Telefónica
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TOP 100 EDUCATIONAL INNOVATIONS

100 EFFECTIVE PROJECTS TO PROMOTE SCIENTIFIC AND TECHNOLOGICAL (STEM) CAREERS

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Introduction
Fundación Telefónica Education Challenge

Fundación Telefónica's commitment to education is reflected not only through the activity of its direct intervention programmes with children and young people in Europe and Latin America, but also in the constant exploration of innovative educational trends and the enhancement of experiences and projects that have given proven results. In Europe, our most important initiative is Think Big. It's a project with big goals and works in conjunction with partners and volunteers in delivering programmes that inspire; help young people gain the skills for today's economy; think like entrepreneurs; to take the initiative; to be self-reliant; and to make their ideas come alive.

With the number of trained scientific and technological professionals in Information and Communications Technology (ICT) available often insufficient to meet today's needs – with demand expected to continue rising in the coming years – it is clear that a project like Education Challenge is very much needed. In this context, Spain is a unique case study in which to conduct such a research due to the high youth unemployment and migration rates, which remain despite the steadying of the Spanish economy. According to the latest report form the OECD, 25.79 per cent of young Spaniards are NEET (young people who are Not in Education, Employment or Training) and investment in education and, in particular, STEM have been identified as areas that can retain young talent and secure a more prosperous future for the country.

The task facing Education Challenge is therefore twofold. On the one hand, it has to mobilise and raise awareness in society about the importance of scientific and technological careers. And on the other, it has to create opportunities to pass on those educational initiatives that have proven more effective and thus more innovative, in stimulating the learning of science and technology, engineering and mathematics.

This report, *Top-100 Educational Innovations*, presents the results of the Education Challenge project. This is an extensive research project that Fundación Telefónica has conducted throughout the year to identify innovative educational initiatives; that is to say, innovative projects which nevertheless have proven results in the field of science education as a whole. Initiatives that are considered to have the greatest potential for development will be presented, and brief but useful and systematic information will be offered for each of them. We are confident that these results will be a tool that allows the distribution of knowledge that will be of great value to the entire educational community and society in general.

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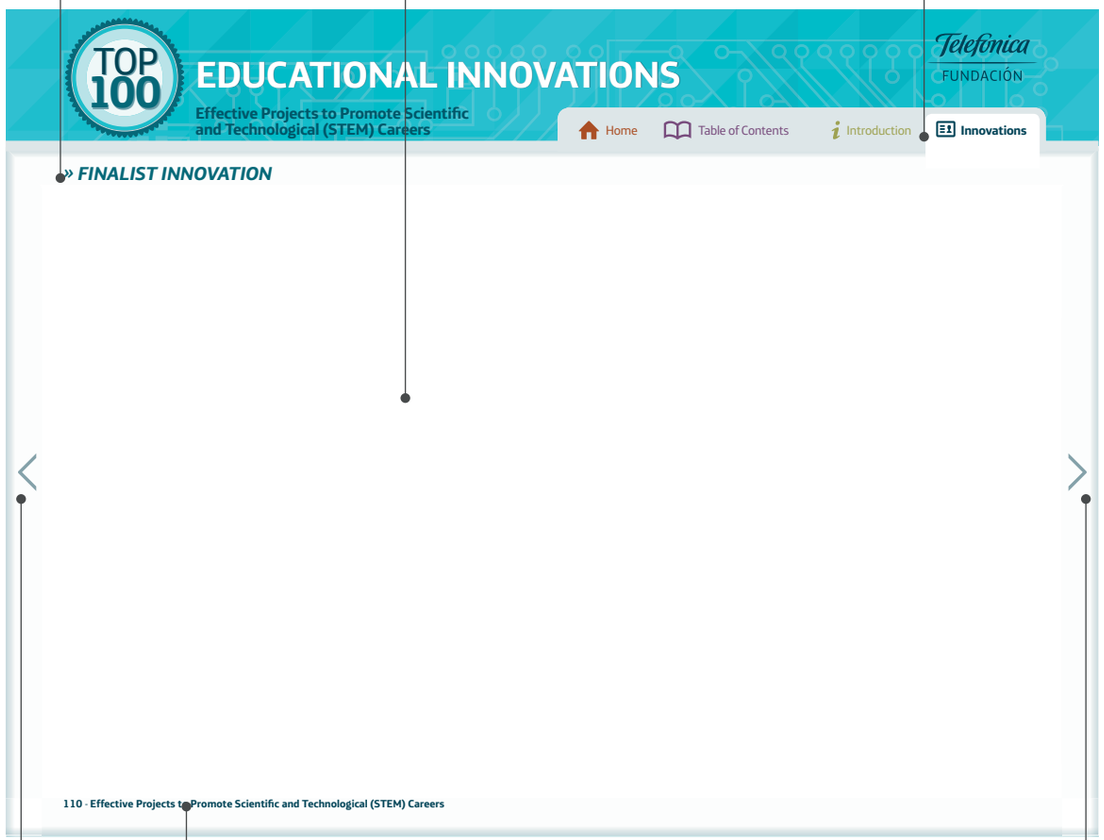

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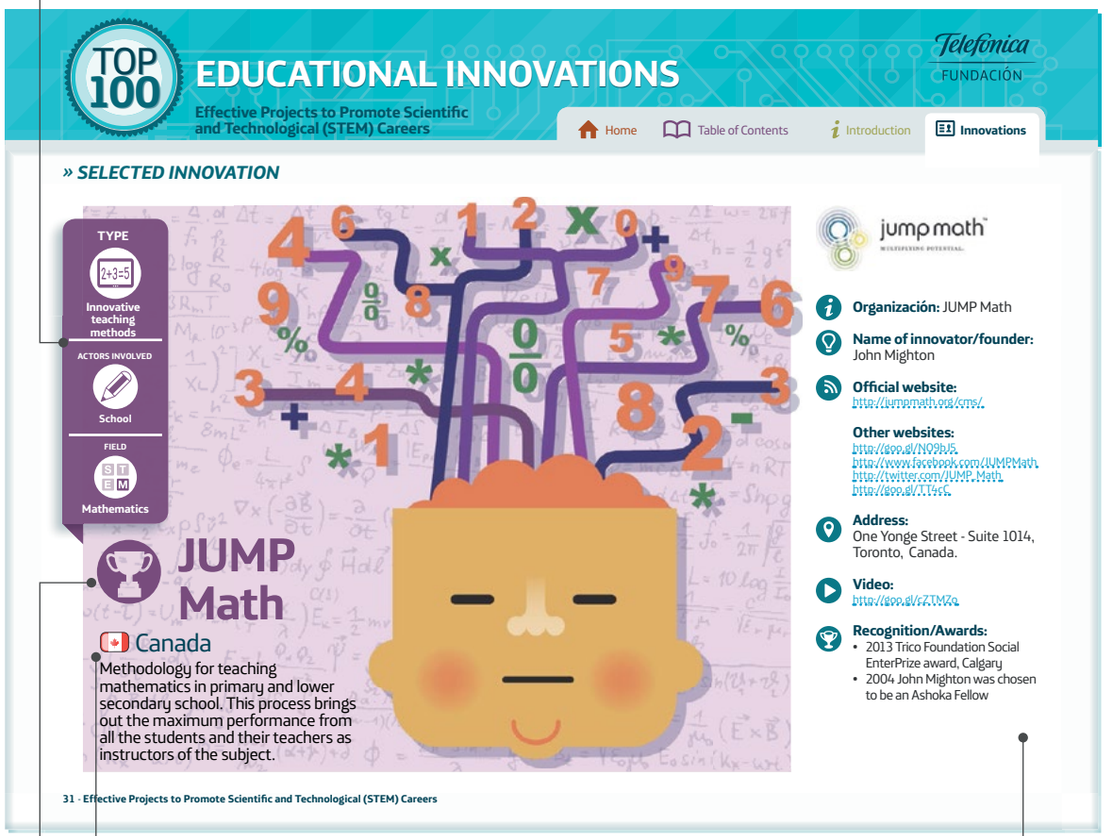
Pictographic summary (Type, actors involved and field)



