FONDATION
La main à la pâte

POUR L'ÉDUCATION À LA SCIENCE

Our international expertise

THE FOUNDATION FOR SCIENCE EDUCATION, *LA MAIN À LA PÂTE*, WAS CREATED IN 2011 BY THE ACADÉMIE DES SCIENCES, THE ÉCOLE NORMALE SUPÉRIEURE (PARIS) AND THE ÉCOLE NORMALE SUPÉRIEURE DE LYON.

IT CONTINUES THE WORK STARTED BY THE *LA MAIN À LA PÂTE* OPERATION, AN INITIATIVE LAUNCHED IN 1995 BY THE ACADÉMIE DES SCIENCES UNDER GEORGES CHARPAK, NOBEL PRIZE IN PHYSICS.

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Two decades serving teachers and students

DANIEL ROUAN, PRESIDENT OF THE FOUNDATION *LA MAIN À LA PÂTE*, MEMBER OF THE ACADÉMIE DES SCIENCES
OLIVIER PIRONNEAU, MEMBER OF THE ACADÉMIE DES SCIENCES, DELEGATE FOR INTERNATIONAL AFFAIRS

For over 20 years, *La main à la pâte* has been an ideas laboratory for innovative practices that aim to improve the quality of science teaching in primary and middle schools in France, Europe and the world.

The Foundation, which has carried the project forward since 2011, brings together partners from a variety of backgrounds to work on original projects that aim to develop, assess and share science teaching prototypes in a school environment. These prototypes move away from traditional teaching approaches and have shown their capacity to inspire large-scale improvements in the educational systems in France and elsewhere.

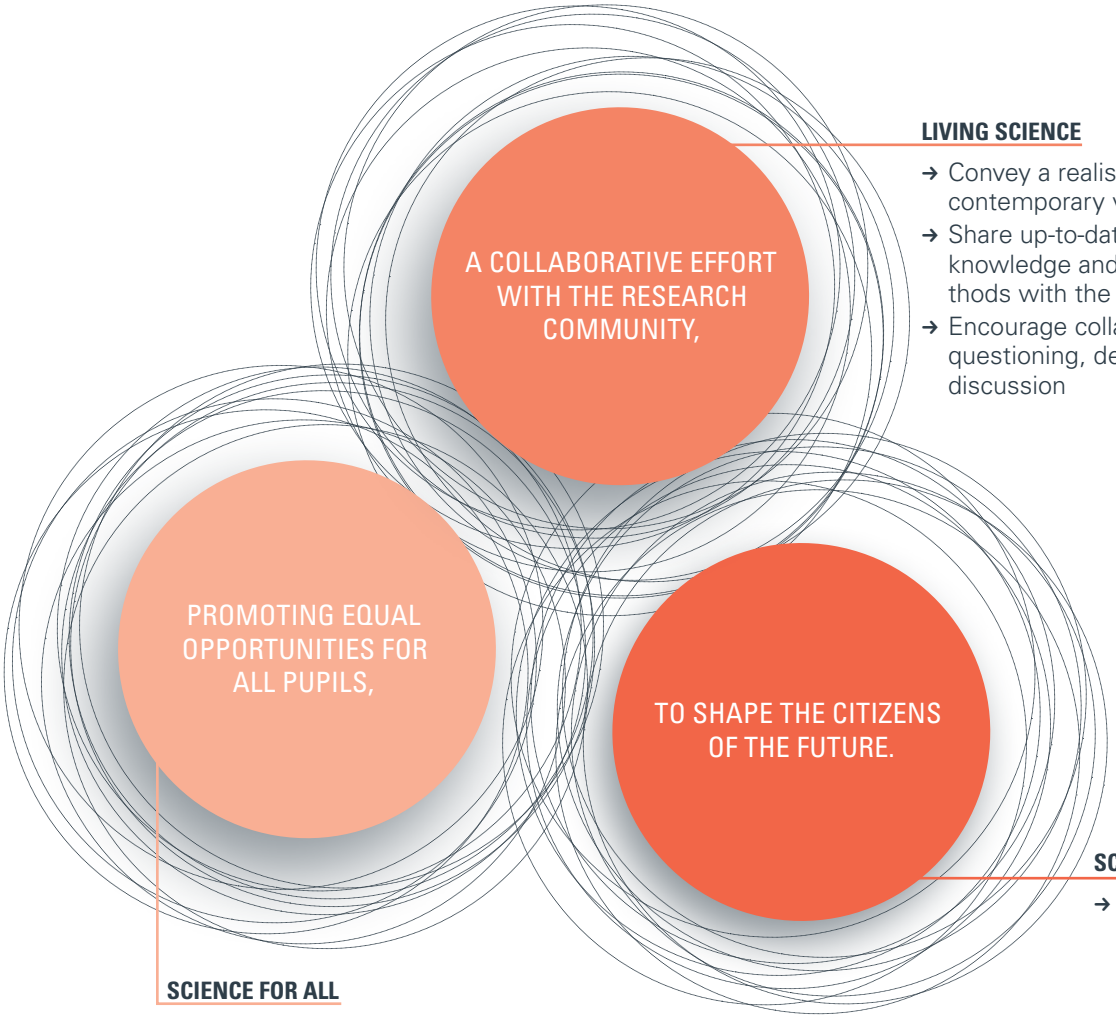
The Foundation defines its goals in close cooperation with the scientific world, in particular with the Académie des Sciences. A founding member of the Foundation, the Académie des Sciences is committed to promoting science teaching, a mission achieved thanks to its international networks and its support of the Foundation.

