The Fibonacci Project

DISSEMINATING INQUIRY-BASED SCIENCE AND MATHEMATICS EDUCATION IN EUROPE

FIBONACCI NEWSLETTER
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# One year of Fibonacci

The Fibonacci project is one year old! After the first months devoted to the setting up of the project in the centres and the twinning between the Reference Centres and the Twin Centres, the project has now fully entered its concrete implementation and operational stage. Over 2,000 teachers are involved in the class activities and the local partnerships are being developed. The First European conference in Bayreuth marked the dissemination process of IBSME in Europe with 28 European participating countries. Five field visits have already taken place since September 2010, in Aabenraa, Augsburg, Ljubljana, Bayreuth and Saint-Etienne, and seven other visits will be organised between January and April 2011. Cross-work between partners has also started, with four out of the five starting workshops on the common topics having taken place: 'Scientific inquiry in maths' in Bayreuth, 'Using the external environment of the school' in Helsinki, 'Cross-disciplinary approaches' in Leicester, and 'Scientific inquiry in natural sciences' in Paris. These will lead to the five European training sessions from September 2011. Greenwave Europe is being implemented in 375 classes over 16 countries. The Greenwave website was officially launched on 1st January, and translated into 15 languages: www.greenwave-europe.eu.

In March 2011, we will be glad to welcome the representatives of each Fibonacci centre in Aabenraa, in Denmark, for the follow-up seminar on the project activities. The seminar aims at supporting the practical implementation of Fibonacci and IBSME in the classrooms, as well as preparing the next phase of the project: "Tutoring and Training" (July 2011-June 2012).
Throughout 2011, the European and scientific coordination will go on supporting the centres, and the external evaluator Educonsult will continue to closely monitor the project.
All Fibonacci partners will join their efforts in 2011 to fulfil their commitments to the project, and develop IBSME in the 24 countries involved.

We wish you a Happy New Year **2011** with flourishing activities!

## Newsletter Credits

This newsletter is produced by the European coordination of the Fibonacci Project.

Pictures: the Fibonacci partners

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SEVENTH FRAMEWORK PROGRAMME

# **Greenwave** Europe

The Greenwave Europe project was presented to the partners at the Steering Committee in Bayreuth (23rd September 2010) and subsequently a workshop on the website was organised and held in Dublin (25th-26th November 2010). From this field trip a number of ideas and comments from the partners helped evolve some of the website's features and functionalities.


With the website launching on 1st January 2011, Fibonacci schools are now able to participate in a European-wide science experiment to observe the arrival and evolution of spring in their countries.

16 countries, with a maximum of 25 primary schools per country, are involved for 2011: Belgium, Denmark, France, Germany, Greece, Ireland, Netherlands, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, and United-Kingdom. They will study and record on the website common data, i.e sightings of animals and vegetal species, and also input meteorological measures, which are indicators of the arrival of spring in their countries. The resulting data will be available for cross reference among the Fibonacci countries in June.

Among the species to observe, all the partners (except Greece) will follow as animal species the barn swallow (*Hirundo rustica*) and the common European frog (*Ranatemporaria, frogs-pawns*), and as vegetal species the ash (*Fraxinus excelsior*) or horse chestnut (*Aesculus hippocastanum*) or local trees.

The website is translated in 15 languages (including English).

➔ **Click on the following link to visit it:**
**www.greenwave-europe.eu**

# **The First European Conference in Bayreuth:** «Raising Awareness about Inquiry Based Science and Mathematics Education in Europe»

The First European conference of the Fibonacci project, "Raising awareness about Inquiry-Based Science and Mathematics Education (IBSME) in Europe", took place on 21st and 22nd September 2010 at the University of Bayreuth, in Germany. More than 170 participants from 28 European countries took part in the event, including teacher educators, researchers, university lecturers, teachers, and other relevant stakeholders of IBSME. The conference offered a diverse and attractive programme with lectures, workshops, a poster session and social activities. The conclusions underlined two major issues for which a certain balance has to be found and joint reflection further developed, i.e the definitions of IBSME and the links between dissemination and research. These issues are being addressed within the common topics of the project, and the relation between research and practice will be dealt with at the second European conference.

