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Scientix

The Community for science education in Europe

PROJECT INFORMATION

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EUROPEAN COMMISSION

Scientix

The Community for science education in Europe

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PREFACE

The Europe 2020 Flagship initiative “Innovation Union” acknowledges the need for the EU and the Member States to continue to invest in education and modernise their education systems at all levels with the aim of enhancing skills and preparing young people to meet the challenges of innovation. One million net additional researchers are needed in Europe by 2020 to meet the R&D intensity target of 3% of GDP.

While each EU Member State is responsible for the organisation and content of its education systems, there are advantages in working together on common issues such as those of science education. The challenges related to science education are common and urgent in all European countries: traditional schooling has been mainly about teaching and testing, producing knowledge and skills, for a model of industrial society which is now rapidly declining.

EU Member States share the urgency of addressing young people’s lack of interest for science and technology, the need to attract more of them to science and technology careers and to equip all young people with the skills and knowledge needed by future responsible innovators/researchers and “science-active” citizens.

Since the publication in 2007 of the report “Science education now: a renewed pedagogy for the future of Europe”, FP7 projects have focused on the large uptake in Europe of a specific science teaching methodology (Inquiry Based

Science Education), recognized to be appropriate to address the above challenges. This is however a long term investment.

Changing the fragmented and colossal European educational systems requires extensive long-term efforts and involvement of all stakeholders at all levels: teachers have to be trained and supported, policy-makers have to define and apply changes to curricula, methodologies and assessment practices, parents have to understand and support the need to change, universities, business, local actors, informal science educators and civil society have to play a role in making science education more meaningful and linked to societal challenges, and research has to guide the change.

This means that an effort is required from all stakeholders. Scientix can play a great role in supporting these efforts, as it builds the necessary community amongst these stakeholders in order to facilitate their dialogue and the sharing of best practices, policy guidelines and research results.

WHY A PORTAL ON SCIENCE EDUCATION?

Year after year, hundreds of science education projects are funded by the European Commission but apart from the persons directly involved in these projects (teachers, project managers, etc.) not many people hear about the results obtained, especially when the projects are over. The objective of the Scientix portal is to ensure that the knowledge and results of the projects reach a larger audience. In other words, Scientix was created to facilitate regular dissemination and sharing of know-how and best practices in science education across the European Union. The portal collects and disseminates teaching materials and research reports from European science education projects financed by the European Union under the *6th and 7th Framework Programmes for Research and Technological Development* (Directorate-General for Research and Innovation), the *Lifelong Learning Programme* (Directorate-General for Education and Culture) and various national initiatives.

Launched in May 2010, the portal is targeted especially at teachers and schools, but also at other science educators, curriculum developers, policy-makers, researchers and EU stakeholders. It is a free-to-access and free-to-use portal, so that anyone interested in science education in Europe can join the Scientix community.
Most of the content on the portal is accessible for all users, without registration. However, after registration, users are able to access some additional content, such as their personal pages, and use additional services, such as the fora and the chat tool, and request translations of the existing teaching materials. All users are encouraged to give feedback on the portal through the feedback tool, and thus to take part in developing the portal further.

The philosophy of the portal can be summarized in the following keywords: “search, find, engage”. This motto emphasizes the shift from a central portal where information is disseminated to end users (who act in this case as passive users) towards a more

dynamic and user-centred platform. Scientix thus should not be seen as a mere information transmission mechanism, but rather as a knowledge building platform.

Scientix is a project initiated by the Directorate-General for Research and Innovation of the European Commission, and it is funded under the *7th Framework Programme for Research and Technological Development.* Scientix is managed by European Schoolnet (EUN) on behalf of the European Commission. European Schoolnet is a key player at EU level in education, representing a network of 31 Ministries of Education in the EU Member States and beyond. EUN provides major European education portals for teaching, learning and collaboration and leads the way in bringing about change in schooling through the use of new technology.

THE PORTAL'S KEY SERVICES

How to find information on European science education projects

The **projects** section of the Scientix portal presents European science, maths and technology education projects which are financed either by the European Commission or by other public entities. It is possible to search for projects by topic, target group, programme start and end year, or by the participating countries. All the project information is available in the six Scientix languages: English, French, German, Italian, Polish and Spanish.