La main à la pâte's action is the result of a constant focus on children and teenagers. What can science education bring them, in the world they live in? How can discovering and learning about science cultivate their intelligence and sensitivities, develop their personality and talents, improve their social relations and prepare them for the future?

In an increasingly interconnected world, in which different countries are faced with converging challenges, *La main à la pâte* raises these questions not only in a French context but also abroad. In doing so, the Foundation highlights the key role that science has to play in understanding and finding solutions to 21st century issues, such as climate change, sustainable development and combating poverty. Its aim is to use its educational projects to prepare children to contribute actively to these future challenges and live together harmoniously.

While the ultimate aim is personal and collective fulfilment for all children, **the Foundation decided to focus efforts on teachers and their trainers, who are on the front-line of child education**. To foreign countries, support is through the sharing of best practices and developing local initiatives. The Foundation does neither undermine the actions of local players nor offer a one-size fits all approach, but rather works with the entire educational community, from a grassroots to central level, to innovate and seek solutions tailored to the specific context of each country.

Our vision of science education



LIVING SCIENCE

- Convey a realistic, appealing and contemporary vision of science
- Share up-to-date scientific knowledge and its production methods with the education world
- Encourage collaborative work, questioning, debate and scientific discussion

SCIENCE FOR ALL

- Reach all children through activities included in compulsory education
- Specific focus on pupils in difficulty or with special learning needs
- Encourage students to take up contemporary science and technology professions

SCIENCE FOR CITIZENS

- Transpose scientific practices to the classroom, linking them to societal issues and challenges (health, the environment, etc.)
- Help students acquire scientific knowledge and other skills necessary for discussion, respect and peaceful coexistence
- Develop critical thinking and rigour skills which underpin the scientific approach

Actions are approved by a scientific council and designed for and with teachers...

- Work with grass roots actors
- Promote and develop their initiatives
- Take inspiration from them, promote them and share them in France and abroad
- Strengthen ties and dialogue between educational, scientific and industrial communities

...bringing together partners and operators with support from the Foundation's operational network, in France and abroad.

Our expertise and strengths

TO PROMOTE AND IMPROVE SCIENCE TEACHING FROM PRESCHOOL TO THE END OF MIDDLE SCHOOL, THE FOUNDATION HAS DEVELOPED REPUTED EXPERTISE IN THE PROFESSIONAL DEVELOPMENT OF TEACHERS AND TEACHER TRAINERS IN FRANCE AND ABROAD.

OVER THE YEARS, WE HAVE DEVISED A SYSTEMATIC APPROACH BASED ON THREE FOCUS AREAS AND DEVELOPED STRENGTHS IN EACH OF THOSE AREAS.

IMPLEMENTING ASSISTANCE PROGRAMMES AND PROJECTS

Our expertise

Assisting public authorities and other actors involved in promoting science teaching, by creating professional development programmes for teachers and their trainers

Assisting pilot project testing to initiate programmes with a larger scope

Our strengths

Strong ties with the Académie des Sciences

Continuous, innovative experience in deploying locally-based, long-term projects: resource centres, scientific support, etc.

Practical tools to facilitate teacher follow-up for trainers

TRAINING TRAINERS AND TEACHERS

Our expertise

Implementing comprehensive training courses

Conducting one-off training sessions that cover all scientific disciplines (natural sciences, engineering, computer sciences)

Our strengths

Courses offering training in both content and pedagogy: living/contemporary science and inquiry-based learning

An original exploration of new topics: sustainable development, computer sciences, controversial societal issues...

Strong focus on interdisciplinarity

An offer combining on-site and distance training sessions (possibility of completing sessions partially or entirely by distance)

DESIGNING AND DEPLOYING TEACHING TOOLS

Our expertise

Designing ready-to-use materials in several formats (learning progressions, detailed sequences, equipment kits, etc.)

Assistance in implementing teaching projects: training, pooling tools and promoting collaboration between teachers and science professionals

Our strengths

A focus on inquiry-based learning

Proven experience across the sciences (natural sciences, engineering, computer sciences)

Multidisciplinary teams of scientists, engineers, teachers, trainers, experts in the education sciences, etc.

Synergy with training activities

What can the *La main à la pâte* Foundation provide its international partners? Support on three focus areas

Focus area 1 - Support expertise and consulting to define and implement assistance programmes and projects

The Foundation provides support throughout the entire process of creating and implementing professional development programmes as well as teacher and trainer assistance, in order to promote inquiry-based science education in a given region.

It also assists with the innovation or improvement of existing professional development programmes. To do so, the Foundation draws on networks of experimentation, resource-pooling and best practice dissemination that it has built up in France. It can connect these networks to initiatives supported abroad, enabling further cooperation in the provision of expertise.

Advocacy and involving policymakers are key prerequisites to launch efficient, lasting programmes. This is why the Foundation maintains a close relationship with the Académie des Sciences, its members enjoying the capacity to interact with senior decision makers, in order to foster recognition across the continents and institutions, such as government departments, international organizations and cooperation agencies, of *La main à la pâte*'s educational principles. Its action is also supported by an international committee made up of distinguished scientists.