The conference was a good opportunity for the Fibonacci partners to network and to make the first contacts with some institutions interested in joining the project.

The proceedings of the conference - i.e the presentations, reports, conclusions and videos - are available in the "Resources" section of the Fibonacci website:
**www.fibonacci-project.eu**

The second European conference, "Bridging the Gap between scientific education research and practice", will take place in Leicester (United Kingdom) on 26th-27th April 2012.

# **Some testimonies** about the field visits

Between September and December 2010, five Field Visits were organised by the Reference Centres, in Aabenraa (Denmark), Augsburg (Germany), Ljubljana (Slovenia), Bayreuth (Germany) and Saint-Etienne (France), to present their local education system used to implement the inquiry-based approach in science and mathematics. According to the external evaluators, Yves Beernaert and Magda Kirsch of Educonsult, the visits were of high quality, with a very nice mix of theoretical and practical input, especially through the class visits. They were inspiring and motivating learning experiences which also enabled to strengthen the networking between the partners.

Here are some comments of the participants:

## About the visit of University College South Denmark, Aabenraa (28th-30th September 2010)

"We consider the strategy implemented for the sharing of kits quite interesting, although not possible to be transferred to the Portuguese reality at such a large scale. However, we will use their model as a basis to work, and will try to produce some kits. In our case, booklets / guidelines will be created as they are essential for our teachers.

We will use ideas from the peer-to-peer support. From September 2011 onward, this will be implemented in our schools. In each school, teachers in the Fibonacci project will involve partners in IBSME activities."

*Margarida Suarez, for Ciência Viva, Portugal (TC1)*

## About the visit at the University of Ljubljana (19th-21st October 2010)

"Our Field Visit to FIBONACCI RC center Ljubljana was very useful for us because:

- we could make comparisons between Slovenian and Serbian Pre-school-and Primary teachers' education as well as activities and materials developed in Ljubljana RC.
- Serbian teachers' education is a more classical one; our laboratories in the Faculties for teachers are not so well equipped, and the presentation of science education is not based on Inquiry;
- the hands-on and inquiry experimental boxes are very rare;

For those reasons, the activities of our TC1-center Institute, VINCA-University of Belgrade, must continue in the frame of the FIBONACCI project, mainly by developing experimental boxes for the work of teachers in the classes, and to equip our Faculties for teachers with them.

Concerning the Visit to the Fibonacci/ Pollen School in Kamnik and the Fibonacci workshop, we have realized that:

- TC1-center Institute VINCA-University of Belgrade must try to get more help from the local community regarding the application of inquiry in the Primary schools in the frame of the FIBONACCI project;
- our seminars for teachers are also good.

We are very grateful to our Slovenian colleagues, mainly to Ms Ana Blagotinšek, for the excellent organization of this field visit, as well as to all the other participants for the very useful discussions concerning their experience."

*Ljiljana Jokic and Stevan Jokic, for Vinca-University of Belgrade (TC1)*

## About the visit in the Graduate School of Engineering of Saint-Etienne (7th-9th December 2010)

"I liked that many countries came together to discuss these topics. I liked that I got to experience both sides of these topics, theory and practical part - I discovered new ways, how to teach a teacher - Through that help a teacher should feel that he/she is involved in an international teaching improvement project. I really liked the idea of theme box «store» and the possibility for teachers to be assisted by a tutor in their classroom. I was very fascinated by the idea of supporting teachers through the involvement of scientists in primary education.

I hope that in the future, teachers can also meet to share their experience."

*Margarida Kask, Estonia (TC1)*

# **Distribution** of the centres

15 Fibonacci centres are involved in science and mathematics, 17 in science only and 5 in mathematics only. Over 2,000 teachers participate in the project at this stage.