All the information about each project is divided into three pages. The first page of the project presentation provides a **general description** of the project's aims and goals, including information about the project's partners, target groups, topics, timeline, and so on *(see Screenshot 1)*. This information is particularly relevant for policy-makers, to help them make better decisions in the area of science education, or anyone who wants a quick view of what the project is about.

In the project's **research information** section, researchers and policy-makers will find a wealth of reports, case studies and projects linked to their area of work, while project managers can find links to deliverables and reports from European projects in the area of mathematics and science education.

On a third page *(see Screenshot 2)*, the project's **teacher information** provides background information about the educational methodology behind the project and links to the teaching materials and other learning resources developed in the

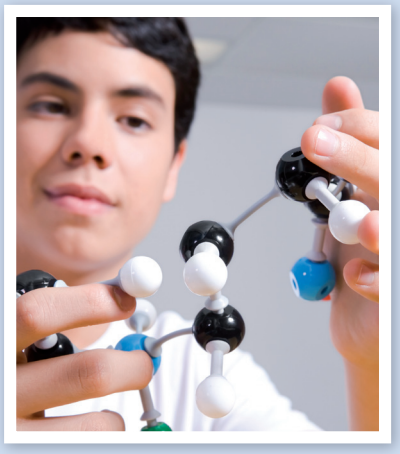
Screenshot 1: Project's basic information

Screenshot 2: Project's teacher information page

project if they have been made available for Scientix. In this section teachers will find resources to stimulate their science classes, and may request translation of the teaching materials into any of the 23 languages of the European Union.

Other advantages Scientix offers to teachers are that they can suggest new projects, pass on news and announce events through the feedback tool of the portal; they can be informed when workshops will take place and take part in them; and they are encouraged to join the users community and share their experience with colleagues across Europe by using the fora and chat facilities.

How to find high-quality resources in science education



In the Scientix **resource repository** users can find and download various science education materials, such as teaching materials, lesson plans, reports, studies, guidelines and training courses. All the resources are available for free, thanks to the European projects that have developed them. Regarding the display of the resource repository, the title and the description of the resources are translated into all Scientix languages, whereas the resource or report stays in its original language.

A unique service: on-demand translation of teaching materials

In the case of teaching materials, some of them are available for the translation on demand service. This means that if a Scientix user finds a teaching material that is not available in his/her preferred language, as soon as he/she is registered on the portal, he/she can request an additional translation of the teaching materials. The Scientix team will examine the request, and if approved, the additional translation will be added on the page of the resource. The criteria for requests to be approved are that:

- The user asking for translation must be registered on the Scientix website.
- The user asking for translation must be a teacher and/or the material will be used only for educational purposes.
- The same translation is requested by several different users.

How to stay informed about the latest news in science education in Europe

In the Scientix **news** section, you can find current national and international news on science education projects, events, competitions, etc. All news may be provided in any one of the 23 EU languages, but an English summary, a title and a teaser is added to the news in all the Scientix languages. Projects included in Scientix have priority in having their news published on Scientix, but other news is also accepted. News can be searched by the topic, target group, language or country related to the item, and an RSS feed is available.

A complementary option to stay up-to-date with the latest news is to subscribe to the Scientix **newsletter**, available in the six portal languages. The newsletter consists of a monthly update of the new content of Scientix and is also published on the portal, where users can also find an archive of the previous issues of the newsletter.

How to keep up-to-date with the best upcoming science education events

The Scientix **events calendar** brings together science education events from across Europe and beyond. Priority is given to events related to projects included in Scientix, but other events are also accepted.

It is possible to search for events by date, country, type of event, topic, target group, and the language of the event *(see Screenshot 3)*. Events can be imported directly into the users' own online-calendars.

How to share information about best practices in science teaching

The Scientix community is a platform for Scientix users to network, share experiences and ideas, and discuss the projects. The community provides two types of communication tools: the fora and the online chat *(see Screenshot 4)*. The **fora** have separate categories for different science subjects, projects and countries. New categories can be created upon request, e.g. for the Scientix projects.

The fora are open to everyone; however, it is necessary to register on the Scientix portal in order to participate in the discussions. Scientix wants to encourage users to engage in multilingual discussions and welcomes contributions in any language. Fora users can use online translation tools to help with understanding the contributions.

The Scientix **chat** tool is a quick and easy way to interact directly with other users. After registration in the portal, a small chat icon appears in the bottom right corner of the website. From there, users can see which other users are online, and start the discussion.

