



The
Fibonacci
Project

DISSEMINATING INQUIRY-BASED SCIENCE
AND MATHEMATICS EDUCATION IN EUROPE

FIBONACCI EUROPEAN TRAINING SESSION

IMPLEMENTING AND EXPANDING A REFERENCE CENTRE

Monday, November 28th to Wednesday, November 30th, 2011
Freie Universität Berlin, Germany



WHAT IS THE FIBONACCI PROJECT?

Funded by the European Union under the 7th Framework Programme and supervised by a high level scientific committee, the Fibonacci Project (2010-2013) aims at a large dissemination of Inquiry-Based Science and Mathematics Education (IBSME) throughout the European Union, in a way that fits with national or local specificities. This project defines a dissemination process from 12 Reference Centres to 24 Twin Centres based on quality and a global approach. The Fibonacci Project will lead to the blueprint of a transfer methodology valid for building other Reference Centres in Europe.

The Fibonacci project is based on 3 pillars:

1. **An inquiry-based approach** to science and mathematics teaching and learning in primary and secondary schools;
2. **A local approach**, mobilising a comprehensive and complementary group of local partners.
3. **A twinning strategy** linking 37 centres in 24 countries. From 2010 to 2012, 12 Reference Centres with a high expertise in IBSME are twinned with 12 intermediate centres and 13 beginner centres. In 2012, 24 new partners (not identified yet) will join the Fibonacci project, expanding it to almost all European countries.

See <www.fibonacci-project.eu> for details.

IMPLEMENTING AND EXPANDING A REFERENCE CENTRE

Supporting inquiry-based science and mathematics education (IBSME) in European schools is the aim of Fibonacci. Fibonacci is based on two previous programs: Pollen (also funded by the European Union) and the German program SINUS. In several countries, Pollen and SINUS pilot projects have been so successful that they have created a high demand of new schools wanting to join the programs. Thus, due to the success of these local pilot programs, several projects were faced with the problem of "scaling up". On the other hand, Fibonacci partners were approached to share their experiences with institutions which would like to start such programs.

In order to accommodate start-up programs as well as programs which would like to expand, this European training session addresses the following topics relevant for the consolidation and the spreading of a pilot project, as well for starting such program:

- Inquiry-based science and mathematics education (IBSME)
- Professional development of teachers
- Material support
- Community involvement
- Evaluation

During the training session you will get a hands-on introduction to inquiry-based science and mathematics education in several workshops and will be able to talk to different members of the Berlin community who support IBSME including people from foundations, the department of education and industry. In addition, you will be able to get an overview of the science and mathematics material being used by different countries participating in the Fibonacci project. A visit to a material center in Berlin that serves over a hundred primary schools is also planned.

Highlights

- Lectures
- Workshops
- Community involvement
- Material centre exhibition

Accommodation

Accommodation at the Holiday Inn Express Berlin Centre is possible. The keyword for our guests is: **fibonacci**.

Holiday Inn Express Berlin
Stresemannstrasse 49 10963 Berlin / Germany
Phone: +49 (30) 200 520 Fax: +49 (30) 200 52100

Venue

Most of the workshops will be held at a primary school in Berlin: Richard Grundschule. On one afternoon there will be an exhibition of teaching material at the material center of TuWaS! which is part of the Freie Universität Berlin.



How to register

A Registration form is available at the end of this brochure. Please fill it out and send it to Nese Ersoy at the address indicated below, either by e-mail or by fax, before November **18th, 2011**.

There is no registration fee. Participants will have to pay for their trip, meals and accommodation.

Any questions?

Nese Ersoy

Freie Universität Berlin, Local Coordination Berlin
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Program

MONDAY November 28th

- 12:00 Registration
- 13:00 - 13:05 Welcome by Dr. Skiebe-Corrette
- Opening remarks by
- 13:05 - 13:45 Dr. Bongardt, *Vice President of the Freie Universität Berlin*
Mr. Bänisch, *Education Department Berlin*
Anne Lejeune, *La main à la pâte, France*
- 13:45 - 14:00 Introduction to the workshop program
Professor Dr. Skiebe-Corrette
- Workshop Session 1**
- Inquiry science education**
1. Inquiry science education in primary schools
14:00 - 15:45 *Ana G. Blagotinsek, University of Ljubljana, Slovenia*
2. Inquiry science education in secondary schools
Philippe Léonard, Director of Experimentarium the physics museum of the Université Libre de Bruxelles, Belgium
- 15:45 - 16:15 **Coffee break**
- Workshop Session 2**
- Inquiry mathematics education**
1. Mathematical inquiry in the context of science education
16:15 - 18:00 *Dr. Janet Ainley, Director School of Education, University of Leicester, Great Britain*
2. Opportunities of inquiry based teaching of mathematics for secondary students
Mari-Ann Skovlund Jensen, CFU / University College Sjælland, Denmark
- 18:00 **Dinner**