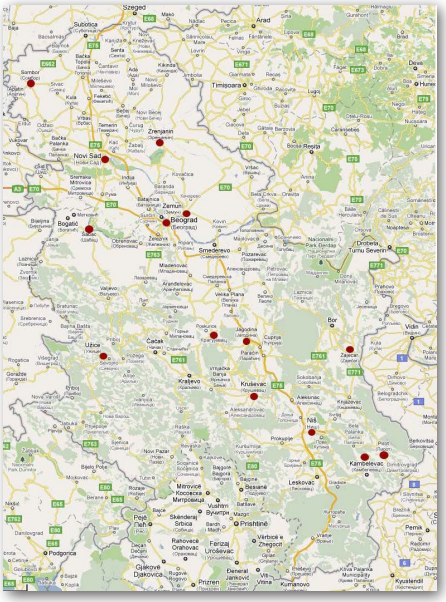
The tables in Annex I give an overview of the school levels, the fields targeted by the Fibonacci centre and the number of teachers by centre.

# Focus on Serbia and Romania

## Serbia

Ruka u testu is the Serbian programme aiming at renovating science education in elementary and low-secondary schools. It recommends that teachers implement Inquiry Based Science Education (IBSE). Ruka u testu is run by the VINCA Institute, member of FIBONACCI as Twin Centre 1.

In 2010, 14 Regional Experimental Rooms have been created in Serbia - each Room is supplied with 5 experimental boxes containing 20 experiments for the classes activities and 8 books - for about hundred primary schools to give teachers a model of research and implementation of the inquiry-based process in a convenient place with convenient tools.



Map of the 14 Regional Experimental Rooms in Serbia

5 Pedagogical Kits have been created on water, air, electricity, colours, swim and skin, and they have been distributed (100 boxes) in the Fibonacci centres. These experimental boxes contain 20 experiments and 8 books for work in the classes, for about one hundred primary schools all over the Serbian territory.

A module "Scientific Discovery in the Balkan region" is also in preparation. Indeed, throughout history, the Balkan region has mostly been known because of its problems. We would like to show another side of this region, by presenting scientific contributions from Balkan countries, which will be used to involve children in an inquiry-based learning sequence.

Besides the translation of various resources for teachers into Serbian, we have focused on establishing a network of Serbian schools interested in participating in the Fibonacci and Greenwave projects. Nearly 50 schools, primary and secondary, have joined the project so far, and more will follow in 2012 and 2013.

We have chosen schools geographically close to one another for a better involvement of the local actors. We cover almost all areas of Serbia, which is very important for the dissemination of IBSE across the country.

Sessions of 8 hours of professional development have been organised for more than 600 teachers and tutors in 2010 (and 3,000 in the past two years), during which participants had to resolve problems by applying IBSE, like their pupils, with material easily found around.

Training workshop for teachers

During the project, trainers/tutors will keep in touch, and each of them will be responsible for up to 10 teachers.

We also get support from students of the Teachers Faculties who do their practical training in our schools.

Throughout 2010, the VINCA team members, teachers and students involved in the Fibonacci Project in Serbia gave several interviews and made guest appearances in broadcasts on Radio Belgrade 1 (Serbian National Broadcasting Corporation). The main goals of those participations and interviews in very popular radio broadcasts ("Dear Children" and "Youth Science") were to present and promote IBSME, the Fibonacci Project in Serbia (including the Greenwave Project), as well as new methods and approaches in the teaching of science.

The Fibonacci Project was presented in the Serbian Academy of Sciences and Arts on the annual assembly of the Academy on 19 November 2010, as well as in the Belgrade Festival of Science in 2009 and 2010.

During the Belgrade Science Festival

The Fifth south-European Workshop about IBSME in Primary School took place in Belgrade (2 and 3 December), with around 50 participants from South-eastern Europe, members of Fibonacci Project, scientists, science educators and education experts, professional advisors and policy makers.