How to benefit from free online training

The Scientix **Moodle platform** offers the opportunity to follow various online training courses for teachers interested in improving their skills, to learn to use tools that can bring a new dimension to their science classes, deepening their knowledge on specific topics, or even to follow an introductory course on a totally new subject. The Scientix Moodle courses include learning how to create one's own Moodle course, how to make the best use of the Google form tool, and how to spice up maths classes.

Screenshot 3: Event calendar

Screenshot 4: Fora

Do you have any questions or suggestions? Tell us what you think…

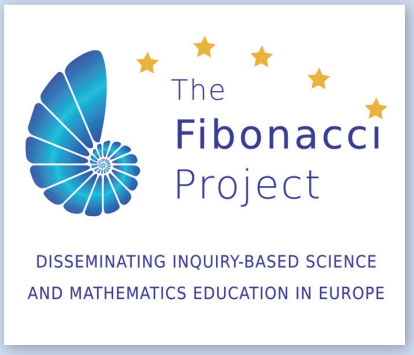
Through the online **feedback** tool, users can have their say about the portal, suggest new content, such as projects, news, events and resources, or inform the Scientix team about any problems they are having with the portal. Feedback is handled confidentially and replied to as soon as possible. Based on the suggestions and feedback, the Scientix portal is continuously developed and improved to meet users' needs and expectations.

EXAMPLES OF PROJECTS

As previously mentioned, Scientix collects and distributes information about past and present science education projects carried out in Europe. Priority is given to projects funded by the European Commission, but other publicly funded projects are accepted as well.

Projects accepted for Scientix must provide accurate information on the project goals, research and results, and preferably also links to the public reports and resources developed in the project. These are displayed on the Scientix portal, in both the Projects and Resources sections. Project authors are also invited to promote their events and news (e.g. new publications and calls for conference speakers) through the Scientix portal.

Examples of currently active projects which are included in the Scientix portal can be found below. As most of them had just started at the time of this publication, their final results or achievements are not available yet. However, these will be updated on the Scientix portal at a later stage.



FIBONACCI: Disseminating inquiry-based science and mathematics education in Europe

Fibonacci is a three-year project funded under the 7th Framework Programme which focuses on designing, testing and formalizing a process of dissemination of inquiry-based teaching and learning methods in science and mathematics, in ways that match national or local specifications across Europe. This is done by supporting teachers as key players in the process of improving mathematics and science education, and by encouraging cooperation among various partners in both formal and informal education. Fibonacci also aims to implement concepts of inquiry-based and problem-based learning in pre- and in-service teacher training, and to install a database with innovative teaching and learning materials, as well as a communication platform.

Fibonacci is coordinated by the École normale supérieure (France) with a shared scientific coordination with Bayreuth University (Germany). The Consortium includes 25 members from 21 countries with endorsement from major scientific institutions such as Academies of Sciences.

One of the project publications is already available through the Scientix portal. “Implementing Inquiry-Based Science Education: An Introductory Guide” gives an overview of the principles of the inquiry-based approach in science education, and specific pedagogical strategies with examples and practical suggestions. Fibonacci also announces its events through the Scientix events calendar.

S-TEAM: Sharing advanced science teacher education methods

The "S-TEAM: Science-Teacher Education Advanced Methods" project was created to change the way science is taught in schools across Europe and beyond. It focuses on teacher education and teachers' professional development activities, and aims to make it easier for teachers to use inquiry-based or "investigative" methods when teaching science. S-TEAM draws upon a wide range of existing knowledge about how to teach science effectively. This knowledge is shared between teachers, schools, national systems and researchers, and new materials and methods are developed collaboratively.

S-TEAM is funded under the 7th Framework Programme of the European Union and is coordinated by the Norwegian University of Science and Technology (NTNU). The teaching materials created in the project are uploaded to the Scientix portal as they become available.

ESTABLISH: "European Science and Technology in Action, Building Links with Industry, Schools, and Home"

The ESTABLISH project aims to encourage and promote the wider use of Inquiry-Based Science Education (IBSE) in secondary level schools. Members of the consortium work with local teachers and students to develop and implement IBSE units and evaluation tools that are culturally adapted for each country.

The rationale for ESTABLISH lies in creating authentic learning environments for science by bringing together and involving all relevant stakeholders, particularly the scientific industrial community, policy-makers, parents, science education researchers and teachers, to drive change in the classroom. As a result, ESTABLISH will create a team of science teachers across Europe who are skilled and confident in inquiry-based science teaching methodology, as well as suitable model(s) of science teacher education for IBSE, at both pre- and in-service levels.