Country and description of the enterprise analysed

Outstanding innovations

Fact sheet for the enterprise analysed

This document is a PDF and is best viewed in **Adobe Acrobat**. This will allow you to get the most out of the integrated navigation functions.

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- Main navigation menu.
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Disponible en el App Store

ANDROID APP ON Google play

» DESCRIPTION OF LOGOS AND ANALYSES

ICONS

TYPE

- AFTER-SCHOOL ACTIVITY
- INFORMATIONAL ACTIVITIES
- INNOVATIVE TEACHING METHODS
- TEACHER TRAINING
- MENTORING
- NETWORKS
- CONTACT WITH WORK ENVIRONMENT

ACTORS INVOLVED

- SCHOOL
- UNIVERSITY
- COMPANIES
- OTHER

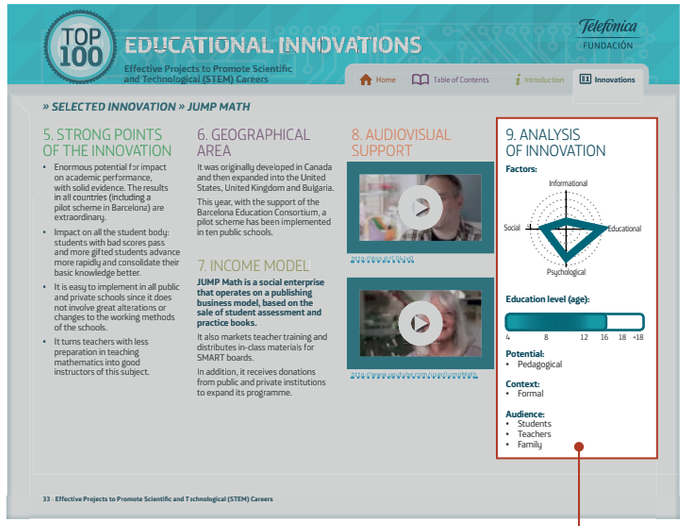
FIELD

SCIENCE — TECHNOLOGY — ENGINEERING — MATHEMATICS

OUTSTANDING INNOVATIONS

- SELECTED INNOVATION
- FINALIST INNOVATION

ANALYSIS



FACTORS

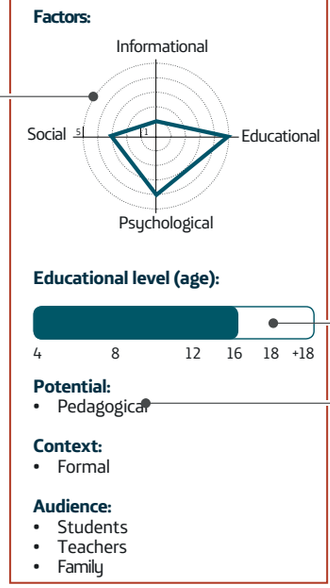
Educational:
Improving the acquisition of STEM skills: knowledge, abilities and attitudes.

Psychological:
Promoting the active involvement of students in the process of reflection on their skills and interests and matching them with those required in STEM.

Informational:
Academic and professional advice of job opportunities in the scientific and technical fields.

Social:
Improving the social image of STEM careers.

9. ANALYSIS OF INNOVATION



EDUCATIONAL LEVEL

Graphic representation of the age range each initiative is addressed to.

OTHER

Potential
Pedagogical or Organisational.

Context
Formal, Informal or Non-formal.

Audience
Target group the initiative is addressed to.

How can we increase STEM careers among young people?

AN EDUCATIONAL PRIORITY

The development of the STEM (Science, Technology, Engineering and Mathematics) skills is one of the fundamental objectives of the educational agenda, not only for the European Union but for several international agencies and countries such as the USA.

These skills are key to fostering a competitive economy that responds to the real challenges of society:

- Knowledge-based
- Environmentally friendly
- Socially inclusive

However, **each year the number of young people opting for these training paths is falling**[1].

1 Everis (2012), *Factors Influencing the Choice of Studies in Science, Technology, and Mathematics*, p.7.

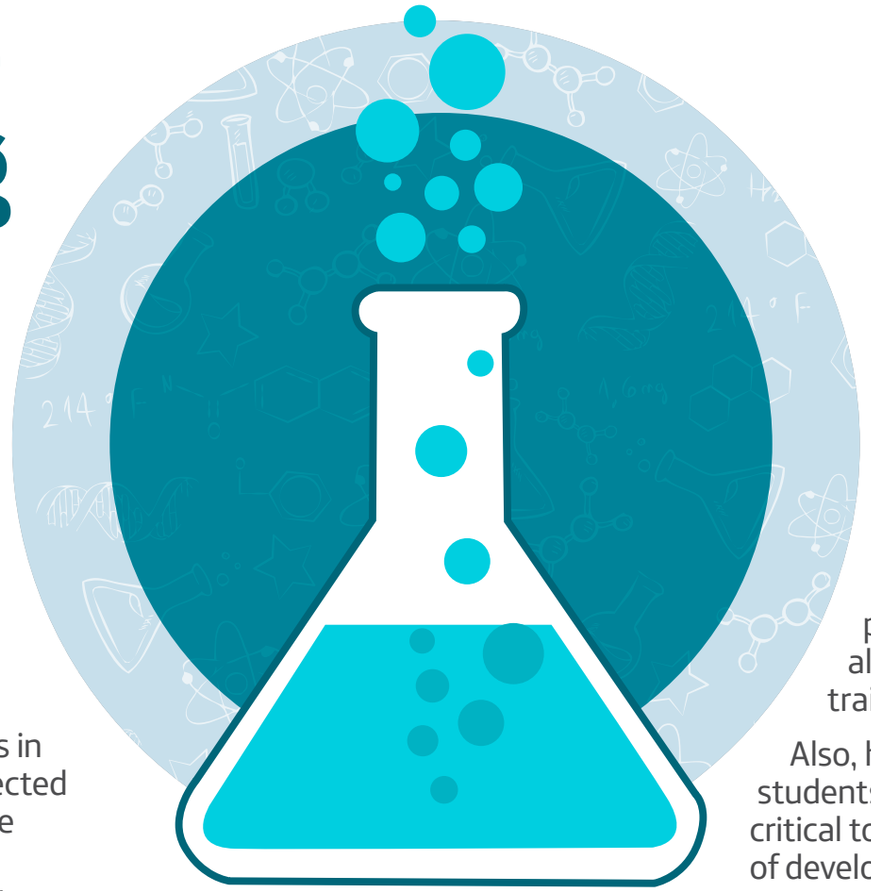
In Spain, according to Eurostat, only 13 in every 1,000 people have completed studies in these fields[2].

