

“Scientiam Inquirendo Discere” (SID): develop Inquiry-Based Science Education in Italy

Summary : The Italian Association of Natural Sciences Teachers (ANISN) discovered the Foundation La main à la pâte (Lamap) during an international conference in 2008, and has since established a fruitful collaboration. ANISN adapted resources and materials to develop their own Inquiry-Based Science Education (IBSE) programme: “Scientiam Inquirendo Discere” (SID) which now has 10 centers.

AUTHOR(S)

Anna Pascucci
Coordinator
anna.pascucci @gmail.com

Report written by :
Alice Balguerie

PROGRAMME

Start date : 2010
Implementation site : Italy
Budget : 40000 €
Source and specificity of funding :
Ministry of Education, local authorities and private foundations

ORGANISATION(S)

Association des Enseignants en Sciences Naturelles
Via Mezzocannone 8
80134 Naples
<http://www.anisn.it>
Employees : 40
Volunteers : 522
Members : 2000



REVIEW COMMITTEE

Date of proofreading : 2015/03/23

Opinion of the Committee : *High impact !*

Solution(s) : *Education*

Participant : *Academic, research Institute, Association, ONG, Public institution*

Country : *Italy*

Beneficiaries : *Adolescents, Pupil, students*

Stature of the programme : *National*

Field of action : *Education, Training, Science*

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*To quote from a document published by RESOLIS : Pascucci, « “Scientiam Inquirendo Discere” (SID): develop Inquiry-Based Science Education in Italy », **Journal RESOLIS** (2015)*

BACKGROUND OF THE PROGRAMME

Anna Pascucci, from the Association of Teachers of Natural Sciences (ANISN), met Pierre Léna, from the Foundation La main à la pâte (Lamap) in 2008 during an international conference on science education. As she was very interested in Lamap pedagogy promoting Inquiry-Based Science Education (IBSE) (where students progressively develop key scientific ideas through learning how to investigate and building their knowledge and understanding of the world), in 2009 she came to Lamap headquarters in Paris for three weeks to study the Lamap model, meet members of the team responsible of different areas, and visit pilot centers and classes.

A strategic plan was designed and presented in May 2010 by ANISN to the Academia Nazionale dei Lincei, the French Academy of Sciences, and the Ministry of Education. Through different agreements, they became partners to launch the project ‘Scientiam Inquirendo Discere’, promoting IBSE in Italy.

GOALS OF THE PROGRAMME

- The overall objective is to improve science education in Italy through the implementation of IBSE at schools, setting up a fitted training programme for teachers
- At the beginning, the targets were only the first years of junior high schools, the grades with the most serious problems. The programme has since expanded to primary schools, kindergarten, and the other years of secondary school (high school).

IMPLEMENTED ACTIONS

- Benchmark and study of the existing programmes of IBSE
- Translation of Lamap materials, and adaptation to different levels. An expert group meets to develop new resources and materials.
- Creation of the first pilot center in Naples in 2011. When a new pilot center is created, it is associated with an older one that supports it. In each pilot center, there are different contemporary levels of training depending on the age of the pilot center.
- Trainers (4 to 8 in each pilot center) are trained each year with the support of Lamap and attend 3 or 4 national meetings each year.
- The Association (ANISN) is connected with the teachers thanks to the activities that it runs. Thus, the programme started with a network of selected and motivated teachers. Since 2011, training of teachers at different grades from kindergarten to junior high school school, and development of new materials adapted to each level. Teachers are trained altogether, regardless of the level they are teaching in, because they can help each other thanks to their different backgrounds.
- When a teacher becomes involved, he/she: is trained (attend courses from October to May), receives the needed materials, is supported by trainers, other teachers and scientists to implement the programme.
- In 2014, an external evaluation was made by experts from Brussels



QUANTITATIVE AND QUALITATIVE RESULTS FROM THE IMPLEMENTED ACTIONS

- 3 pilot centers (2011/12) ; 5 pilot centers (2012/13); 7 pilot centers (2013/14); 10 pilot centers (2014/15)
- 55 trainers and 319 teachers were trained from 1 to 3 years (50- 60 hours/year of courses + at least 20 - 40 hours/year of experimentation in classroom) in 80 schools.
- In total, over the three years, 27,774 students have gone through the programme
- At present 12 ANISN lead members, 70 trainers, 492 teachers, and 21,750 students are working in the SID programme
- No teacher has left it since the beginning.
- Equal implementation in rural and urban schools
- The external evaluation states:
 - > The activities to disseminate IBSE all over Italy have been very efficient especially taking into account the limited means and resources available
 - > Trainers are motivated and committed to the project
 - > Teachers have gained confidence
 - > According to the teachers, an increase of the pupils' team-building skills and the interest and motivation of the pupils to study Mathematics Science Technology.
 - > A key element that needs particular attention to enhance the project's sustainability: the integration and mainstreaming of the achievement of the Scientiam Inquirendo Discere project in the education systems across Italy.