ESTABLISH is also a 7th Framework Programme funded project, and it is coordinated by Dublin City University (DCU). As project (public) reports become available, they will be linked to the Scientix resources.

PRIMAS: Promoting Inquiry in Mathematics and Science education across Europe

The PRIMAS project seeks to support teachers in developing pedagogies to use inquiry-based teaching strategies in maths and the science subjects, and thus to give students first-hand experience of scientific inquiry and the exciting world of science. To achieve these goals, PRIMAS provides teaching materials, teacher training and other supporting actions for teachers. Additionally, the project provides support to a wider group of stakeholders and networks by organising information meetings and events also for parents, students and politicians.

PRIMAS is funded under the 7th Framework Programme. The project consortium includes representation from fourteen organisations distributed across twelve European countries, and is coordinated by Pädagogische Hochschule Freiburg in Germany.

PRIMAS is one of the projects which are using the Scientix online community and the Scientix fora for the project communication: in a specific section of the fora, the project partners and teachers can exchange ideas, raise questions and concerns, and get more information about the project.

SPICE: Creating a Science Pedagogy Innovation Centre for Europe

The primary objective of the SPICE project is to collect, analyse, validate and share innovative pedagogical practices, particularly those using inquiry-based learning, whilst enhancing pupils' interest in the sciences. SPICE supports this objective by identifying, analysing and validating good practice pedagogies and practices in maths, science and technology, and disseminating them across Europe. The good practice criteria created in SPICE allow new projects to have guidelines to ensure their innovation and quality.

SPICE is funded under the Lifelong Learning Programme of the European Union's Directorate-General for Education and Culture. The project coordinator is European Schoolnet.

After the project ends, the 24 good practices tested by the SPICE teachers from across Europe will be made available through the Scientix portal. SPICE has already used the Scientix events calendar to inform about its meetings and conferences, and the Scientix fora to encourage communication between the project partners and teachers.

PATHWAY: Teacher training on inquiry-based teaching methods on a large scale in Europe

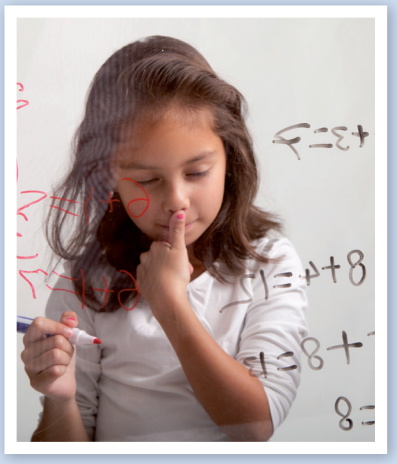
Following the recommendations of the "Science Education Now: A Renewed Pedagogy for the Future of Europe" report, the Pathway Supporting Action is bringing together experts in the field of science education research and teachers´ communities, scientists and researchers involved in pioneering scientific research, policy-makers and curriculum developers to promote the effective widespread use of inquiry and problem based science teaching techniques in primary and secondary schools in Europe and beyond.

The proposed approach aims to encourage the uptake of Inquiry-Based Science Education by developing three main areas:

- outlining a standards-based approach to teaching science by inquiry that outlines instructional models to help teachers organize their classes effectively,
- setting up a series of methods to motivate teachers to adopt inquiry based techniques and activities in their classrooms
- giving access to a unique collection of open science-education resources and teaching practices that match the science curricula, have proved to be effective in promoting inquiry based education, and expand the limitations of classroom instruction.

Such an approach enables teachers, teacher trainers, curriculum developers and policy-makers to examine their own practices in the light of the best performing approaches that set the standards on what can be achieved and provides them with a unique tool to improve their everyday practice.

The three year project is coordinated by Z-MNU (Centre for Maths & Science Education), University of Bayreuth (Germany) and is funded under the 7th Framework Programme.



INQUIRE: Offering a one-year teacher training on IBSE methods

The science education community agrees that pedagogical practices based on Inquiry-Based Science Education (IBSE) methods are more effective. But the reality on the ground is different. For various reasons, this type of teaching is not practised in most European classrooms. INQUIRE counteracts this by developing and offering a one-year practically based IBSE teacher training course that will reach out to hundreds of teachers, and in turn thousands of children, in 11 European countries. The course is run through 14 Botanic Gardens and Natural History Museums – some of Europe's most inspirational cultural and learning institutions. These places act as catalysts, training and supporting teachers and educators to develop their proficiency in IBSE and become reflective practitioners.