The *European Round Table* (ERT) warns that the low birth rate and the low number of students choosing STEM careers pose a challenge to the recruitment of human resources in most European countries[3]. Expected changes in the economy and the labour market over the next 10 years will affect the demand for STEM professionals[4], which will grow to a greater extent than that of professionals in other sectors.

2 Eurostat, *Science and Technology Graduates by Sex* http://epp.eurostat.ec.europa.eu/portal/page/portal/education/introduction

3 European Round Table, Mathematics, Science & Technology Education Report http://www.ert.eu/issue/science-technology-engineering-and-maths

4 Wilson, R.A. (2008), *The Demand for STEM Graduates: Some benchmark projections*. CIHE/ETB/DIUS http://www.cihe.co.uk/category/themes/policy/stem



These changes will also influence the skills required in the STEM field, with the existing gap between the skills required at professional level and those which our young people have widening over the next decade. From this perspective, efforts are also needed to improve the training of STEM professionals.

Also, having the most talented students in the STEM fields is critical to achieving higher levels of development in the future, so it is necessary to reverse the trend among these young people who are increasingly less likely to consider technological and scientific studies as an option.

Educational innovations are needed throughout the different stages of education, to equip students with the information, skills and knowledge required to promote their choice of STEM studies

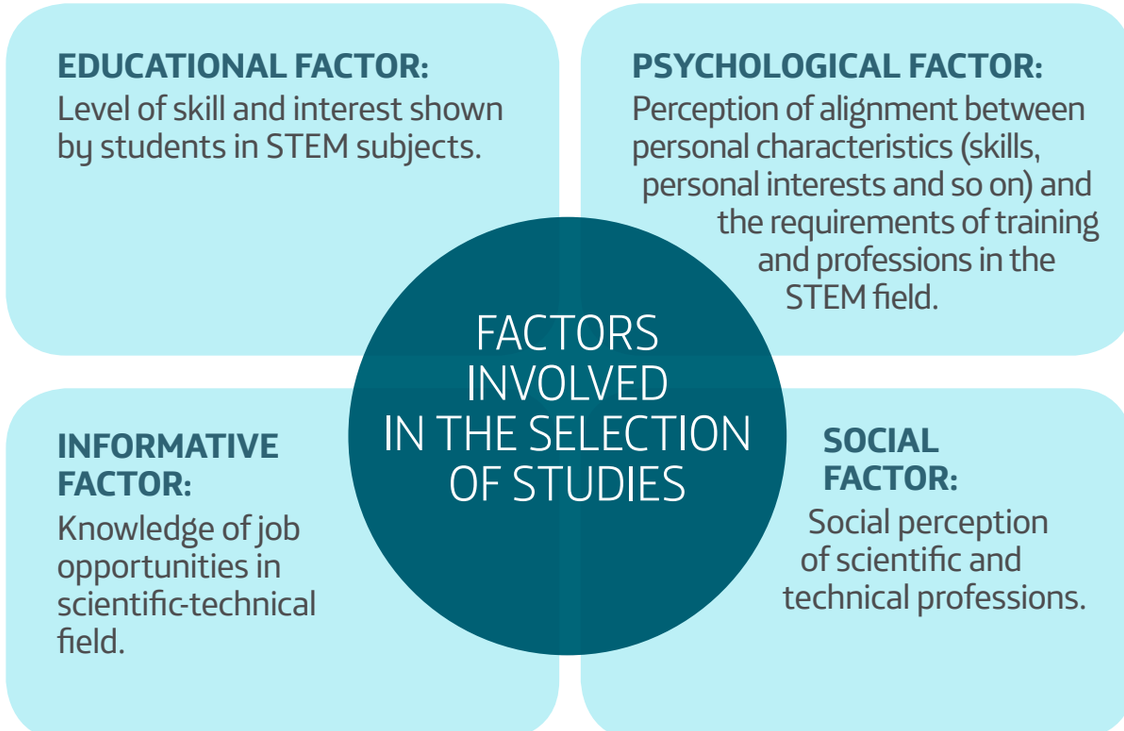
» HOW CAN WE INCREASE STEM CAREERS AMONG YOUNG PEOPLE?

STRATEGY TO ADDRESS THE CHALLENGE

To respond effectively to this need, it is important to bear in mind that the choice of studies is a dynamic and complex process depending on multiple factors which are strongly interrelated[5]. These factors can be classified into four main groups: educational, psychological, informative and social.

In this regard, considering that the promotion of STEM careers is the result of appropriate action in the long term, it is necessary to identify educational innovations that respond to this challenge and have a positive impact on these four factors, even if it is more difficult in the short term to quantify their impact on the increase in the number of students choosing STEM studies.

5 For the definition of Telefónica Challenge, we have had the cooperation of CRECIM, Research Centre for Science and Mathematics Education at the Universitat Autònoma de Barcelona (UAB). Among its contributions, it has been instrumental in identifying the factors that influence the process of choosing STEM studies.



Source: CRECIM, Research Centre for Science and Mathematics Education at the Universitat Autònoma de Barcelona (UAB).

It is necessary to find solutions that mobilise agents that can positively affect each of the factors

Specifically, educational innovations that directly affect the following priority areas of action are necessary:

- **Educational factor:** Improving the acquisition of STEM skills: knowledge, abilities and attitudes.
- **Psychological factor:** Promoting the active involvement of students in recognising their skills and interests and matching them with those required in STEM. Also, participation of teachers and families in this process, oriented to positive reinforcement (assessment and communication) of the scientific and technical capabilities of adolescents.
- **Informative factor:** Academic and professional advice with the aim of publicising job opportunities in the scientific and technical fields, not only through teaching staff at schools, but also through professionals in the STEM sectors.
- **Social factor:** Improving the social image of STEM careers among the group of students and the general public, with special attention given to families.