→ See our proposition on page 8

Focus area 2 - Training trainers and teachers in primary and secondary education

The Foundation designs and implements comprehensive five-day on-site training sessions for teacher trainers, which may be combined within a professional development course. This is especially useful for partners wishing to create or reinforce autonomous trainer groups able to disseminate inquiry-based learning. All of these training actions are based on strict scientific content and designed to be in sync with the curricula of the recipient countries. They may target a specific scientific subject, which could be cross-disciplinary (such as energy and biodiversity, for example) and in certain cases, include a ready-to-use teaching tool for the class (see below).

Furthermore, the Foundation can also offer specialty training sessions focusing on methodology, in particular for the production of teaching tools (activities sequences, for example) or formative evaluation of teaching practices.

Some training sessions may be provided either partially or entirely by distance. Training sessions provided entirely by distance (MOOC) can also be followed by teachers.

→ See our proposition on page 12

Focus area 3 - Designing and deploying teaching tools

The Foundation designs ready-to-use, multi-format tools that enable teachers to carry out activities and scientific projects in the classroom. All of these tools are rooted in experimental sciences and technology. In addition, some lend themselves to the discussion of societal issues, through an interdisciplinary approach.

The Foundation offers specific expertise on the following themes: digital sciences, sustainable development, health, cognitive sciences and critical thinking.

It can also assist local actors with their strategy to deploy teaching tools: by improving or adjusting pre-existing tools (which may or may not have been produced by the Foundation) to the local context, organising training sessions, reflecting on resource sharing and collaboration between teachers and scientists, etc.

→ See our proposition on page 16

Who can benefit from our international expertise?

It is designed for structures outside France:

- Government departments in charge of basic education
- International institutions that support the improvement of basic education (European Union, Unesco, World Bank, regional development banks, etc.)
- Agencies for governmental cooperation involved in educational programmes
- Public or private school networks
- Local governments
- Associations, NGOs and foundations
- Businesses, specifically as part of their CSR
- Universities and other teacher training organisations
- Publishers of educational content

Who are our experts?

The Foundation has a network of experts capable of working in all countries (excluding security reservations). It is made up of members of the Académie des Sciences, Foundation staff and French national education system staff (inspectors, teaching advisors, teacher training college trainers, etc.), some of whom are involved in projects created by *La main à la pâte*: Pilot centres, Houses for Science, pilot middle schools.

The languages available are French, English, Spanish, Arabic and Portuguese (subject to availability). We can also offer our services in the presence of interpreters, provided by the partners if necessary.

The Foundation can also call on its network of international partners to take part in some interventions.

SUPPORT EXPERTISE AND CONSULTING TO DEFINE AND IMPLEMENT ASSISTANCE PROGRAMMES AND PROJECTS

Our contribution

The process of creating teacher and teacher trainer professional development policies and programmes includes **some or all of the following steps**.

1. **Needs assessment/study of an existing teacher professional development system (diagnostic phase):** [1]

This assessment phase, together with the **development of strategic advice**, is conducted in cooperation with local actors.

It may be conducted **at a distance** (documentary study, questionnaires, interviews), **and completed with an on-site visit that deepens the experts' knowledge of local specificities**, in particular by observing teaching or training practices. A report is produced.

2. **Definition of the framework and recommendations for the development of science teaching (strategic planning phase):**

This essential phase aims to **bring decision makers and actors on the ground together** to think collectively and lay the foundations for the desired programmes or projects. It may be a **high-level strategic workshop** (see example in sidebar), where awareness and engagement of decision makers may also be included, if necessary.

The Foundation can take care of the programming (content), speakers and the promotion (proceedings) of this type of event.

As the Foundation operates **in close relation with the Académie des Sciences**, it can rally senior academics that are in a position to share their strategic vision with policymakers concerning science education reform.

3. **Defining teacher professional development programmes or projects (operational planning phase):**

This phase concerns the staff in charge of professional development (PD) planning. This is when the **PD courses (for trainers and teachers) are defined in-depth**, including scientific and educational input, alternation between training sessions (on-site or remote, see below) and fieldwork, access to existing resources, etc.

1 The Foundation targets basic education, which is the 9 years of education provided, in most countries, in primary schools (5 years) and the junior cycle of secondary education, for example middle schools (4 years). It also includes preschool (kindergarten).

Strategic workshop to formulate an action framework for the development of science teaching

Duration : 2 to 3 days

Participants: Workshop designed for approximately thirty participants, such as policy-makers and senior government staff in education (from preschool to the end of secondary); actors from higher education institutions in charge of initial training and teacher professional development; academics, scientists involved in science education matters; representatives of cooperation agencies, financial backers, etc.

Aims: Draw up a strategic plan for the development of science teaching (pilot project on a limited geographic area, in view of extending the project to a whole region or country in the longer term).

Typical programme:

Day 1: Opening session with high-level institutional representatives.
Presentation of the *La main à la pâte* experience and the contextual setting in relation with current challenges (climate change, sustainable development, combating poverty, migrant crisis, etc.).
Hands-on session: experience an inquiry situation to understand inquiry-based science education.