TUESDAY November 29th

- Lecture**
- 9:00-10:00 The integrity of change: Research, Policy, Practice, Learners
Louise Hayward & George MacBride, University of Glasgow, Scotland
- 10:00 - 10:20 **Coffee break**
- 10:20-12:30 **Workshop**
The Change Game
- 12:30-13:30 **Lunch**
- Round table**
- Role of Community members and supporters**
moderator Dr. Skiebe-Corrette
- Introduction: The importance of regional networks
Dr. Franz Rauch, Alpen-Adria-Universität, Klagenfurt, Austria
- Community members:**
- 13:30-14:30 **Dr. Müller:** *Involvement of the TSB Technology Foundation Berlin*
Mr. Bänisch: *Involvement of the Education Department*
Mr. Gollub: *Involvement of the Industry, federation of German employers' associations in the metal and electrical engineering (M+E) industries*
Mr. Winner: *Involvement of local business, Berliner Wirtschaftsjunioren*
Mr. Hütter: *Involvement of local business, GO! General Overnight & Express Logistics*
- 14:30-15:00 **Transport to the material centre**
Kelchstr. 31 / 12169 Berlin
- Exhibition**
- Material Center and exhibition of teaching materials**
- TuWaS! Germany:** Material center: commercial material
- Denmark:** Resource center: didactical advisors develop materials
- 15:00-18:00 **Slovenia:** Material center: materials developed at the university
- Belgium:** Science material for primary & secondary schools developed by scientists
- Serbia:** Scientist develops materials for teacher
- France:** St. Etienne



WEDNESDAY November 30th

Lecture

9:00-10:00 Professional development of teachers, teacher trainers and principals

Dr. Sandy Ledwell, AMSTI, Alabama, USA



10:00 - 10:20 **Coffee break**

Workshop Session 1

1. Distant Learning

Claus Auning, University College South Denmark, Denmark

10:20-12:00

2. Using notebooks

Dr. Petra Skiebe-Corrette, Freie Universität Berlin

Dr. Sandy Ledwell, AMSTI, Alabama, USA

12:00-13:00

Lunch

Workshop Session 2

1. Sinus & IMST: A way of professional development

Dr. Volker Ulm, University of Augsburg, Germany

13:00-14:40

Dr. Franz Rauch, Alpe-Adria-Universität Klagenfurt, Austria

2. IBSME and language development

Nese Ersoy, Freie Universität Berlin, Germany



14:40-15:00

Coffee break

Lectures

15:00-16:00

Evaluation tool for teachers

Anne Lejeune, La main à la pâte, France

16:00-17:00

RC and TCTwinning: A strong tool for enhancing quality and dissemination in IBSME

Magda Kirsch & Yves Beernaert, Educonsult, Belgium

17:00-17:30

Closure discussion

17:30-18:00

Transport

18:00

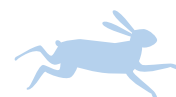
Buffet



VENUE:

Richard Grundschule Berlin

Richardplatz 14, 12055 Berlin



Description of the workshops

Session 1: Inquiry science education

1.1 Inquiry science education in primary schools

Ana G. Blagotinsek University of Ljubljana, Slovenia

The foundations for IBSME can be successfully laid in the pre-school education. Taking into consideration the limitations and advantages of the developmental stage of the pre-school children, workshop is planned to encourage children to explore the environment with all senses, to observe, compare and describe, to pose questions and look for the answers. Special attention will also be given to simultaneous language development.

1.2 Inquiry science education in secondary schools

Philippe Léonard, Experimentarium, Belgium

Since the start of the Fibonacci project, the Experimentarium has developed a method to enhance the experimental abilities of the students in order to provide them the renewed pleasure of discovery and a better capacity to analyze situations.