It is necessary to find ways to not only give students the power to determine their own learning process and choices, but also to mobilise those stakeholders capable of having a positive impact on each of the four factors:

- Teaching staff and management teams at schools
- Families
- Working professionals and companies from the STEM sector
- Research centres, museums and other institutions at which informal learning occurs
- Political agents in the education sector
- The media

» HOW CAN WE INCREASE STEM CAREERS AMONG YOUNG PEOPLE?

CRITERIA FOR IDENTIFYING AND SELECTING INNOVATIONS

Considering the challenge and the factors that influence the choice of STEM studies, a process for identifying educational innovations was planned nationally and internationally:

- The innovations should respond effectively and efficiently to the posed challenge, in line with the priority areas of action as stated.
- Due to their characteristics and development conditions, they should be able to be replicated in the Spanish context.

From this perspective, focused on the utility and differential value that the educational initiative could provide in our context, it was decided that the proposals identified had to meet the following requirements:

- **Proven innovation:** it must have documented success and development.
- **Meaningful implementation:** either it has a relevant quantitative or geographic scope or it has a performance formula that affects the decisive factors in a clear, strong and positive manner.
- **Orientation to scalability:** it has the measures required for replication: packaged methodology, projection model or transfer to other agents.
- **Defined sustainability model:** it takes into account parameters such as diversified revenue model (less than total dependence on public subsidies); optimisation of resources; use of community resources (equipment, neighbourhood volunteers, synergies with local associations and so on).

Furthermore, in order to assess the relevance and adequacy of the innovations to be implemented in Spain, the following criteria were considered:

- **Potential impact on the local context (30%):** assessment of the degree to which the innovation is able to produce results that wholly or partly meet the challenge in question. Being aware that the promotion of STEM careers is a long-term and multidimensional process, indicators were considered that demonstrate the effectiveness of innovation in relation to the priority foci of defined actions.

- **Ability to be executed/ implemented in the local context (25%):** taking into account the obstacles, weaknesses, need for resources and long-term financial viability.
- **Economic sustainability model (25%):** the degree of consolidation of the economic model of the innovation, with attention to whether the current framework may have ways of generating income or will depend on public or private resources in the form of subsidies.
- **Degree of innovation (10%):** tt this point the differential value of the innovation compared with the solutions that already exist in the Spanish context was assessed. From this perspective, the innovations could be complementary improvements or disruptive approaches.
- **Speed of results (10%):** that is, the time needed to implement the innovation and for its first results to be produced.

» HOW CAN WE INCREASE STEM CAREERS AMONG YOUNG PEOPLE?

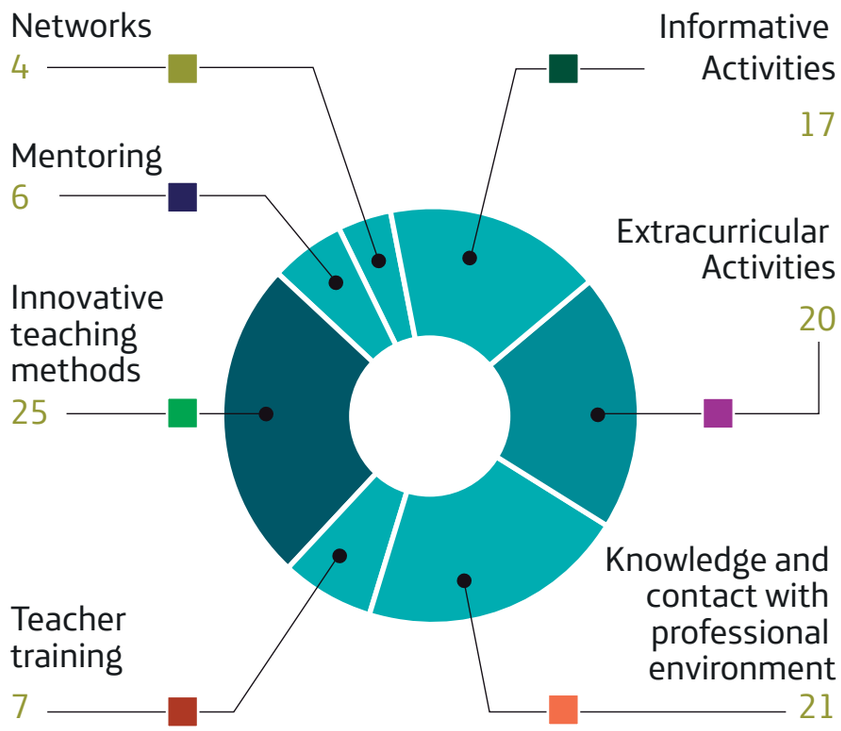
PRESENTATION OF 100 INNOVATIONS

One hundred innovations that were identified in the process of international sourcing are presented in this publication.

Out of the 100, 20 initiatives that were highlighted and analysed by a panel of experts to assess their suitability for implementation in the Spanish context are presented in greater detail. Apart from the reference data, such as the scope or level of education (age) in which they operate, this presentation provides an analysis of how they affect the given decisive factors (educational, psychological, informative and social).

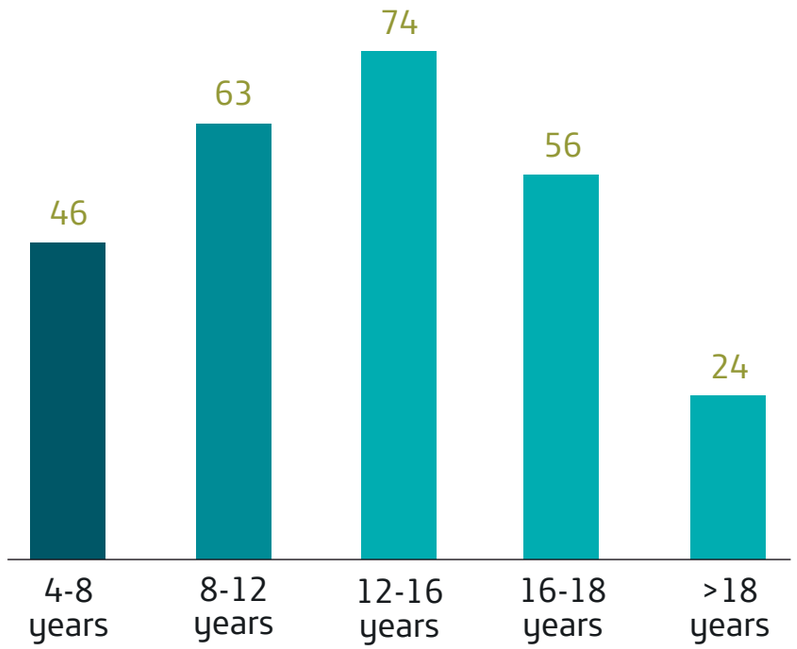
Lastly, we should mention that all the educational initiatives were classified into the following categories, based on their activity and potential:

PROJECTS BY CATEGORY



PROJECTS BY EDUCATIONAL LEVEL

The number of projects does not equal 100 because some of them function at various educational levels.