Day 2: Presentation of the national/regional context concerning science teaching and discussions on the subject to lay the foundations of a strategic plan.
Presentation of *La main à la pâte*'s various fields of expertise and possible support within the strategic plan.

Day 3 (subject to schedule): Classroom visits, meetings with the scientific community and businesses, etc.

Workshop on planning a professional development programme

Duration: 3 to 5 days

Participants: Ministry of Education, tertiary institutions in charge of initial teacher training and teacher professional development.

Aims: Define an operational professional development plan for trainers and/or teachers in a given area.

Typical programme:

Day 1: Analysis of existing professional development, and/or initial education, structures: strengths and weaknesses in terms of content (discipline, didactics, teaching) and in terms of operating modes.

Day 2: Defining the reformed professional development (and/or initial education) programme: content, duration and advancement of training, additional support activities (class visits/observation, teacher networks, scientific support, etc.).

Day 3: Work on the operational aspects of the professional development programme: principles, implementing and follow-up for on-site/distance/blended training courses; coordination and follow-up of support measures.

If possible, classroom visits and observation of training sessions should be included.

Optional extra: the Foundation can also evaluate an existing professional development plan and formulate recommendations for its improvement.

The Foundation also offers **advice to stakeholders on how to set up and run a local teacher professional development structure**, of variable size (school network, resource centre, conditions for set-up and management, making use of the science rooms and labs in schools, etc.), including the use of pre-existing structures, that were assessed or not by the Foundation (see point 1). This support may be provided in the form of a dedicated workshop (see example in sidebar).

4. **Assistance during programme implementation (follow-up phase):**

The Foundation offers **distance coaching for project coordinators**, science education centres and other local pilot projects: assistance in preparing training, classroom monitoring methods for teachers and formative assessment of their practices, assistance in preparing important meetings, project updates, advice on how to optimize and disseminate pilot tests so that they may be shared, etc.

It also offers partners, specifically in French-speaking countries, **the possibility to interact and collaborate with members of the teaching experimentation (innovation) and development networks that it coordinates in France**, in particular the *La main à la pâte* Pilot Centres, pilot middle schools and Houses for Science networks.

5. **Additional support, advice and expertise on specific topics**

The Foundation also provides assistance and advice on **innovation or improvement of specific aspects** of existing professional development programmes and projects. The Foundation offers expertise on the following topics (non-exhaustive list):

- Distance training (MOOC, combinations of on-site and distance training): principles, methods and tools (setting up and using collaborative tools for PD: minimum technical specifications, how to conduct the training session, etc.);
- **Collaboration with the scientific community and businesses** (in the form of a practical workshop on inquiry-based science education and collaborating with teachers for researchers and technicians, for example on the ASTEP (primary school assistance for science and technology) system model, see example below. Another type of workshop can provide advice on how to set up and run partnership projects;
- Other topics available on request and subject to feasibility.

Workshop to rally the scientific community for science education

Duration: 2 days

Participants: Department of Education, Academies of Sciences, higher education institutions in charge of initial teacher training and teacher professional development, universities and public and private research centres, centres for scientific culture, businesses, etc.

Aims: Foster the creation of collaborative ties between the educational and scientific communities to benefit science education.

Typical programme:

Day 1: Rallying the scientific community: philosophy (living science) and principles. Practical methods for co-designing training sessions using the experience of the Houses for Science.

Day 2: Rallying the scientific community for classroom support for teachers: the ASTEP programme, open school projects in the area, the diversity of scientific players.

Our added value

- **An international annual week-long seminar**, for 50 participants from non-European countries to:
  - discover all the activities and projects the Foundation develops;
  - initiate dialogue, for those who wish, with the Foundation team in order to lay the groundwork for structured collaboration.
- **An ability to set up and, if necessary, take responsibility for the institutional coordination of multi-partner projects** to create professional development programmes, pilot projects and teaching tools. This includes:
  - Assessing the project and financing opportunities according to the context and partner dynamics; scouting for partners, specifically in the scientific field;
  - Setting up projects and drafting grant request applications or tender bids; objectives, operational content, budget/price offers, programming, etc.
  - Contracting projects, coordinating, monitoring and reporting, including financial aspects, in particular for projects supported by major bilateral or multilateral backers.

Some of our past projects

- Support for the planning of integrated professional development programmes in Mali, Haiti, etc.
- Design, setup and coordination of several European projects supported by the European Commission: SciencEduc and Pollen (FP6), Fibonacci (FP7), SUSTAIN (Lifelong Learning Programme), LINKS (Erasmus +).
- Joint organization with ECO-Science Foundation and ISTIC (International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO) for the Astana seminar in Kazakhstan on science teaching in June 2015 to rally the support of policymakers (government departments, science academies, universities, etc.) of ECO's (Economic cooperation organisation) ten member states in order to define national strategies for science teaching development.
- Assistance to centres dedicated to science teaching in Vietnam (Quy Nhon centre), Lebanon (Eureka Centre in Jounieh), Italy (SID network of 10 centres), etc.

What our partners say about us

"I would like to thank you for your efforts in successfully running the International Seminar. This seminar was interesting and beneficial in more ways than one: interesting and varied programme; rich and instructive content for improving science teaching; activities that encourage involvement and commitment; competent and friendly organizational staff from *La main à la pâte* Foundation; valuable and enjoyable discussions with participants and a warm welcome. Thank you!"