The largest part of the activities we have developed is quite a traditional way for the student to acquire basis control and knowledge of the proposed subject. The heart of the activity is « Terra Incognita », a challenging question that can only be solved through further experimentation and association of all the information they have gathered.

The Terra Incognita usually makes use of non linear processes (so they have to search for the answer), graph analysis (but we don't ask them to draw graphs !), daily life applications and technology (how does it work ?) and examination of models or simulations.

Session 2: Inquiry math education

2.1 Mathematical inquiry in the context of science education

Dr. Janet Ainley, University of Leicester, Great Britain

In this session we focus on examples of inquiry-based activities suitable for primary and early secondary

pupils to explore similarities (and some differences) between inquiry in mathematics and science education. We also aim to illustrate the approach we are taking at Leicester to integrating mathematics and science teaching, using science as a purposeful context for mathematics, and drawing on the power of mathematical ideas to underpin the understanding of science concepts.

2.2 Opportunities of inquiry based teaching of mathematics for secondary students

Mari-Ann Skovlund Jensen, CFU / University College Sjælland, Denmark

Most mathematics education is setup to solve mathematics problems without any connection to the everyday life of students. In this way, students learn how to solve math problems, but may have difficulty transferring their knowledge. In this workshop, we will show you different ways to teach mathematics with inquiry-based methods for secondary students. You will get examples for mathematics lessons and hear reports about implementing inquiry-based mathematics in Danish schools.

Session 3: Classroom activities

3.1 Distant learning

Claus Auning, University College South Denmark, Denmark

Distance education or distance learning is a field of education that focuses on teaching methods and technology with the aim of delivering teaching, often on an individual basis, to students who are not physically present in a traditional educational setting such as a classroom. At the University College South Denmark we have been working with distance learning for the last 10 years in in-service training for primary and lower secondary level teachers. We have a lot of experience in this area. In the workshop, we will be working with different kinds of cloud computing used in geography and science education at University College South Denmark and the methods used for distance learning.



3.2 Using notebooks

Dr. Petra Skiebe-Corrette, Freie Universität Berlin, Germany & Dr. Sandy Ledwell, AMSTI, Alabama, USA

Notebooks play an important role in inquiry-based science education. They are thinking tools for the pupils that will help them to construct understanding. Since notebooks are records of the pupil's thinking process, they will give the teacher access to the pupil's thoughts and ideas. Thus, notebooks might also reveal misconception, and therefore, could be used to help teachers to plan their next lessons. Notebooks are also tools to improve the literacy skills of students and will also allow the teachers to implement differentiated teaching in their classrooms. During this workshop you will create your own notebook and thus experience how you can use it in your classroom and how you can implement the use of notebooks in your next professional development session.

Session 4: Professional development and language development

4.1 Sinus & IMST: A way of professional development

Dr. Volker Ulm, University of Augsburg, Germany & Dr. Franz Rauch, Alpen-Adria-University Klagenfurt, Austria

In the last decade, there have been many attempts to innovate mathematics and science education – on regional, national and European levels. Some of these attempts seem to have had rather substantial influence on the educational system, some others didn't have deeper impact. This raises the question whether there are critical aspects for innovation projects to be effective.

With reference to theories of cybernetics the talk proposes a general theoretical framework for initiatives aiming at systemic innovations of educational systems. It shows that it is essential to initiate incremental-evolutionary changes on the meta-level of beliefs and attitudes of the agents involved. For the theoretical foundation of concrete activities in mathematics education the didactic concept of learning environments is developed on the basis of constructivist notions of teaching and learning. This concept has proven to be rather successful in the design of activities in the German project SINUS (1998 – 2013) and the implementation of the Fibonacci project at

the Reference Centre Augsburg.

IMST is the acronym for „Innovations Makes Schools Top“. It is a support system for teachers, which was established in Austria in 2000. The main subprograms at present are Thematic Programs focusing on instructional- and school development and Regional Networks/Regional Competence Centres focussing on exchange and mutual development and learning. The IMST-philosophy of teacher education is to empower the teachers to act professionally by providing space and supporting them in reflecting their own practice and in trying and reflecting new approaches. This implies an increase in self-monitoring and an enhancement of individual responsibility. Diversity, sustainability and reflection are regarded as principles that are as important as cooperation and networking among the persons and institutions involved in any developmental process. Informal contacts, phone and email conversations, feedback and meetings for collective reflection support the individual enactment of (for the teacher) new approaches to IBSME learning in the classroom.