INQUIRE is coordinated by Universität Innsbruck, Institute of Botany (LFU), in Austria and is funded under the 7th Framework Programme. Two highly regarded science education research institutions participate in the project: King's College UK (informal learning; practitioner research) and University of Bremen, Germany (research into teacher education).

PROFILES: Promoting a reflective approach to inquiry-based science education

PROFILES
Professional Reflection Oriented Focus on Inquiry-based Learning and Education through Science

PROFILES promotes IBSE by helping science teachers to develop more effective ways of teaching students, with the support of various science education actors. The project is based on "teacher partnerships" aiming to implement existing, exemplary context-led, IBSE-focused science teaching materials. Long-term teacher training courses based on challenges relevant for the participants will improve their skills in developing creative, scientific problem-solving and socio-scientific related learning environments. These should enhance students' motivation to learn science and their specific competencies, including skills in decision-making and scientific inquiry. Success is measured in terms of the confidence of science teachers in developing up to date science teaching and the attitudes of students toward science and their science education. A further aim is the dissemination of approaches, reactions from different actors and insights from accompanying evaluation, with strong use of the Internet and other media. PROFILES aims to make science education more meaningful, more closely related to 21st century science and to IBSE in order to foster scientific literacy.

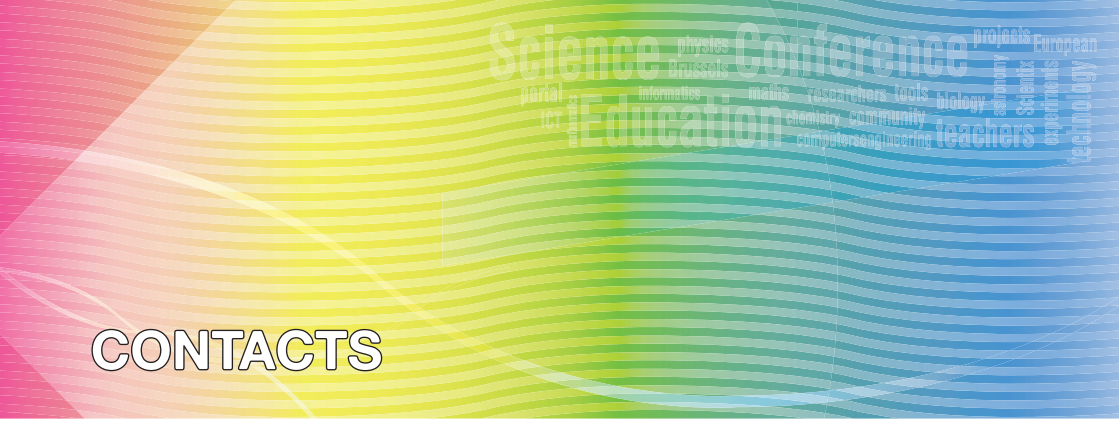
This four year 7th Framework Programme-funded project is coordinated by the department of Biology, Chemistry and Pharmacy of the Freie Universität Berlin (FUB), Germany.

CONCLUDING REMARKS

The Scientix portal was launched in May 2010. Since then, it has proven to be a very successful portal, which attracts users to search for science education projects and studies, browse and download reports, resources and tools, and use the communication and translation services provided.

The yearly survey of Scientix users showed that it has managed to reach the intended target groups: more than two-thirds of the users are teachers at schools or universities, followed by researchers, policy-makers and education managers such as head teachers, experts involved in curriculum development, etc. Most users are looking for project information, news and teaching materials, and they are generally happy with the content and resources that they found – one in three of the survey respondents had used one or several resources from Scientix in their teaching.

Scientix is gradually growing as more and more projects join the community and share their resources and materials through the portal, which is also constantly updated and developed to display the current status and latest results of the projects, and to fulfil the needs and wishes of the users. Scientix is all the time looking for new educational initiatives to join its community to demonstrate new ideas and good practices for science education in Europe.



CONTACTS

To access the Scientix portal, visit **www.scientix.eu**. If you wish to change the portal language, just use the language menu in the top right corner.

To give feedback about the portal, you will find the online feedback tool at the bottom of the page at scientix.eu.

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