1. KNOWLEDGE AND CONTACT WITH PROFESSIONAL ENVIRONMENT

These are initiatives that link the business and education world (secondary, higher education) through programmes of activities with students: mentoring, role models, competitions, visits to the professional environment, conferences, carrying out scientific and technological projects and so on.

In a specific form or through these activities with students, the company-school link also allows the following: teacher training, updating and improvement of programming and teaching resources and so on.

Also included in this category were activities which show high school students the STEM university environment.

Potential:

- To improve the perception of STEM careers.
- To support the process of identification and motivation of students towards STEM studies by providing role models and information on the practical application of the studies.
- To enable interaction channels between schools, universities, teachers and professionals for two major improvements: the training-employment orientation of students and the adaptation or improvement of educational programmes to suit the demand in the professional field.

» HOW CAN WE INCREASE STEM CAREERS AMONG YOUNG PEOPLE?

2. EXTRA-CURRICULAR ACTIVITIES

Included in this category are learning experiences that take place outside school hours and which are not dependent on the formal system, even if they are activities that take place on school property or are focused on the strengthening of STEM skills (for example, in the more vulnerable collectives).

What is remarkable is the size and diversity of the offering, ranging from workshops held in various settings to the formation of STEM clubs. We should also emphasise in some cases that activities that have been developed in non-formal settings are setting trends and are highly valued as supplements in schools.

Here we include entrepreneurial initiatives that are offering their services and proposals to schools, museums and cultural promotion spaces.

Potential:

- To allow the introduction to and experience of new methods of STEM learning and teaching since there are fewer requirements than in formal education.
- To provide a motivating experience without academic pressure, bringing science to children and adolescents as well as to educators (teachers and parents).
- They are applicable to different settings: school and after-school centres, museums, clubs and so on.
- They also provide value in their promotion and awareness-raising about the importance of STEM knowledge.

3. INFORMATIVE ACTIVITIES

In this section it is possible to find activities ranging from elaborate television formats to practical videos, published online and made by the students themselves, and activity programmes at science or mathematics museums.

The common element is accessibility and the goal of bringing STEM knowledge to civil society and raising awareness of its social importance.

Potential:

- To bring the STEM world closer to the educational community as a whole through accessible and understandable settings/products.
- These are activities that involve top-rank agents, either as issuers (media) or recipients (families).

4. INNOVATIVE TEACHING: METHODOLOGY AND RESOURCES

The diversity in this category is broad in terms of products presented and geographical deployment.

Potential:

- In their implementation they show: 1) evidence on the improvement in the acquisition of STEM skills: knowledge, abilities and attitudes; 2) quantitative scope; 3) a new way of dealing with some aspects of the teaching-learning process.
- Most are intended to confer a central role in the learning process on students using methodologies that empower them and make them participants.
- Interest in dealing with diversity in the classroom and reducing the STEM achievement gap in those groups whose family background affects their access to and success in these areas.

» HOW CAN WE INCREASE STEM CAREERS AMONG YOUNG PEOPLE?

5. TEACHER TRAINING

The proposals identified offer resources for teaching activities, but in particular training in teaching methodologies that are effective in addressing classroom activity in a manner that is more skills- and experiment-based for students.

Potential:

- Action regarding a key player in the learning-teaching process and in particular regarding one of the most decisive factors: their training as STEM counsellors and teachers.

6. MENTORING

Consolidated mentoring formulas are presented that either focus on STEM or can be taken as a reference point for the promotion of these careers.

Potential:

- The mentoring model or tutoring system is one of the most effective formulas for strengthening customised plans because they have an effect on key elements in educational success: performance, educational commitment, educational transition, educational equity and impact on individual and collective development, the professional environment and so on.

7. NETWORKS

Although several suggestions from other models also opt for collaborative networks, this section **includes those cases where the core action is to promote this organisational formula in a specific form** in order to meet the different demands surrounding the STEM challenge.

» EDUCATION CHALLENGE JURY

Marc Alba

Partner-director of Everis

Marc is a renowned expert on innovation, entrepreneurship, regional development and socio-economic transformation. He combines his broad experience as a director of innovation and transformation with being the founder of technology-based companies, a sponsor of non-profit initiatives, adviser to large organisations and a researcher. He has worked in various public and private sectors with a strong international focus. All this gives him an exceptional, systematic vision of the great socio-economic challenges that the planet faces.

He is the co-author of five books and more than 100 publications. He is the co-founder of the civil society initiatives TransformaEspaña and TransformaTalento, as well as being a sponsor of Fundación TransformaEspaña.

He is currently a partner-director of Everis, where he works as Chief Innovation Officer, is a member of the Steering Committee and sponsor of Fundación Everis. He is a regular speaker at conferences, universities and business schools. He also sits on several boards and think tanks/action tanks linked to innovation, entrepreneurship, regional development, education and talent.

Jesús María Arsuaga Ferreras

Director of the Universidad Rey Juan Carlos (URJC) Third Age University

Jesús María has a Doctorate in Chemical Sciences from Complutense University of Madrid (UCM), and is a graduate in Sciences, specialising in Industrial Physics, from the National Distance Education University (UNED).

In 1981 he became a secondary school Physics and Chemistry teacher and in 1997 became Head of Department. Between 1991 and 2002 he combined his work in public education with lecturing, first as an associate professor at UCM and then at Universidad Rey Juan Carlos (URJC). Since 2002 he has been a tenured professor in the Chemistry and Physics department of URJC.

At URJC he has been the coordinator of the Scientific Culture Programme, manager of the Scientific Culture and Innovation Unit of the Vice-Rectorate of Research (2004-2013), and coordinator of the Docentia Programme, the teaching performance assessment programme (2007-2013). Since 2013, he has been the Director of the URJC Third Age University.

» EDUCATION CHALLENGE JURY

Luis Berruete

Coordinator and co-founder of Creas

Luis has a degree in Architecture from the Public University of Navarre. He has a Master's degree in City Planning from Harvard University and a Master's degree in Real Estate Company Management from the Technical University of Madrid.

He worked with the Saragossa City Council on drafting the General City Zoning Plan. He has been a representative of Fundación Vicente Ferrer in Saragossa.

He is an entrepreneur on various projects and a patron of the Ecodes, Entretodos, Norte and Fidah foundations.

Germán Castejón

Partner-director of Kailas MT, member of the Boards of Trustees of Fundación ESADE and Fundación Ship2B

Germán has an MBA from ESADE Barcelona and IMP from McGill University, Montreal.

He has been Director General of Deutsche Bank Spain, an adviser on Spain to Bank of America Capital Partners and Assistant Director General of Santander de Negocios.