4.2 IBSME and language development

Nese Ersoy, Freie Universität Berlin, Germany

Inadequate language development is increasingly a pressing problem in primary schools within Europe. The lack of literacy skills is no longer just a problem of foreign students or students with a migration background, but is also increasingly a problem of mother tongue children, in particular of children with a problematic socio-economic background. In order to close the gap between different levels of language skills, language support is needed throughout all lessons. Science lessons are particularly well suited to support language development. Science lessons can offer stimulating resources that engage learners and promote communication. Science lessons can involve team work which encourages communication. Science lessons create different viewpoints which initiate discussions. Science lessons can include the use of notebooks that will improve writing skills. This workshop you will introduce you to the theoretical background of “Language support throughout all lessons” and will give you a hand-on introduction to how to implement it in your classroom.



Description of the presentations

Session 1: Community involvement, teaching material and material centres

1.1 The integrity of change: research, policy, practice, learners

Louse Hayward & George MacBride, Scotland

All change involves learning. Drawing on recent research, within and beyond Scotland, on assessment and curriculum development, the authors identify 'integrity' – intellectual, professional, moral and systemic – as a key condition for effective educational change. The authors examine critically recent policy development in Scotland and identify and reflect on cases where collaboration between researchers, policy makers and practitioners, based on integrity, mutual respect and shared learning, has resulted in transformational change. They proceed to consider the roles that pupils and students can and should play in initiating and supporting change in an education system which values inclusion, social justice and the promotion of democracy.

1.2 Round table with supporters and community board members of TuWaS, a program to support inquiry-based science education in Berlin

Members of the Berlin community board, an essential building block of all Pollen initiatives, and of supports of TuWaS! will explain why they are supporting TuWaS!. During a question period participants will have the opportunity to ask questions in order to get ideas how to organize a support network for the own initiatives or for their schools.

Berlin community board members and TuWaS! supporters:

- Dr. Müller: Involvement of the TSB Technology Foundation Berlin
- Mr. Bänsch: Involvement of The Education Department
- Mr. Gollub: Involvement of the Industry, association of the regional employers' associations in the German metal and electrical (M+E) industry
- Mr. Winner: Involvement of local business, Berliner Wirtschaftsjuvenen
- Mr. Hütter: Involvement of local business, GO! General Overnight & Express Logistics

1.3 Material Centre and exhibition of teaching materials

Materials from different centres will be shown at the material centre TuWaS!

- Commercial material: **TuWaS! Germany**
- Didactical advisors develop materials: **Denmark**
- Materials developed at the university: **Slovenia**
- Science material for primary & secondary schools developed by scientists: **Belgium**
- Scientist develops materials for teacher: **Serbia**



Session 2: Professional Development and Evaluation

2.1 Professional development

Dr. Sandy Ledwell, AMSTI, Alabama, USA

This presentation will outline how to design and implement high-quality professional development in math and science at varying levels. First, it will look at the specific training needed to become a trainer of math and science teachers. Then, it will discuss the unique needs of principals as they become leaders of change within their school. Next, the presentation will examine how to prepare teachers to implement inquiry based math and science instruction in the classroom. Finally, we will see how the theory comes together in action in the Alabama Math, Science, and Technology Initiative.

2.2 Evaluation tool for teachers

Anne Lejeune, La main a la pate, France

The Fibonacci Project aims for a deep and sustainable change of teaching practices in the classroom. One of the project's main topics, which will contribute to structure a common IBSME approach at a European level, is "Deepening the understanding of scientific inquiry in natural sciences". The group in charge of this topic reflects upon how scientific inquiry in natural sciences translates into observable classroom practices. Its main objective is to create two common European IBSE evaluation instruments that will allow providers of Continuous Professional Development (CPD) and science teachers to evaluate inquiry-based science practices in the classroom. The reflection and the work leading to an IBSE diagnostic tool for CPD providers as well as a self-reflection tool for teachers, which can be useful in the implementation and expansion of a reference centre, will be presented to the participants.

2.3 RC and TC Twinning: A strong tool for enhancing quality and dissemination in IBSME

Magda Kirsch & Yves Beernaert, Educonsult, Belgium

The presentation will focus on the key activities set up between the RC (Reference Centres) and the TC (Twinning centres) in the framework of the Fibonacci project to promote and disseminate IBSME.