ORIGINAL CHARACTERISTICS

COLLABORATION WITH LAMAP

- The project is based on Lamap pedagogy and experiences. Thanks to the international network developed by Lamap, teachers in Italy feel that they are part of an international programme and they can benefit from experiences of other teachers. Lamap supports the training of the trainers, involves ANISN in European projects (like Fibonacci and SUSTAIN), and allows access to different types of resources.
- Possible improvement: promote the creation in each country of an international Lamap reference center. Each country, through this International Lamap reference center, could share how they train the trainers, exchange resources, create a pool of international trainers, create an international committee to sustain international vision and actions.

PARTNERSHIP(S) DEVELOPED IN THE CONTEXT OF THE PROGRAMME

- Financial support from the Ministry of Education and local foundations
- Some local authorities help with the dissemination of the programme.
- Local Academies, research center, universities hosted the SID pilot centers
- Some scientists from several universities or Accademia di Lincei help developed new material, supporting the programme and the teachers
- The Accademia has facilitated the link with Science Academies in other countries, and has played a political role.

FEEDBACK

Difficulties and/or obstacles encountered during the programme's implementation :

- Shortage of funds, and delays receiving funds from the Ministry. They often have to start the activities in the schools before receiving the funds. In each pilot center, there is a list of schools and teachers that would like to be part of the programme, but the pilot centers cannot accept them because of the lack of funds.
- Lack of stability: since the start, there have been 4 different Ministers of Education.
- Lack of human resources dedicated to the programme. The programme is run mainly on a voluntary base. Many trainers are retired teachers.
- The Association of Teachers is leading the project, and it does not have much political influence.

Solutions used to overcome the difficulties and/or obstacles :

- Find different kinds of financial support: turn to private foundations and look for European funds.

Suggestions for future improvement :

- Reinforce the International connections (participation in international initiatives and projects; train the trainers abroad)
- Improve the National dimension through the sharing of trainers, resources, tools, organising meetings and intensive residential training course for trainers.
- Sustain the existing pilot centers by increasing slowly the number of teachers and schools involved while maintaining the quality of the process. Involve more teachers within the schools that already implement the programme. Involve more schools in the pilot center's area to enlarge the local community of teachers.
- Expand the programme if possible in the 2 main regions that are still not covered by the 10 pilot centers.

Summary of factors responsible for the programme's success :

- The background study of the Lamap model and other European models thanks to the EU project (Fibonacci)
- The close collaboration with Lamap in training trainers and the involvement in International initiatives
- Teachers must know that they are not alone, for which it is necessary to:
 - Have a deep understanding of the schools' and teachers' needs
 - Develop activities that are connected with the curriculum and implemented during school hours
 - Implement a strategy of associating partners (for schools and pilot centers)
 - Encourage the teachers to share their experiences supporting peer communities
 - Provide the teachers with the needed materials, giving the kit boxes for free
 - Support interconnected dimension of training: local, national, international
- Ask for the help of scientific experts for some subjects
- Give the opportunity to students to share their views on IBSE and tell what has brought them to the programme; it is the best means to motivate other teachers about the effectiveness of the programme.
- According to the external evaluation, "there is a clear correlation between the commitment and dedication of the coordination and the partners and the quality of the work achieved".



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TO KNOW MORE

- See the appendix to know more about IBSE
 - More details about the pilot centers and the teachers' training:
 - > The model of pilot center foresees: a responsible from ANISN (Association of Teachers in Natural Sciences); a scientific advisor from Academia; from 4 to 8 trainers; from 20 to 160 teachers; from 600 to 5000 students (4-16 years old) involved. The hosting institution of a pilot center, that gives space and facilities for free, is a research institution, University, museum or local Academia.
 - > The locations of the pilot centers are chosen according to the local support of the Academia or of one university, and if the Association of Teachers has a local session there.
 - > In order to be implemented in a new school and break the isolation of single teachers involved in the programme, at least two teachers of a school had to be involved, with the agreement of the headmaster.
 - > In remote areas, schools can play the role of reference school and connect with other schools to facilitate the development of the program.
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