



Pollen: IBSE programs in Germany and Europe

PD Dr. Skiebe-Corrette, 10.09.2009

Fifth International Conference: Quality growth of inquiry-based science education programs

Session III: Inquiry Based Science Education Programs in the global context

TuWaSI ist eine Initiative von:



Integriert in TuWaSI ist:



To analyze the support of International Agencies and Institutions to foster the IBSE Programs:

Networking, financing, technical support

1. European Union
2. Pollen in Europe
3. Pollen in Germany
4. TuWaS! In Germany

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Programs promoting IBSE funded by the European Union



Coordinators: La main à la pâte

- 5 partners + 2 associated partners
- 2004 – 2006
- Organising a conference to promote IBSE



- 12 partners + 4 observing countries
- 2006 – 2009
- Supporting IBSE in 12 "Seed cities"



- 24 partners from 21 European countries
- 2010 – 2012
- Disseminate what has been learned from Pollen and Sinus-Transfer

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12 Partners



- École Normale Supérieur – LAMAP - FRANCE
- Université libre de Bruxelles – BELGIUM
- University of Tartu – ESTONIA
- Freie Universität of Berlin – GERMANY
- Consortium Innovation Training Educational Inquiry – ITALY
- Universiteit van Amsterdam – NETHERLANDS
- Ciência Viva – PORUGAL
- P.A.U. Education – SPAIN
- Royal Swedish Academy of Sciences – SWEDEN
- University of Leicester – UNITED KINGDOM
- Apor Vilmos Catholic College – HUNGARY
- University of Ljubljana – SLOVENIA.

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pollen in Europe and Berlin

Berlin as a model for other German cities

- **Goal:**
support 4 Mio. hours of science classes
duration: 3.5 years
- **Concept:**
100 primary schools
1 500 classes
37,500 pupils
- **Budget:**
1,75 Mio. EUR

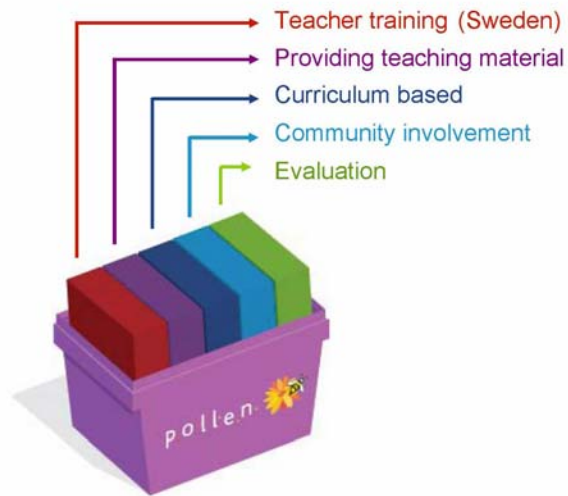


Approach in Berlin

- **Start:**
January 2006
- **Goal:**
improve science education
10 primary schools
150 classes
3 750 pupils
- **Methods**
learn from partners

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Learn from role models: Pollen Partners + NSRC



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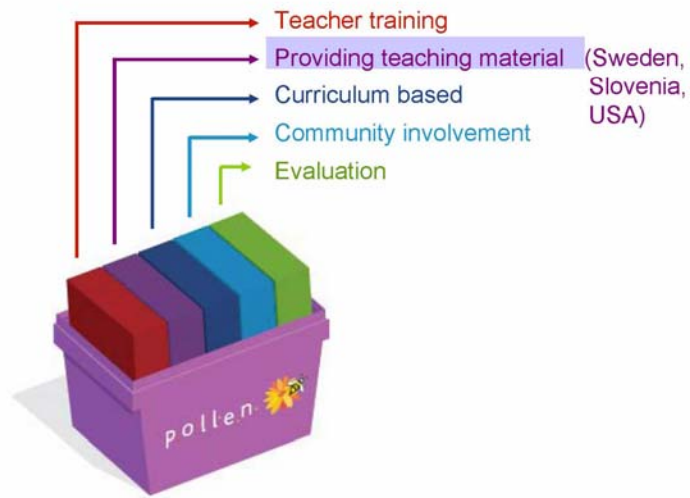
6 different topics for teacher Training