Participant in the 2017 International Seminar

"This workshop on science teaching organized in Astana was a milestone event in the efforts to promote this form of teaching in ECO member countries and which will help them attain the Millennium Development Goals between now and 2030."

Extract of the final declaration of the Astana workshop jointly organised in June 2015 by *La main à la pâte* for representatives of ECO's ten member states (Iran, Turkey, Azerbaijan, Kazakhstan, Afghanistan, Turkmenistan, Kyrgyzstan, Uzbekistan, Tajikistan, and Pakistan).

TRAINING TRAINERS AND TEACHERS IN PRIMARY AND SECONDARY EDUCATION

Our contribution

The Foundation organises training sessions for teacher trainers only, with the exception of MOOCs, which are for teachers.

A **basic training course** is offered to facilitate the practical application of inquiry-based science education (IBSE). The course consists of two five-day sessions and may also include distance learning support, which meets the course objective of 60 to 80 hours of professional development necessary for trainers to become proficient (see description of typical programme in the sidebar). For a course targeted at secondary education, the scientific disciplines offered are upon request and on a needs basis.

The basic course may be completed by a third session, which, if included, offers several possible options:

- **The creation, use and application of teaching practice assessment tools** (principles of formative assessment, data collection via observation grids or interviews, data analysis, using individual feedback for strategic planning).
- **Scientific interdisciplinarity**, in particular in secondary education, as an intrinsic element of modern science. How can it be practiced?
- **The use of mind mapping for improved assessment of scientific notions** taught at every age of compulsory schooling.
- **Adjusting and/or producing resources for the classroom based on conceptual scenarios** (topics chosen by the project commissioner) or training resources
- **Training sessions that offer an introduction to science through a specific theme**, following a ready-to-use teaching module for teachers, that may be translated and adapted (see below): sustainable development, computer sciences, critical thinking, etc. (see example on next page).

Optional extra: the **training sessions described above may also be offered separately from the basic course**, for groups of trainers who have already acquired the necessary prerequisites.

Distance support may be provided with any training session.

Inquiry-based science education course for trainers

Duration: Two five-day sessions over two years minimum

Participants: Training designed for a group of 30 teacher trainers (primary or secondary education).

Aims: Upon completing the two training sessions, trainers will have acquired a comprehensive capacity to train and assist teachers in implementing an inquiry-based approach in the classroom. They will be able to suggest suitable professional development activities that are effective and tailored to local needs.

Typical programme:

Session 1: The essentials of inquiry-based teaching: hands-on sessions, analysis of class videos, role and gestures of the teacher/trainer, etc.

Session 2: Going deeper: feedback on the preceding year, reinforcement of existing skills and development of new ones, reflection on science and language, etc.

Prerequisites: Experience in teacher training. Between the two sessions, trainers train teachers and follow them in their implementation of science sessions in the classroom.

Optional extra: adding distance follow-up between the two sessions offers greater support to the group of trainers.

Science and sustainable development: a course for trainers

Duration: 5 days

Participants: Training designed for a group of 30 teacher trainers (primary or secondary education).

Aims: Upon completion of this training session, the trainers will have acquired scientific knowledge, skills and teaching tools to conduct multidisciplinary activities on sustainable development.

Programme: Upon request, the course may focus on, for example, climate change, the ocean, biodiversity, eco mobility, eco homes, natural risks…

Prerequisites: Experience in teacher training.

The Foundation can provide French-speaking countries with the MOOCs it has created for primary and secondary school teachers: "L'air, quelle drôle de matière" ("Air, what strange matter"), "Regards croisés sur l'énergie" ("Interdisciplinary perspectives on energy") and "Esprit scientifique, esprit critique" ("Scientific thinking, critical thinking", upcoming). These can be accessed on the Foundation's own sharing platform. For non-French-speaking countries, translation (subtitling) is possible under certain conditions.

Two standard options are available (subject to technical feasibility):

OPTION 1

MOOC provided on the platform

Partner is fully independant using MOOC

Technical support provided by the Foundation for setup

OPTION 2

MOOC provided on the platform

Training session for trainers in MOOC support (4 to 5 days)

Distance supervision included

Our added value

For all training sessions

- needs and actions assessment;
- possibility of distance supervision;
- ready-to-use training materials and tools available for trainers and teachers (for example, hands-on activities);
- all scientific and interdisciplinary subjects covered; topical subjects may also be covered: sustainable development, computer sciences, the brain, scientific thinking and critical thinking, etc.;
- linking scientific content to methods for teaching them;
- training in several languages (French, English, Spanish, Arabic…).

Also available with MOOC courses:

- coordinator support from the Foundation to establish the course so that it fosters a participative and collaborative approach (experience sharing among participants);
- a close correlation between interdisciplinary scientific input and working on classroom practices (video analysis, provision of resources for science teaching, etc.);
- original and diverse training tools and methods.

Some of our past projects

- Conducting three-year teacher training programmes in several countries, the most recent including South Africa, Haiti, Malaysia, Mali and Timor-Leste.
- Co-designing professional development and assessment tools adapted to the local context in Haiti: observation charts, interview grids, class session videos, etc.