It will focus on how the clusters of RC and TC₁ plus TC₂ have planned, organized and implemented their activities. It will highlight which kind of activities have been organized over the first half of the Fibonacci project. Especially attention will be paid to the knowledge, expertise and practices which have been transferred between the RC and TCs and how cross-fertilization across the RC and TC has operated. While expanding on the RC and TC activities the obstacles impeding cooperation and the success factors enhancing cooperation will be highlighted. The dissemination channels used to make others profit from what has been achieved through the cooperation RC and TC will also be focused upon. Finally lessons will be drawn as to the implementation of RC and TC cooperation to enhance MST innovation in school education in general which may be useful to policy makers and other stakeholders such as project coordinators.



The Speakers



Dr. Janet Ainley, Director of the School of Education. Her background was originally in primary teaching, but she has since had a long career in higher education as a researcher and teacher educator in mathematics education. She has a broad range of interests in mathematics and statistics education, and in the professional practice of teachers, and contribute regularly to national and international conferences and journals. She strongly value the interaction between teaching and research.

<jma30@leicester.ac.uk>



Claus Auning, graduated as bachelor in education (Primer and lower secondary level) (geography and biology) in 2000. From 2000 to 2004 he worked as teacher in primary and lower secondary school, especially science education, but also mathematics. Since 2004 he is a teacher at University College South Denmark. There he does teacher education and in-service training of primer and lower secondary level teachers in geography and science. On 2008 he graduated as master of geoscience at Aarhus University Denmark

<caun@ucsyd.dk>



Yves Beernaert; After a career of 15 years as a teacher (in school and higher education), a teacher trainer and an inspector in the Congo and Belgium, he worked for 15 years in several technical assistance offices of the European Commission in Brussels dealing with school education and teacher education EU programmes (i.a. the Comenius programme). For the last 10 years he has been working as an independent EU education consultant for Educonsult focusing mainly on evaluation of European projects in education and training. He was for five years the rapporteur of the Cluster Maths, Science and Technology of DG EAC and has evaluated several European projects focusing on MST. He has published for DG EAC several country reports on MST policies and has developed an MST compendium for this Cluster focusing on good practices as to innovation in MST. He has also published two comparative European studies on mobility of school teachers.

<yves.beernaert@educonsult.be>





Louise Hayward is Professor (Pedagogy Policy and Practice) in the School of Education of the University of Glasgow. She is a member of the Curriculum, Assessment and Pedagogy Educational Reform Group and was a member of the internationally renowned Assessment Reform Group. She was a founding member of the Assessment is for Learning programme in Scotland. Louise has a particular interest in the inter-relationship of research, policy and practice in improving education, and, specifically, how the evidence base from which decisions in education are taken might be enhanced by teachers, learners, researchers and policy makers working collaboratively.

<louise.hayward@glasgow.ac.uk>



Magda Kirsch; After a 10 year career as a teacher in school education and in higher education, in the Congo and in Belgium, she became first a head of department and later on the deputy director of the University Business college of KHLeuven. For the last 10 years she has been working as an independent EU education consultant focusing for Educonsult mainly on Quality Assurance in higher education as a member of nearly 30 visitation committees and on evaluation of European projects in education and training. She has published comparative European studies on Short Cycle Higher education (level 5 of the EQF), on double, multiple and joint degree development in HE, on access and retention of students of migrant origin in HE, on the workload of lecturers in HE etc. She also worked two years as an EU project leader for the Bulgarian Ministry of Education and Science. She is also involved in the evaluation of several MST projects.

<magda.kirsch@educonsult.be>



Dr. Sandy Ledwell is the Science Administrator over kindergarten through eighth grades for AMSTI at the Alabama Department of Education. She has worked with AMSTI since its planning stages on committees and then as a teacher, a trainer, and as a specialist. Dr. Ledwell has sixteen years of experience in education. She has been a classroom teacher in elementary and middle school, a teacher leader and coach, and a professional development provider. Her expertise lies in inquiry-based science instruction and incorporating the use of strategic teaching across the curriculum. Dr. Ledwell teaches methods courses to preservice teachers at Faulkner University. Dr. Ledwell has been honored as the Alabama Science Teachers Association's Outstanding Middle School Science Teacher, a state finalist for the Presidential Award for Excellence in Math and Science Teaching, and has earned early childhood certification with the National Board for Professional Teaching Standards. She resides in Alabama with her husband and two sons

<sledwell@alsde.edu>





Anne Lejeune, an engineer in Biology by training, has worked during several years on the dissemination of the scientific and technical culture at school in France (in a Science centre: Exploradome and in an association: Planète Sciences). She joined the International team of La main à la pâte (French IBSE programme) in October 2009. She participates in the coordination of the FIBONACCI European project.