- Motion & Design
- Microworlds
- Chemical Tests
- Electrical Circuits
- The Life Cycle of Butterflies
- Solids & Liquids



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Researched based teaching material

- Adaptation of units of the *National Science Resources Center*
- Is successfully used also in the USA, Sweden, Mexico and Chile
- Experimental material for 30 pupils
- Student and teacher guides
- 16 lessons for each topic
- 24 Topics



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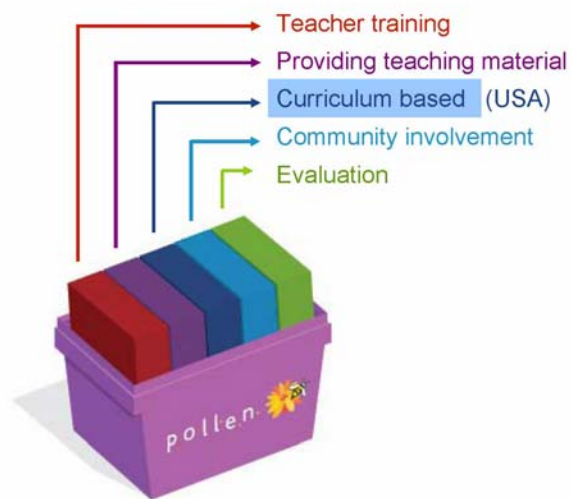
24 Topics for primary schools



Grade	Biology	Earth Science	Physics & Chemistry	Technology
1	Organisms	Earth science	Solids and Liquids	Comparing and Measuring
2	The Life Cycle of Butterflies	Soils	Changes	Balancing and Weighing
3	Plant Growth and Development	Rocks and Minerals	Chemical Tests	Sound
4	Animal Studies	Land and Water	Electrical Circuits	Motion and Design
5	Microworlds	Ecosystems	Food Chemistry	Floating and Sinking
6	Experiments with Plants	Measuring Time	Magnets and Motors	The Technology of Paper

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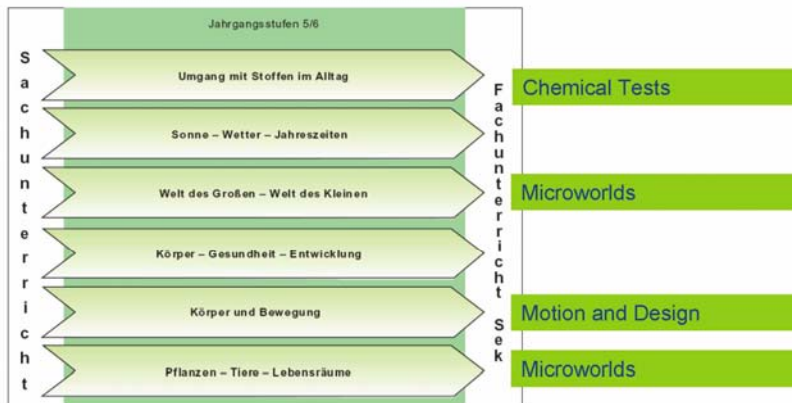
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Science curriculum grades 5 + 6

Standards at the end of grade 6

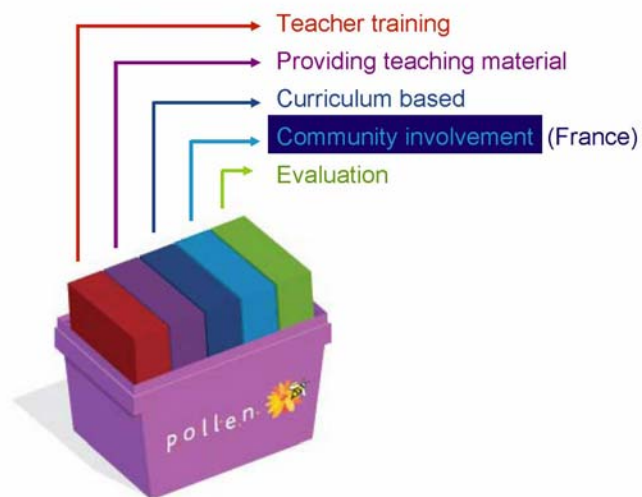
- All skill related standards are covered by the teaching material
- 85% of the subject related standards are covered

