientix.eu/web/guest/newsletter)



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