<anne.lejeune@inrp.fr>



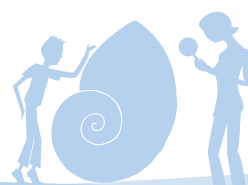
Philipp Léonard studied physicist at Université Libre de Bruxelles, has been teaching in secondary schools (15 to 18 years old students) since 30 years. Since 2000, he is also coordinating the physics olympiads for the French part of Belgium and he is leading the Belgian team in the International Physics olympiads. At the University, he is also involved in the training of the future physics teachers. Currently involved in writing physics textbooks for school teachers, in Belgium. Since 2004, he is directing the physics museum of the University.

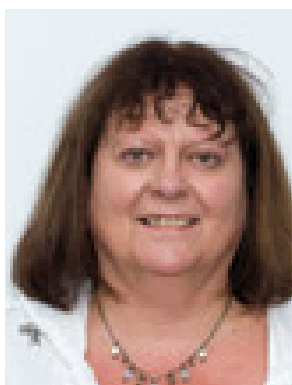
<pleonard@ulb.ac.be>



George MacBride, was employed as a teacher in Glasgow secondary (comprehensive) schools for 37 years, working for most of that time as a support for learning teacher. As a leading member of the EIS teachers' trade union, he was a member of the councils of state examinations and curricular agencies and participated in government working groups on the curriculum and assessment. More recently, he has carried out work for the Scottish Government and its agencies on curriculum, on assessment and on the processes of change; he has been working on University research and development projects on engineering in the school curriculum and on assessment.

<gmbgv@exchange.gla.ac.uk>





Mari-Ann Skovlund Jensen was originally trained as a teacher and later trained to pedagogical degree cand. pæd in physics / chemistry. She works as a consultant for teachers on teaching and learning materials in mathematics and science at a resource center for teachers.

<msj@ucsj.dk>



Dr. Volker Ulm, studied mathematics and physics and received his doctor degree in the field of algebra at the University of Munich. He has been grammar school teacher for five years. He worked as a scientist in the field of mathematics education at Universities in Bayreuth, Heidelberg and Karlsruhe for several years. Since 2007 he has the Chair for Didactics of Mathematics at the University of Augsburg.

<volker.ulm@math.uni-augsburg.de>



The common topic members

Ana G. BLAGOTINSEK, MSc, is a lecturer and research associate at the Faculty of Education, University of Ljubljana, Slovenia. She started her career as a physics teacher, but was later invited to work at the Faculty of Education, where she works with future and in-service kindergarten, primary and physics teachers. Previously, her research field were liquid crystals, and she studied possibilities to implement them in education. In the recent years, she focused on primary science and especially inquiry-based methods of science education. She is the national coordinator of The Fibonacci project in Slovenia.

<ana.gostincar@guest.arnes.si>

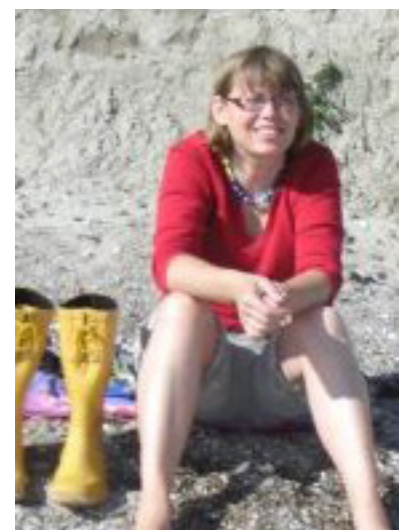


Dr. Patricia CORIERI, has a PhD in Fluid Dynamics. She has been working since 2001 at the Université Libre de Bruxelles (ULB) in the training and tutoring of primary school teachers. She is the local coordinator for the Fibonacci project in Brussels. She is responsible for a non-profit association carrying out an after-school IBSME project with children in deprived areas. At the von Karman Institute for Fluid Dynamics, she is coordinator of REStARTS, a FP7 project, that initiates collaboration between teachers and research institutions to develop didactic material for experiments in concepts of physics applied to the field of aeronautics.