Visit of a primary school in Sabac

South East Conference 2010

The workshop involved visiting Primary schools in which IBSE is applied.

To date, the IBSE method has been applied in about 10% of primary schools in Serbia, and we will continue our mission in the future, with the hope that IBSE will be disseminate in more schools in Serbia and neighbouring regions.

For more information on IBSME and Fibonacci in Serbia, visit

http://rukautestu.vinca.rs

# Romania

In Romania, the Fibonacci project is promoted by the Centre for Science Education and Training – CSET (education.inflpr.ro), a department of the National Institute for Laser, Plasma and Radiation Physics (as a Twin Centre 1). The Institute benefits from a very modern research infrastructure and is involved in numerous national and international projects. The Centre is part of the Institute policy to support science education, both at university and pre-university levels.

The 2010 activities for the Fibonacci project were extensively supported by the national educational network "Hands-on Science – Romania" which CSET coordinates nationwide. Considering the challenges the Romanian educational system faces (lack of adequate resources for science teaching – both as educational kits and written materials, an old fashioned approach in science teaching, inexperienced teachers on inquiry-based educational methods), our policy in the frame of the Fibonacci project focuses on training teachers on inquiry-based approach through courses and demo sessions, providing them with assistance in the classroom (for several selected schools across the country), and developing teaching resources to assist classroom work, at elementary and middle school levels. On a communication level, we organise science fairs/science days for large audiences, and we generally strive to promote the image of science to the public at large. At the same time, we aim at establishing closer links with parents associations and representatives, as well as closer contacts with pre-school educators. All in all, our purpose is to ensure the best dissemination of the project strategies, activities (run at European and national level) and results.

The project objectives and activities were promoted at national level through presentations delivered to various audiences (elementary and middle school teachers, parents associations, school inspectorate personnel) across the country, as well as participation in major national and international conferences, translation and printing of the Fibonacci presentation booklet (*Figure 1*), and the creation of a dedicated website:

education.inflpr.ro/ro/Fibonacci.htm


Figure 1. The Fibonacci brochure in Romanian

In order to catch a larger audience and to promote IBSE at a wider level, we developed a science-related project: "The future researcher" (education.inflpr.ro/ro/CercetatorInDevenire.htm). Students from 8 to 18 years old from three Romanian schools had to run a research project or develop a model of a device, all subjects being related to environmental issues. The students were asked to apply the inquiry-based approach, and each participating team had its own notebook for the experiment (scanned samples are given in *Figure 2*).

By the end of the project, a Science Day was organized, hosted by the French Institute in Bucharest, with the participation of about 220 school students, on June 4, 2010 (*Figures 3-6*).

A DVD exemplifying the students' enthusiasm in participating in the Science Day was prepared and distributed during the events organized by the "Hands-on Science – Romania" network. A brochure of the project was also made and sent to all the counties' school inspectorates.

In September 2010, a course for 25 elementary school teachers was run in Constanta, in cooperation with the county school inspectorate (Figure 7).

Apart from the national activities, the Romanian team will contribute to the research of the working group dealing with the cross–disciplinary topic. Our main focus will be the use of ICT, data loggers and sensors in school experiments. In order to promote these ideas in Romanian schools, at all levels, we started to translate some resources, like for example the selection of applications for the use of the Eurosense data logger (teachscience.moodlehub.com/mod/resource/view.php?inpopup=true&id=328).