He has been a collaborating lecturer in the finance and company policy departments, an adviser for final-year business projects at ESADE and President of the ESADE Alumni association.

He is a member of the Boards of Trustees of Fundación ESADE and Chairman of its Fundraising Committee, Fundación Gaspar de Portola, which gives employment to the mentally handicapped, and Fundación Ship2B, an incubator and sponsor of social entrepreneurs. He is a member of the Editorial Committee for the Empresa collection of the publishers Lid Editorial.

He is an adviser to various family business groups, Chairman of the Advisory Council of Meridia Capital and member of a number of Boards of Directors.

» EDUCATION CHALLENGE JURY

Jesús Fernández-Cid Román

Director of the Castilla-La Mancha Regional Teacher Training Centre

Among other positions, Jesús has been Head of the Studies and Projects Service of the Castilla-La Mancha Education Council, with responsibility for the internet presence and content of the Education Council and Castilla-La Mancha education centres.

He designed and created the Castilla-La Mancha Regional Teaching Training Centre, which is based on a digital platform that creates and transfers knowledge between teaching centres. Last year he launched the Education, Culture and Sports Council digital education content project. Involving 45 schools, 374 teachers and 3,740 students, the "Extended School: Digital Backpack Plan" will replace paper textbooks with digital ones in the primary and secondary schools of Castilla-La Mancha.

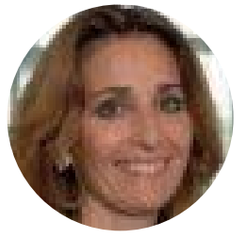
Blanca Gómez González

Human Resources Director, Microsoft Spain

Blanca is a graduate in Education Sciences from Complutense University and also has an MBA from Seattle University.

She has been working in the field of human resources for 25 years. Her career began in consulting at Accenture. She then became Director of Human Resources at PepsiCo and L'Oréal, Director of Human Resources for Spain and Portugal and then Director of Diversity, Europe at Coca-Cola.

She is also a professor at ESADE and The Valley, a board member of the AEDIPE (Spanish Association of Personal Management and Development) Centre and a member of the ESADE Human Resources Advisory Committee.



Carolina Jeux

CEO at Telefónica Learning Services

Carolina is a Computer Science Engineering graduate from the Technical University of Madrid and has an MBA from INSEAD.

She has more than 20 years' experience in the EdTech sector, including several positions at Arthur Andersen and Alcatel-Lucent.

In 2001, she joined Telefónica as CEO of Educaterra (today Telefónica Learning Services). Her current challenge is to position Telefónica as an EdTech and eLearning reference in the global market, and in addition, to lead the expansion of Telefonica Learning Services in four new countries across Latin America.

» EDUCATION CHALLENGE JURY

Ignasi López Verdeguer

Assistant Director of the Science and Environment Department of Fundación La Caixa

Ignasi is a graduate in Physics from the Universitat Autònoma de Barcelona. Management Development Programme (IESE - University of Navarra). He is a visiting professor on the Master in Scientific Communications at the Pompeu Fabra University and the Masters in Museology at the Universidad de Granada.

Since 2007, he has been a member of the Steering Committee of the Catalan Scientific Communication Council. He has been Director of the Transiciones essay and scientific dissemination collection for the publishers Editorial Paidós (2006-2010).

As Assistant Director of the Department of Science and Environment of Fundación La Caixa, he is responsible for scientific dissemination and non-formal science, research and environmental education programmes. He is Coordinator of the European project RRI Tools (FP7), which fosters Research and Responsible Innovation.

Gamaliel Martínez

Academic Director at U-tad (University Centre for Technology and Digital Art)

Gamaliel has a degree in Industrial Engineering from the Technical University of Madrid and an International Executive MBA from the IE Business School (Instituto de Empresa).

From 1990 to 2000 he was Professor of System and Automatics Engineering at the Technical University of Madrid and at the Public University of Navarre. During those years he specialised in the use of artificial intelligence in industrial process control, especially in the food and agriculture industry.

From 2000 to 2005 he worked as an adviser at Indra, developing advanced monitoring and control solutions in industrial and service systems.

Since 2004, he has been a professor of Management of Operations and Supply Chain at the IE Business School, during which time he has received many awards. From 2005 to 2014 he was Director of several programmes at the IE Business School, mainly international online programmes which have been ranked among the best in the world.

In 2014 he joined U-tad, the first Spanish university centre specialised in the major fields of Digital Economy (Digital Business, Engineering and Art and Design) as Academic Director. He is responsible for Undergraduate, Advanced Cycles and Postgraduate programmes.

» EDUCATION CHALLENGE JURY

Ana Millán

Director of Fundación Accenture

Ana is a graduate in Aeronautical Engineering from ETSIA, Technical University of Madrid.

She joined Accenture in January 1995, spending the first years of her career there managing technology and strategic consulting projects. She began working with clients in the aeronautical sector (such as EADS, CASA, the Army); a few years later she changed sectors, working with clients from the financial sector, first in Luxembourg, where she spent four years with the Banque Nationale du Luxembourg and then in the USA with an insurance company.

Since 2003 she has managed Fundación Accenture, which is the social action arm of the Accenture Group, responding to the concerns of its employees with three different but complementary lines of action: free consulting, financing of social projects and corporate volunteering. She is also a member of the Executive Committee and of the Board of Directors of the Spanish Association of Foundations.

Juan José Moreno Navarro

Vice-rector for Academic and Doctoral Planning at the Technical University of Madrid

Juan José has a doctorate in Computing from the Technical University of Madrid. He has mainly worked in the field of software development. Currently, his activity mainly focuses on innovation and entrepreneurship by coordinating Spanish participation in the ICT Labs of the European Institute of Technology, for innovation on ICT. He has been General Director for University Politics (Ministry of Education, 2009-2012) and General Director for Planning and Coordination (Ministry of Science and Innovation, 2008-2009).

He is currently Director of Institutional and Industrial Relation at Institute IMDEA-Software (Madrid Institute for Research into Software Development Technologies), President of the Spanish Association of Software Engineering and President of the Spanish Congress of IT (CEDI) 2013.

Ana Román Riechmann

Graduate in Physical Sciences from the Complutense University, specialising in Automatic Calculation

For the first few years of her career, Ana worked in technology with various companies in the ICT sector.

Since 1993, she has worked for the Spanish Public Administration and belongs to the Senior Corps for Systems and Information and Communication Technologies.

She has held various posts in the ICT area in the administration and since June 2012 has been Director of the Educational Technologies and Teacher Training Institute (INTEF).

» EDUCATION CHALLENGE JURY

David del Val Latorre

President & CEO at Telefonica Research and Development.
Director of Product Innovation at Telefonica

David is a Telecommunications Engineering graduate from the Technical University of Madrid and has a Master's degree in Computer Science from Stanford University.