<pcorieri@ulb.ac.be>

Ida Guldager, National coordinator IBSME-Fibonacci Denmark. She has a master in Science Didactics and is lecturer Science and Biology at University College South Denmark. Ida Guldager is also an author of Science books and materials

<igul@ucsyd.dk>



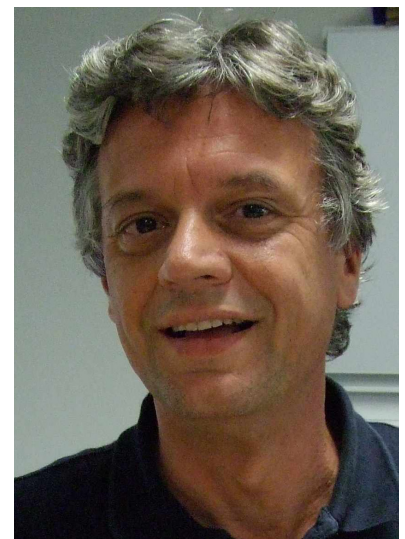


Dr. Stevan JOKIC, Professor researcher in Vinca Institute of Nuclear Sciences received his PhD in Physics in 1980 from University of Belgrad. He was the teacher in secondary school, professor of physics on the University of Kragujevac where he has been the Dean of Faculty of sciences. His research interests in the domains of fission and heavy ions interaction. He has published more scientific articles and 4 books and has given lectures on more Universities. Like a founder of the Council of "Ruka u testu" - the "hands-on" renovation of science education in primary school he has translated on Serbian language 15 books in the frame of collaboration with La main à la pâte team in France. Together with Prof. Jorge E. Allende he has received international PURKWA prize in 2007.

<sjokic@vin.bg.ac.rs>

Dr. Franz Rauch, Dr. Assoc. Professor at the Institute of Instructional and School Development (IUS) at Klagenfurt University in Austria. Master's degree in Natural Sciences (teaching certification) and Ph.D. and Venia Docenti in Education. Science teacher at vocational schools for several years. Since 1991 involved in research and development projects. 1995-1996 research fellow at the University of Northumbria in Newcastle upon Tyne, England. 1997 Fulbright Scholar at the University of Missouri - St. Louis, USA. Currently head of studies of the IUS and of the programme "regional networks" within the project "Innovations in Mathematics, Science and Technology Teaching" (IMST). Member of Editorial Boards. Areas of research and development, publication and teaching are networking, environmental education – education for sustainable development, science education, school development, continuing education for teachers and action research.

<franz.rauch@uni-klu.ac.at>



Dr. Petra Skiebe-Corrette, holds a doctorate in neurobiology and completed her habilitation in 2002. She is director of NatLab, an informal science laboratory at the Freie Universität Berlin which offers both primary school pupils and high school students the opportunity to perform up-to-date inquiry-based experiments in biology and chemistry which have been conceived by scientists. She also initiated a network of the informal science laboratories in the German states Berlin and Brandenburg (GenaU). She has been the German representative for three European Union grants: Scienceduc in 2003, POLLEN in 2004 and Fibonacci in 2010, all of which promote inquiry-based science and/or math education within Europe. In order to support inquiry-based science education within primary schools on a long term basis, TuWaS! (Technik und Naturwissenschaften an Schulen, Technology and Science in Schools) was founded in 2007 as a cooperation between the Freie Universität Berlin and the Berlin Brandenburg Academy of Sciences and Humanities.

<skiebe@zedat.fu-berlin.de>



Individual Registration Form

Fibonacci Training Session 3: Implementing and expanding a reference centre

November 28th – 30th, 2011 in Berlin, Germany

In order to register for this Training Session, please fill in all sections of this registration form and send it to [<nese.ersoy@fu-berlin.de>](mailto:nese.ersoy@fu-berlin.de) or fax: +49 (30) 838 50 684 **before November 18th, 2011**

IMPORTANT INFORMATION. Before you start, please keep in mind:

- Each candidate must fill in one individual form.
- Proficiency in English language is a requirement to participate in the training session.

Your personal information

Last name	
First name	
Male or female	
Date of birth	
Any particular dietary restrictions (vegetarian, food allergies...)?	