What our partners say about us

Participants in distance training sessions

> "An excellent course that was well organised. It makes us want to teach science in the classroom. It reassured me in my decision to conduct several very simple experiments, easy to reproduce at home, every week. My students look forward to the "science" time and are ever more eager to learn! They are getting increasingly better at expressing themselves."
>
> A participant in the MOOC: "L'air, quelle drôle de matière" ("Air, what strange matter"), in France

Participants in on-site training sessions

> "We would like to thank *La main à la pâte* and the two trainers who enabled participants from all across Pakistan to discover new teaching practices related to the inquiry-based approach. The trainers were excellent, and they were successful in transmitting their expertise to the participants, engaging them actively throughout the training workshop. Discussions are ongoing thanks to the Internet. Thank you once again!"
>
> ECO-SF, a Foundation partner and co-organiser of the training programme in Pakistan

> "Taking part in the pilot programme and training sessions helped me think like a scientist and not just a teacher; adopting the inquiry-based approach actually helped me develop my own scientific knowledge and skills."
>
> Participant in the pilot programme in South Africa

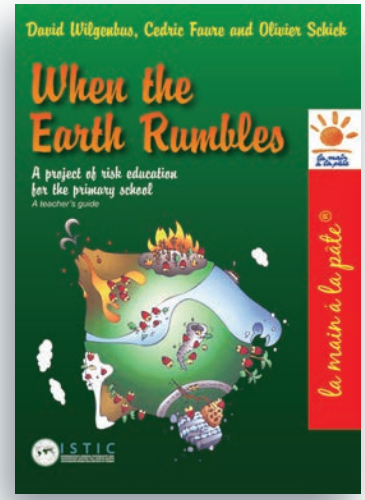
DESIGNING AND DEPLOYING TEACHING TOOLS

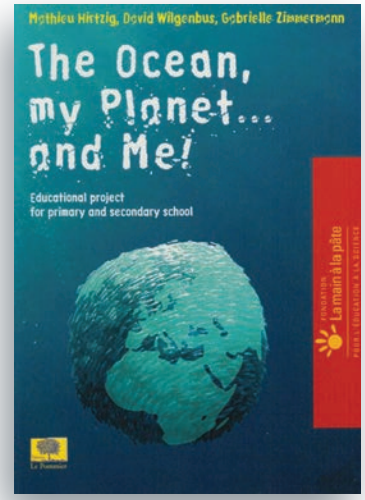
Our contribution

1. **Designing classroom and training material in several formats**

The Foundation offers its expertise at various stages:

- Teacher or trainer needs analysis: including assessment of the quality of existing classroom resources available to teachers. The Foundation can evaluate resources and formulate recommendations for their improvement (see example in sidebar);
- If necessary, new tools can be designed by harnessing teaching and scientific skill sets tailored to each topic. The Foundation can:
  - produce non-contextualised teaching tools that can be adapted and translated by local actors;
  - adapt, if necessary, these tools or other pre-existing tools (in particular the many tools designed by the Foundation for France and focusing on compulsory education curricula) to specific country contexts in collaboration with local actors;
  - assist local material creators to produce contextualised resources to be used in the country in question (see example in sidebar).





Evaluation of teaching resources for the classroom or training sessions

Duration: Depending on the scope of the resource, we suggest 3 days for 10 class sessions.

Target: Resource designers from departments in charge of resources and curricula, higher education institutions in charge of initial teacher training and teacher professional development, associations, foundations, centres for science outreach, etc.

Services provided: Evaluation of scientific content (relevance to curricula and learning objectives, both in terms of knowledge and competencies, accuracy and contemporaneity, suitability of scientific explanations for the profile of teachers or trainers); evaluation of teaching quality (progression of sequences/sessions, quality of activities on offer, their wording and illustrations, and estimation of the level to which inquiry-based learning is implemented, etc.).

Producing thematic classroom resources

Possible activities:

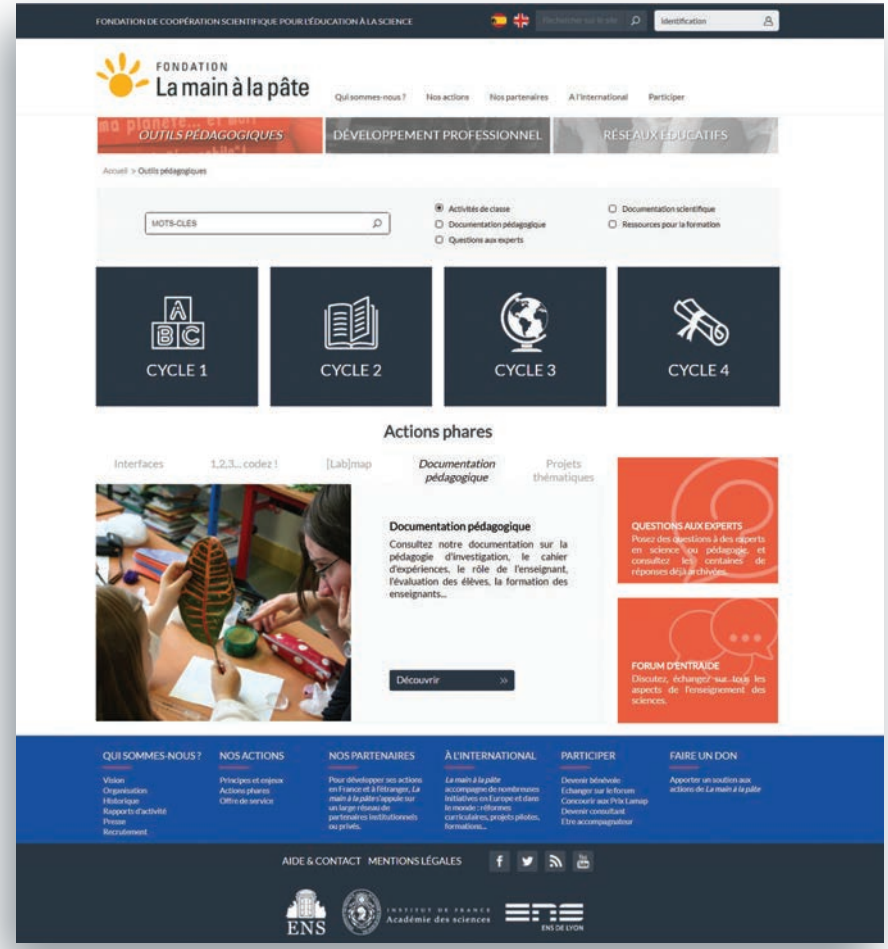
- Preparing a conceptual scenario/sequence plan: 2 to 3 days.
- Design and writing of class sessions (45 to 50 minutes of activities each): as a guide, 10 days for a 5-class sequence.
- Tests in class: 2 days to design the protocol for the tests to be run in the country; distance support provided during the tests then review of the class sessions according to feedback (duration subjected to the number of sessions tested).

Optional extra: the Foundation also offers training sessions for the production of resources to strengthen teachers' and their trainers' self-sufficiency (see above).

2. **Implementation of teaching projects, multilingual collaborative websites, bank of teaching tools**

The *La main à la pâte* Foundation can assist partners in the large-scale implementation of teaching projects by offering training sessions, advice on pooling tools and setting up collaboration projects between teachers and scientists.

It also provides on its website and its partners' websites, free of charge for the teaching community, a bank of classroom activities, teaching, scientific and bibliographic materials on a wide variety of topics in many languages.



***La main à la pâte* partner websites**

In English *I do I discover*, developed by ISTIC
http://www.istic-ibse.org/

In Spanish *Indágala,* developed by the Mexican Academy of Sciences
http://www.indagala.org/

In German *Sonnentaler*, developed by the Free University of Berlin
www.sonnentaler.net

In Arabic, developed by the Bibliotheca Alexandrina
lamap.bibalex.org

And also in Chinese, Serbian and Vietnamese

Indágala
Espacio para aprender y compartir ciencia

اكتشف بنفسك

I do, I discover...

Sonnentaler
Naturwissenschaften in Kita und Grundschule

Our added value

For production

- covering all scientific disciplines and with perspectives for new topics, in particular societal issues such as sustainable development, health and the digital world;
- ready-to-use tools for teachers and trainers that incorporate the inquiry-based approach (progressions, detailed sequences, fact sheets, possible material, scientific and teaching information, etc.);
- tools available in several formats (printed guidebooks, websites, resources kits, etc.);
- support for the test phase methodology and validation of teaching tools (procedures);
- possible translation of resources produced in French; recommendations for adaptation to the context of user countries;
- coproduction partnerships with publishers (guides and kits), graphic designers and developers (multimedia activities), etc.

For deployment

- international partnerships and networks capable of supporting dissemination;
- partner websites of *La main à la pâte* in English, Spanish, German, Arabic etc. hosted by the Foundation's partner institutions;
- remote assistance for local project coordinators for more effective dissemination and appropriation of technical tools (web architecture) and resources.

Some of our past projects

- Production of several teaching guides, in particular on topics related to sustainable development (for example, *The ocean, my planet and me!*) or new disciplines, in particular computer sciences (*1,2,3...Code!*).
- Translation of a number of teaching guides: *When the Earth Rumbles* (English and Spanish), *Screens, the brain and the child* (English), etc.
- Evaluation of classroom resources produced as part of a programme in Romania and recommendations on how to improve them.
- Consulting and assistance for learning progression (from kindergarten to the end of middle-school) and resource production at the French American International School of Portland, Oregon (USA).

What the users say about our teaching tools

"Our little school of 50 students wanted to know if their behaviour in lakes, rivers, on the coast and in the sea had an impact on global warming. When *La main à la pâte* published this guide, it was a real teachers' treat". As a primary school teacher in charge of this major project, I am delighted to have received this guide which is so well made and helps us so much in our inquiry. A big THANK YOU!"