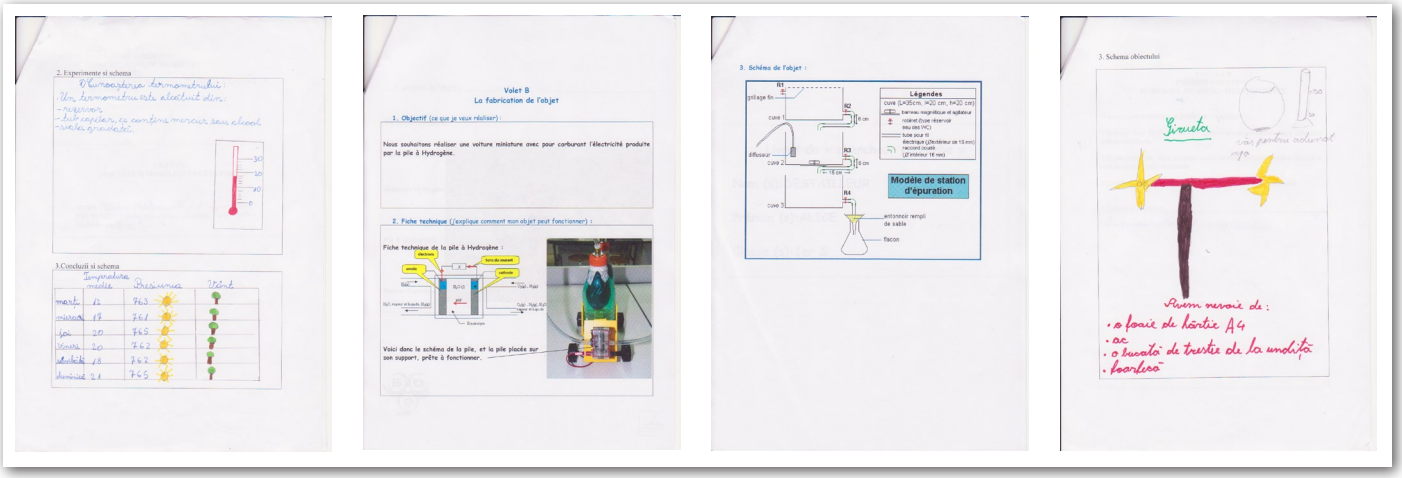


Figure 2. Scanned samples of the students' notebooks

In order to offer some examples on our past experience on the use of data acquisition systems and sensors in science classes, we prepared a review document underlining the activities developed by Romanian schools with CSET support and advice. The document is available for distribution on CDs.

Having a very good and modern infrastructure, the Institute is supporting science education at the pre-university level, also by organizing schools visits of the major laboratories. During the school year 2009 – 2010, more than 80 middle and high school students took the labs tour. We were delighted to learn that half of our middle school visitors expressed their interest to become researchers.

Further professional development of the Romanian trainers was achieved during the field visits organized in Denmark (September 2010) and France (December 2010). These were really exciting experiences as we had the opportunity to meet other European colleagues, to visit teachers training centres and schools, to attend seminars and demo sessions and to learn more about the learning units and resources available to teachers' communities in the two countries. These activities were complemented by the twinning session organized at the Reference Centre of the Trnava University, Slovakia (April 2010), where participants from Austria, Romania and Slovakia exchanged opinions on supporting inquiry-based science education in schools and planned future common co-operation.

Figures 3 – 6. Students participating in the Science Day

Figure 7. Training course on IBSE in the city of Constanta

# Coming events

## Field visits

Sixth visits of the Reference Centres are planned for the coming months:

16th-20th January: University of Klagenfurt

15th-19th February: University of Leicester

22nd-26th February: Free University of Berlin

7th -11th March: RSAS / NTA Stockholm

4th -8th April: GSE/Ecole des Mines Nantes

11th -15th April: University of Trnava

(the first and last days mentioned above for each visit are the days of arrival and departure; cf. the catalogue of field visits for more details).

Concerning the TC1, a visit of the University of Patras will take place on 15-17 February. Other visits will be planned according to the TC1 needs.

## Follow-up Seminar, 29th-31st March 2011, Aabenraa – Denmark

This seminar, which is internal to the project, is organised to ensure a good follow-up of the activities and to support the practical implementation of the project and IBSME in the classroom.