Your professional information

Name of the institution	
Unit or department within the institution	
Your function within the institution	
Full address	
Phone number	
Mobile phone (optional)	
E-mail	



If your institution is already a member of the Fibonacci network	
Are you a RC, TC ₁ , TC ₂ , or other?	
Please specify the first and last names of any other colleagues from your institution who are also submitting a booking form for this TS	

If your institution is NOT a member of the Fibonacci network	
Does your institution plan to become a Fibonacci centre?	
Does your institution participate in any educational projects at the European level? If yes, which ones?	
What are your motivations to participate in this TS?	

Workshops you will attend: (Please check one workshop per session)

DAY 1

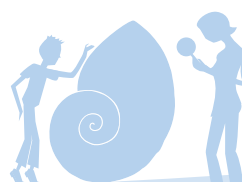
Session 1: 14:00 - 15:45	
Science education in primary schools Anna G. Blagotinsek, University of Ljubljana, Slovenia	
Science education in secondary schools Philippe Léonard, Director of the Experimentarium ULB, Belgium	

Session 2: 15:45 - 18:00	
Mathematical inquiry in the context of science education Dr. Janet Ainley, University of Leicester, Great Britain	
Opportunities of inquiry based teaching of mathematics for secondary students Mari-Ann Skovlund Jensen, CFU / University College Sjælland, Denmark	

DAY 3


Session 1: 10:20 - 12:00	
Distant learning Claus Auning, University College South Denmark, Denmark	
Using notebooks Dr. Petra Skiebe-Corrette, Freie Universität Berlin, Germany Dr. Sandy Ledwell, AMSTI, Alabama, USA	

Session 2: 13:00 - 14:40	
Sinus & IMST: A way of professional development Dr. Volker Ulm, University of Augsburg, Germany Dr. Franz Rauch, Alpen-Adria-Universität Klagenfurt, Austria	
IBSME and language development Nese Ersoy, Freie Universität Berlin, Germany	





PARTNERS

EUROPEAN COORDINATION

 **France** - *La main à la pâte* (French Academy of Sciences, *École normale supérieure Lyon*, *École normale supérieure Paris*). For the purpose of Fibonacci, the *École normale supérieure* is the legal entity coordinating the project.

SCIENTIFIC COORDINATION

Science:  **France** – *La main à la pâte* Mathematics:  **Germany** – University of Bayreuth


REFERENCE CENTRES

 **Austria** – University of Klagenfurt  **Denmark** – University College South Denmark  **France** – ARMINES/ Graduate School of Engineering of St Etienne  **France** – Graduate School of Engineering of Nantes
 **Germany** – Free University of Berlin  **Germany** – University of Augsburg  **Germany** – University of Bayreuth
 **Netherlands** – University of Amsterdam  **Slovakia** – University of Trnava  **Slovenia** – University of Ljubljana
 **Sweden** – Royal Swedish Academy of Sciences  **United Kingdom** – University of Leicester














TWIN CENTRES 1

 **Belgium** – Free University of Brussels  **Bulgaria** – Institute of mathematics and informatics of the Bulgarian Academy of Sciences  **Estonia** – University of Tartu  **Finland** – University of Helsinki
 **Greece** – University of Patras  **Ireland** – St Patrick's College  **Portugal** – Ciencia Viva, National Agency for Scientific and Technological Culture  **Luxemburg** – University of Luxemburg  **Romania** – National Institute for Lasers, Plasma and Radiation  **Serbia** – Vinca Institute for Nuclear Sciences  **Spain** – University of Cantabria
 **Switzerland** – University of Zürich.

ASSOCIATED PARTNER FOR THE GREENWAVE PROJECT

 **Ireland** – Discover Science and Engineering - Discover Primary Science.

TWIN CENTRES 2

 **Austria** – Pädagogische Hochschule Wien  **Belgium** – Dienst Katholiek Onderwijs  **Denmark** – NAVIMAT, Danish National Centre for Mathematics Education  **Denmark** – VIA University College
 **France** – PRES de l'Université de Lorraine  **Germany** – Cologne & Bonn Chambers of Commerce and Industry
 **Germany** – Thüringer Institut für Lehrerfortbildung  **Italy** – National Association of Science Teachers
 **Poland** – Jagiellonian University  **Spain** – University of Alicante  **Turkey** – Academy of Sciences/TUBA
 **UK/ Scotland** – University of Glasgow  **UK / Northern Ireland** – Queen's University Belfast.

CONTACT DETAILS

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