Florence M., primary school teacher,
about the module, *The Ocean, My Planet and Me!*

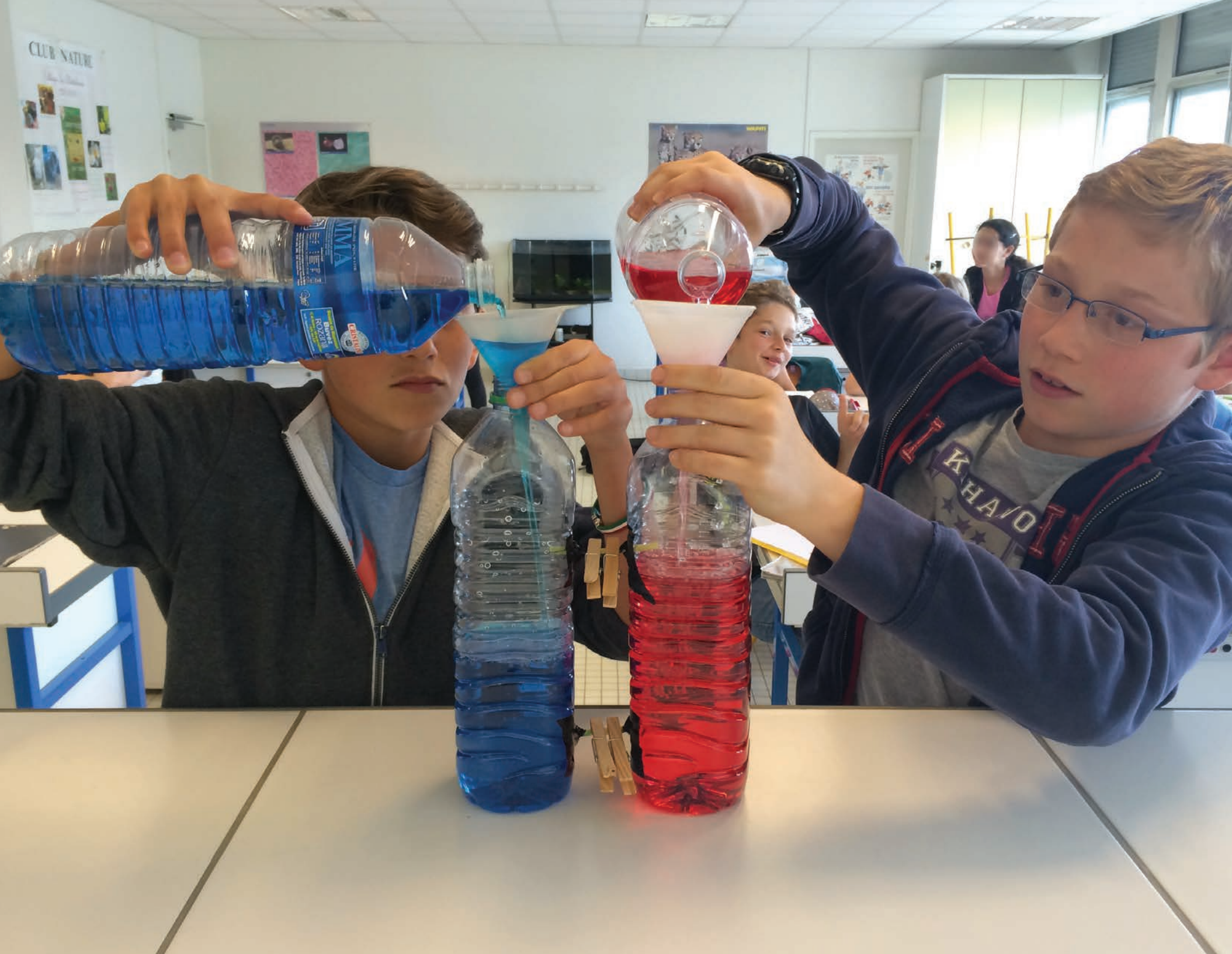
"At last, a real project for computer science! And it's ready to go. It's fun, motivating and innovative. Sequence 2 is perfect for starting out with Scratch for all middle-school grades. With great detail and in a comprehensive, step-by-step guide, it also has unplugged exercise sheets, corrections for all activities and covers all the algorithm objectives for official curricula and contributes to the scientific culture and training of the citizen as defined in the common core. These activities are extremely rewarding for all students, even for those having difficulty — they take pleasure and are motivated in math class and ask to do it again."

Marie G., middle school math teacher,
about the module *1,2,3...code!*

"I really enjoyed setting up the project *The Climate, My Planet and Me!* with my class. Before, I did science lessons out of obligation, to respect the curricula. For the first time in forty years as a teacher, I enjoyed doing science in the classroom.

I was pleasantly surprised to see that several months after the end of the project, the pupils had acquired a lot of new habits in terms of respecting the environment and saving energy."

Virginie L., primary school teacher


CLUB NATURE

Practical information

For all information regarding our international collaboration, the Department for the promotion and diffusion of expertise is ready to answer your questions.

Our team will work with you to study your needs, in any context you wish to undertake your activities: setting up a local pilot project, technical support for one part of a larger project, etc.

The activities presented in this brochure are standard examples. We adapt our intervention to every unique situation and can prepare specific, custom-designed activities on request, depending on our fields of expertise. For large projects, various activities can be combined, on-site and by distance, to offer you a comprehensive solution.

All requests receive a specific, itemised budget.

The Foundation, in line with its social responsibility, offers its expertise at the fairest conditions possible according to the consultancy costs it provides and possible travel costs.

Please note that the Foundation does not cover costs related to the organization of activities, such as training equipment, travel expenses, accommodation and meals for participants, etc. These extra costs are the responsibility of the partners.

In order for us to best meet your needs, we recommend contacting us well in advance.

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