The programme includes sessions and workshops on the inquiry approach in science and mathematics, the different aspects of the local implementation and the twinning between centres.

A first feedback on the external evaluation will be given. The preparation of the next phase of the project, phase 3 "tutoring and training" (July 2011-June 2012), is also planned.

About 60 participants will attend, with a representative from each centre (RC, TC1 and TC2), Greenwave and some observers.

On the eve of the seminar, on Monday 28th March, the Scientific Committee will meet to review the Starting Package of the project and deal with the issue of the convergence between science and mathematics inquiry.

## Scientix European Conference, 6th-8th May 2011 in Brussels, Belgium

The first Scientix conference will be a unique opportunity to learn more about different projects in Europe on mathematics, science and technology education. It will gather 400 participants who will share their expertise, knowledge and best practices on education. The conference is specially targeted at teachers in mathematics, science and technology, but other actors such as researchers, policy makers and science communicators are invited to participate.

Fibonacci will take part in this major event. The European coordination is applying for giving a talk on the project in a session and for an exhibition stand.

The programme will offer:

- sessions on European science education projects for teachers, researchers, industry, etc.
- sessions on science museums and their potential for European science education
- sessions on science education research
- hands-on workshops on various topics and tools that teachers can integrate into their classes
- exhibitions of European science education projects.

The conference will surely interest some of you. If you want to attend, you can choose between three types of participations:

- simple participant
- a teacher can participate in the Scientix poster competition by preparing a poster on how he/she brings Scientix into his/her teaching
- or participant giving a presentation in one of the sessions.

The number of participants and speakers is limited, so you have to register well in advance. The deadlines are:

- 31 January 2011: speakers
- 1 March 2011: participants with posters (for teachers)
- 18 March 2011: participants

Further information and registration at: www.scientix.eu/web/guest/conference

# **Dissemination and links with** other EU-funded projects on science and mathematics education

Fibonacci participated in the market place for projects organised during the **S-Team** conference "Science Fiction: Inquiries into the future of science education", on 13th October 2010 in Glasgow. The conference included representatives of the current FP7 projects **Establish**, **Primas** and **Scientix**. At this meeting, it was agreed that an informal working group would be formed, to include the coordinators of the current and **new FP7** projects. This group would be a channel for sharing knowledge and experience between projects. Scientix will be used to enhance collaborative working. The next meeting of this group is planned in mid-March in Brussels and at the Scientix conference in May.

The project was also represented by its Danish member, the University College of South Denmark, at the **Eminent** conference organised by Scientix in Copenhagen, on 8th-10th November 2010, and took part in a workshop for teachers. This event focused on the ICT initiatives that foster the development of education in Europe and placed a special emphasis on bringing teachers and policy makers together.

Several partners of Fibonacci are also involved in other EU-funded projects, for example:

**InnoMathEd**, funded by the EU Lifelong learning programme, aims at the development of pupils' key competences and their ability to use ICT for learning processes in mathematics. It is coordinated by the University of Augsburg, and includes as partners the University of Bayreuth and the Institute of Mathematics and Informactics of the Bulgarian Academy of Science.

More information at:
www.innomathed.eu

**Secure** - Science Education Curriculum Research - a FP7 project involving the Dienst Katholiek Onderwijs (Flanders), aims at providing relevant research data that can serve as the basis for a public debate among policy makers and other stakeholders on how MST curricula and their delivery can be improved. The research concerns the curricula for pupils aged 5, 8, 11 and 13 years old in 10 member states. This project wants to inform the Fibonacci partnership on a continuous basis on the progress and the outcomes of the research done.

More information at:
www.secure-project.eu (in progress),

contact: wim.peeters.int@telenet.be
(work package leader on valorisation).