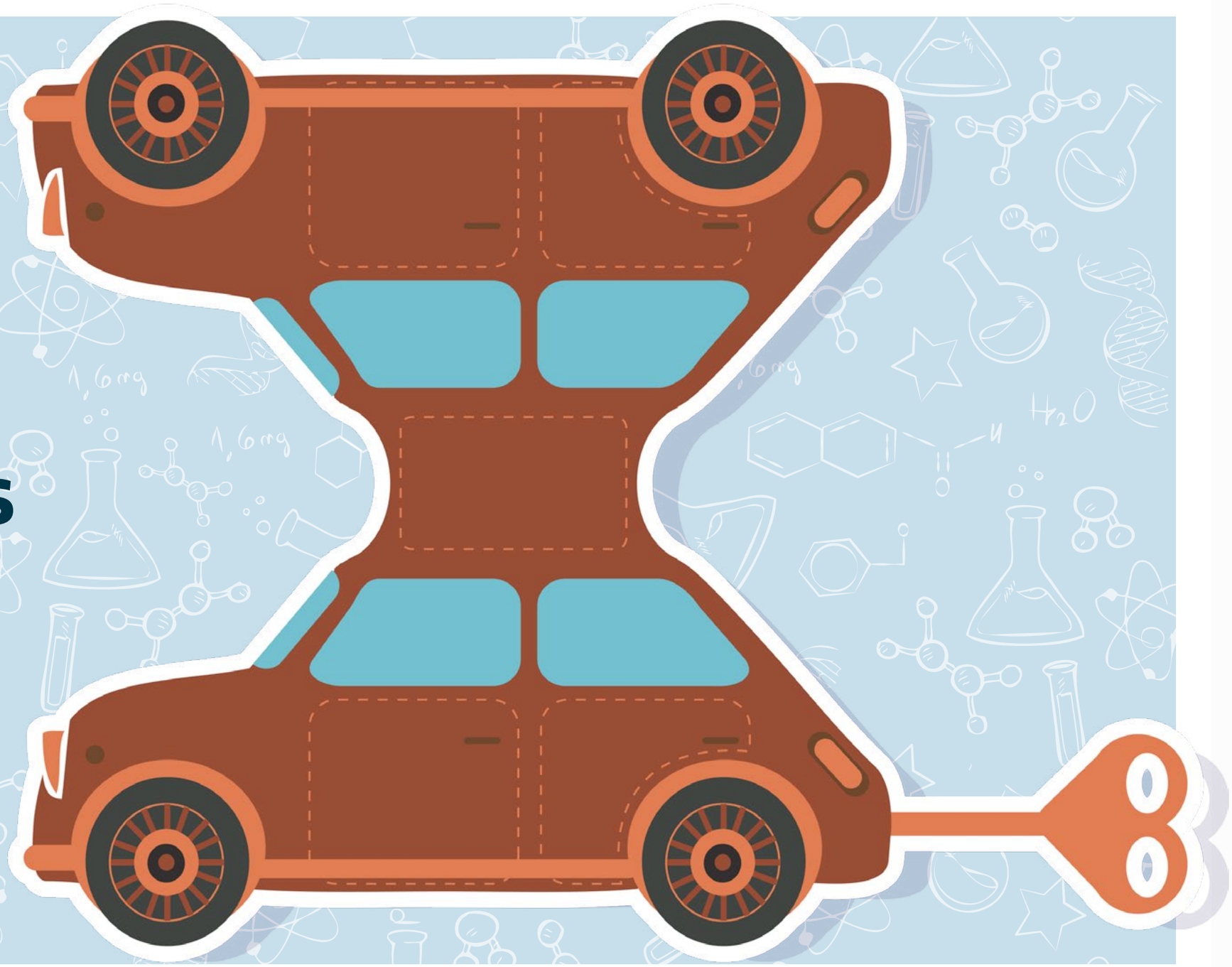
He oversees the team responsible for creating new services developed internally in the Telefónica Group, in areas such as mobile phones, car, home, health and companies.

He spent six years in the USA where he co-founded VXtreme, a technology company based in Silicon Valley, which he later sold to Microsoft. After working with Microsoft for some time, he returned to Spain and founded Tech Foundries, where he served as Vice President until 2008.

He is a co-founder of nine technological companies and holds 16 patents in Europe, the USA and Japan. He is also a member of the General Foundation of the Technical University of Madrid and regularly gives lectures in business creation at the Instituto de Empresa.

Selected Innovations

These innovations were selected by the panel as showing the greatest potential based on the criteria of the Education Challenge.