5.1 topics



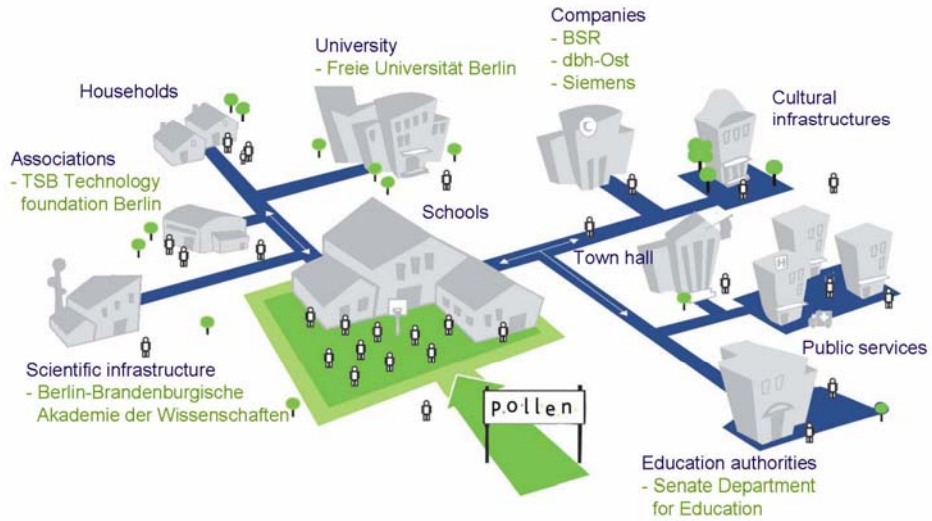
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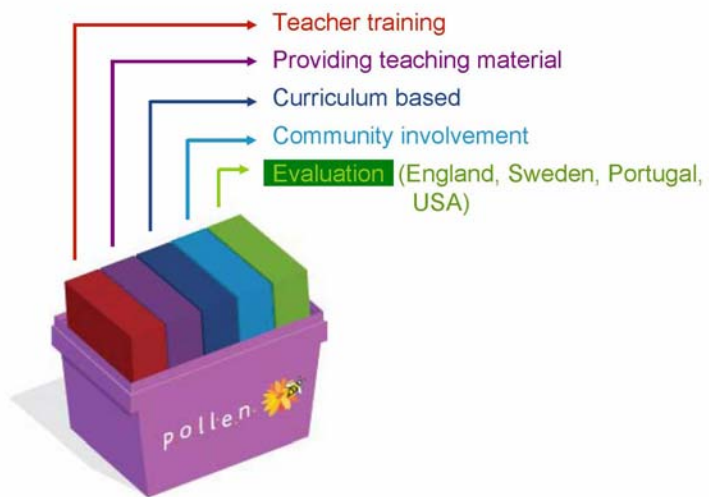
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Community involvement



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Teachers' Changing Confidence and Attitudes over Two Years

Tina Jarvis, Anthony Pell and Phil Hingley, University of Leicester

- average of over 20 years teaching experience
- teachers' confidence in teaching science and technology showed a substantial gain on all aspects except biology
- is higher if more classes have been taught
- even experienced science teachers show increases in confidence
- teachers increasingly valued the in-service
- attitudes towards the importance of making links to everyday experience and the science of the past also increased
- limited interaction with the local community

Suggested reasons

- High quality long-term in-service training
- Material support
- Good match with the curriculum
- Additional funding