You can find more information about the FP7 and Lifelong learning projects at:
www.scientix.eu and
www.ntnu.no/s-team ;
www.establish-fp7.eu ;
www.primas-project.eu

# Annex 1: Distribution of the centres:

## Science / Mathematics, pre-school / primary / lower secondary / upper secondary

| Number | Number of teachers |
|---|---|
| √ | Unknown exact distribution |

**As a minimum, 25 teachers and their classes for Reference Centre will be involved, 20 for Twin Centre 1, and 10 for Twin Centre 2.**

| | MEMBERS OF THE CONSORTIUM | | Mathematics | | | | Natural sciences | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Country | Institution | | | | | | | | | |
| Partner Number | REFERENCE CENTRES | | Pre-school | Primary | Lower-Secondary | Upper-Secondary | Pre-school | Primary | Lower-Secondary | Upper-Secondary | Number of teachers |
| 2 | Austria | University of Klagenfurt | √ | √ | √ | √ | √ | √ | √ | √ | 30 |
| 5 | Denmark | University College South Denmark | | 7 | 8 | | | 11 | 9 | | 35 |
| 8/26 | France | School of engineering - St Etienne | | | | | 10 | 15 | | | 25 |
| 9 | France | School of engineering - Nantes | | | | | | 30 | 6 | | 36 |
| 10 | Germany | Free University of Berlin | | | | | | 29 | | | 29 |
| 11 | Germany | University of Augsburg | | 477 | | | | | | | 477 |
| 12 | Germany | University of Bayreuth | | | √ | √ | | | √ | √ | 70 |
| 16 | Netherlands | University of Amsterdam | | | | | | 32 | 6 | | 38 |
| 20 | Slovakia | University of Trnava | | | | | | 40 | | | 40 |
| 21 | Slovenia | University of Ljubljana | | | | | 88 | 130 | | | 218 |
| 23 | Sweden | RSAS / NTA Stockholm | | | | | | 30 | 10 | | 40 |
| 25 | United Kingdom | University of Leicester | | 11 | 1 | | | 12 | 1 | | 25 |
| | | | | | | | | | | Total | 1063 teachers |
| | | Number of RC involved | 1 | 4 | 4 | 2 | 3 | 10 | 7 | 2 | |

| | MEMBERS OF THE CONSORTIUM | | Mathematics | | | | Natural sciences | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Country | Institution | | | | | | | | | |
| Partner Number | TWIN CENTRES 1 | | Pre-school | Primary | Lower-Secondary | Upper-Secondary | Pre-school | Primary | Lower-Secondary | Upper-Secondary | Number of teachers |
| 3 | Belgium | Free University of Brussels | | 10 (S&M) | 2 | 2 | | 10 (S&M) | 10 | 2 | 26 |
| 4 | Bulgaria | Bulgarian Academy of Sciences, Institute of Mathematics and Informatics | | | √ | √ | | | | | 48 |
| 6 | Estonia | University of Tartu | 10 (S&M) | | | | 10 (S&M) | 20 | 5 | | 35 |
| 7 | Finland | University of Helsinki | 40 (S&M) | 10 (S&M) | | | 40 (S&M)+20 | 10 (S&M) +15 | 10 | | 95 |
| 13 | Greece | University of Patras | 31 (S&M) | | | | 31 (S&M) | | | | 31 |
| 14 | Ireland | St Patrick's College | | | | | | 25 | | | 25 |
| 15 | Luxemburg | University of Luxembourg | | | | | | 35 | | | 35 |
| 17 | Portugal | Ciencia Viva | 8 (S&M) | 14 (S&M) | 2 (S&M) | 2 (S&M) | 8 (S&M) | 14 (S&M) | 2 (S&M) | 2 (S&M) | 26 |
| 18 | Romania | National Institute for Lasers | | | | | 4 | √ | √ | | 78 |
| 19 | Serbia | Vinca Institute for Nuclear Sciences | | | | | 4 | √ | √ | 13 | 124 |
| 22 | Spain | University of Cantabria | | 11 | 30 | 23 | | | | | 64 |
| 24 | Switzerland | University of Zurich | | 24 | 5 | 9 | | | | | 38 |
| | | | | | | | | | | Total | 625 teachers |
| | | Number of TC1 involved | 4 | 5 | 5 | 5 | 6 | 8 | 6 | 3 | |

| | Country | Institution | Mathematics | | | | Natural sciences | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Partner Number | TWIN CENTRES 2 | | Pre-school | Primary | Lower-Secondary | Upper-Secondary | Pre-school | Primary | Lower-Secondary | Upper-Secondary | Number of teachers |
| 27 | Austria | Pädagogische Hochschule Wien | | 60 (S&M) | | | | 60 (S&M) + 10 | | | 70 |
| 28 | Belgium | Dienst Katholiek Onderwijs | | | | 2 | 2 | 8 | 4 | 12 | 28 |
| 29 | Denmark | NAVIMAT, Danish National Centre for Mathematics Education | | | 10 | | | | | | 10 |
| 30 | Denmark | VIA University College | | | | | | 10 | 10 | | 20 |
| 31 | France | PRES of the University of Lorraine | | | | | | 24 | | | 24 |
| 33 | Germany | Thuringer Institut fur Lehrerfortbildung | | | 3 (S&M) + 7 | 2 | | | 3 (S&M) + 1 | 1 | 14 |
| 32 | Germany (Bonn and Cologne) | Cologne and Bonn Chambers of Commerce and Industry | | | | | | 16 | | | 16 |
| 34 | Italy | National Association of Science Teachers (ANISN) | | | 23 (S&M) | 1 | | 5 | 23 (S&M) | 4 | 33 |
| 35 | Poland | Jagiellonian University | | | | | | 10 | | | 10 |
| 36 | Spain | University of Alicante | | | | | 12 | 25 | 10 | | 47 |
| 37 | Turkey | Academy of sciences - TUBA | 6 (S&M) | 5 (S&M) | 1 (S&M) | 1 (S&M) | 6 (S&M) | 5 (S&M) | 1 (S&M) | 1 (S&M) | 13 |
| 38 | UK / Northern Ireland | Queen' s University Belfast | | 6 (S&M) | 4 (S&M) | | | 6 (S&M) | 4 (S&M) | | 10 |
| 39 | UK/ Scotland | University of Glasgow | | | | | | 20 | | | 20 |
| | | | | | | | | | | Total | 315 teachers |
| | | Number of TC2 involved | 1 | 3 | 5 | 4 | 3 | 11 | 7 | 4 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TOTAL NUMBER OF CENTRES INVOLVED | 6 | 12 | 14 | 11 | 12 | 29 | 20 | 9 |

| | |
|---|---|
| CENTRES INVOLVED ONLY IN SCIENCE | 17 CENTRES: 7 RC, 4 TC1, 6 TC2 |
| CENTRES INVOLVED ONLY IN MATHEMATICS | 5 CENTRES: 1 RC, 3TC1, 1 TC2 |
| CENTRES INVOLVED IN SCIENCE AND MATHEMATICS | 15 CENTRES: 4 RC, 5 TC1, 6 TC2 |

| | |
|---|---|
| TOTAL OF TEACHERS INVOLVED | 2003 teachers |

# What is the Fibonacci Project?

The ambition of the Fibonacci Project is to contribute to the dissemination of inquiry-based science and mathematics education throughout the European Union, in ways that fit with national or local specificities. It defines a process of dissemination from 12 Reference Centres to 25 Twin Centres, based on quality and a global approach. This is done through the pairing of Reference Centres selected for their extensive school coverage and capacities for transfer of IBSME with 12 Twin Centres 1 and 13 Twin Centres 2, considered as Reference Centres-in-progress.

Started on 1st January 2010 for a duration of 3 years, the project is coordinated by the French *La main à la pâte* programme, with a shared scientific coordination with the University of Bayreuth (Germany).

This project has received funding from the European Union's Seventh Framework Programme for Research and Development