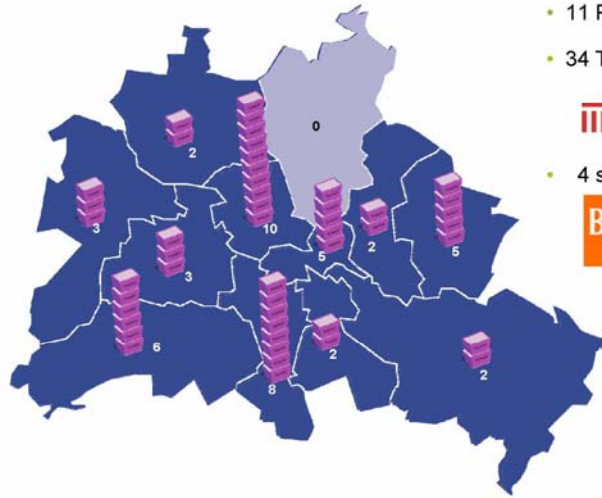
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THINK BIG and long term – Look for Partners



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Dissemination of TuWaS! in Berlin



- 11 Pollen schools
- 34 TuWaS! schools



- 4 schools



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Dissemination within Germany



- Berlin**
- 49 schools
 - 281 teachers
 - EU
 - TSB Technology foundation Berlin
 - Senate Department for Education



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Dissemination within Germany

Pollen-Website

Nordrhein-Westfalen

- 21 schools
- 66 teachers
- Chamber of Industry and Commerce (IHK) of Köln
- IHK Bonn / Rhein-Sieg



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- 21 schools
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Brandenburg

- 1 schools
- 5 teachers
- 2009: 6 schools
- the Association of the German metal and electrical industry

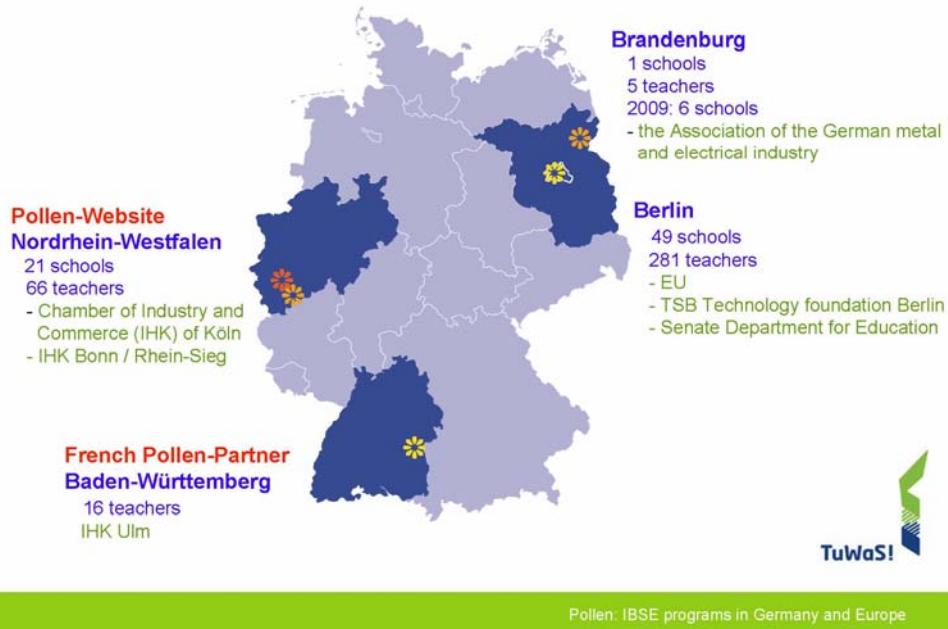
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Dissemination within Germany



Future challenges?

1. **Extend TuWaS! from covering 12 % of the primary schools in Berlin to 50 %**
Funding is missing
2. **Training student teachers for primary school**
First steps are done at the Freie Universität Berlin
3. **Training center for IBSE for primary school teachers**
**Part of the contract between Freie Universität Berlin
Berlin-Brandenburg Academy of Science**
4. **Material center that provides the materials for the teachers of Berlin and is a model for other cities**
**Freie Universität Berlin provided the space
Personel is missing**
5. **Dissemination center for other cities in Germany that want to implement a science reform program**
Part of Fibonacci



THANK YOU FOR YOUR ATTENTION

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