» SELECTED INNOVATION

ScienceLab

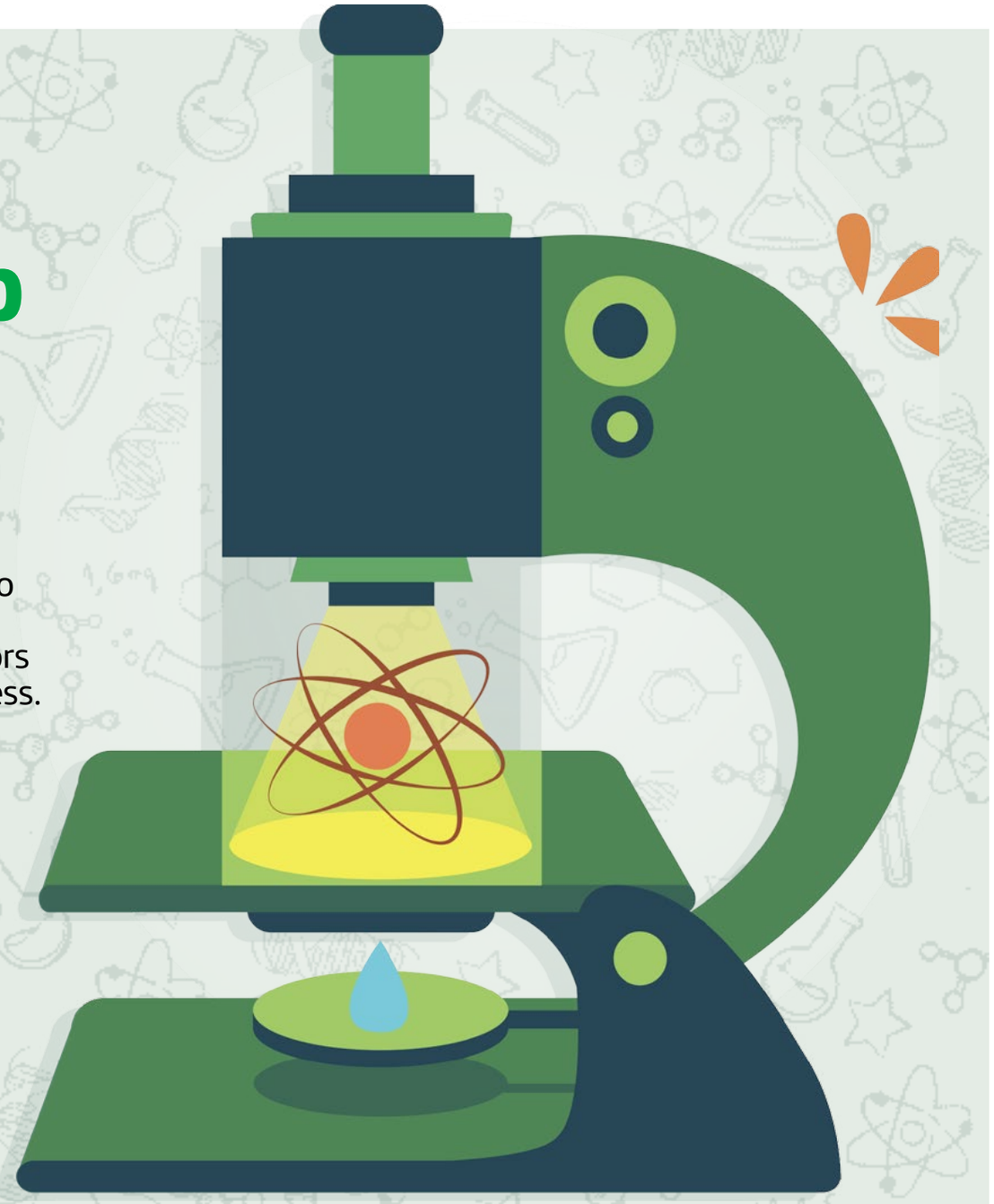
TYPE
After-school activity

INSTITUTIONS INVOLVED
Schools and non-formal centres

FIELD
Science

ScienceLab provides scientific learning and outreach for children aged four to 10, applicable in and outside school. It also gives guidance to families and educators to support this process.

Germany



ScienceLab
Kinder. Wissen. Mehr.

Organisation:
ScienceLab

Name of innovator/founder:
Heike Schettler

Official website:
http://www.science-lab.de

Other websites:
http://germany.ashoka.org/fellow/heike-schettler

Address:
Postfach 1845 - 82308
Starnberg, Germany

Video:
http://goo.gl/qoYYfH

Recognition/Awards:
- Heike Schettler is a 2006 Ashoka fellow.

» SELECTED INNOVATION » SCIENCELAB

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Scientific and technological education are one of the essential goals in education for 2020 in the European Union. However, scientific knowledge is largely forgotten by the education system.

The PISA reports have uncovered alarming deficiencies in scientific and technological education. The causes of these poor results can be found not only in the basic level of knowledge of the teachers but also particularly in the approach to scientific learning in schools.

There is little or no science education in pre-school or primary education. Classes in biology and chemistry start when the students are 10 or 12 years old.

2. WHAT SOLUTION IS PROPOSED?

The initiative founded by Heike Schettler provides a model of scientific learning and outreach, applicable in and outside school, that turns children aged 4 to 10 into the protagonists of their own scientific discovery and education process. The children appropriate the necessary knowledge, abilities and skills through a system that helps them ask questions about their environment and to seek answers through experimentation.

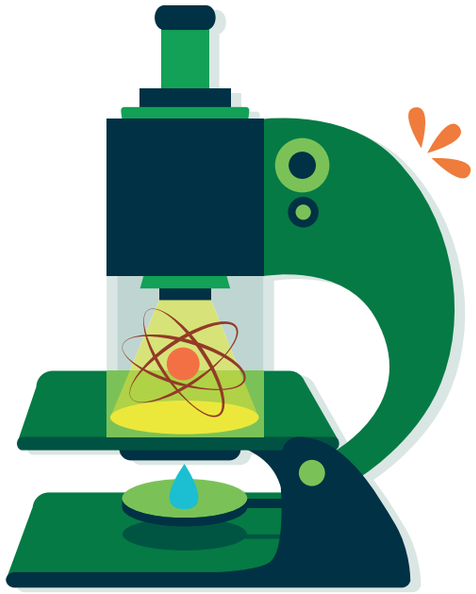
The system fosters the children's curiosity from the early years, regardless of their social and family background. The model was developed with a special effort to reach children from low-income and non-academic backgrounds. As well as providing a learning process for children, it trains the adult population of the learning environment (teachers, parents and non-formal and informal educators) to overcome their fear of science and to feel confident to help children take charge of the learning process.

3. HOW DOES THIS SOLUTION WORK?

ScienceLab started in 2002 as an after-school activity, a programme for children between the ages of four and 10.

It is based on the children's natural curiosity to understand what is happening in the world around them. Starting from questions that are typical of this age group (Why is the sky blue? Why does water boil?), with guidance from instructors, the children are encouraged to conduct, describe and analyse experiments that will allow them to understand complex concepts and processes in a way that is appropriate and motivating for their age group.

The courses offer a wide range of age-appropriate experiments and guidance on numerous topics in the fields of biology, medicine, chemistry, physics, technology, astronomy, geo-sciences (especially geology). There are now 10 modules that are constantly re-written, taking into account the experience gained by ScienceLab from teaching them.



Courses take place in groups of up to eight children and last 14 weeks, with one unit per week. The teaching approach allows the children to develop gradually, at their own pace, through individual guidance. It also promotes teamwork and linking the knowledge with other subjects, such as geography and history. After rapidly proving that the approach worked, ScienceLab succeeded in being introduced into schools and kindergartens in 2004.

One of the advantages of ScienceLab is that the parents take an active part in the programme: they are left with materials

» SELECTED INNOVATION » SCIENCELAB

and guidance that help them support their children's continued learning after the courses have finished.

ScienceLab has succeeded in involving a network of instructors: people interested in this educational area, many of whom are parents or kindergarten and school teachers.

It is also directed at bridging the education gap that results from the social and family background. **The programme has made a special effort to reach out to poor neighbourhoods in Germany, to kindergartens where immigrants account for 95% of the population. Here, it has succeeded in offering the same quality education, overcoming language and social barriers.**

More than one million children have taken part in ScienceLab activities

4. IMPACT INDICATORS AND RESULTS

Because of the evaluation system developed by ScienceLab, it has been seen that the courses significantly improve the children's observing, analytical, verbal and social skills.

- More than one million children have taken part in ScienceLab activities.
- Between 50 and 100 instructors are trained each month.
- Its programmes are implemented in more than half of Germany's public schools.
- More than 500 kindergartens have received training.
- Heike Schettler has headed the revision of the curriculum for the Bavarian state education department.

5. INNOVATION HIGHLIGHTS

- Effective pedagogical approach.
- Integration of science learning from the earliest stages of education.
- Methodology continually evaluated and updated.
- Directed to social and educational inclusion.
- Involvement of parents in the process.
- Effective training of instructors, teachers, parents and non-formal educators.
- Availability and suitability of the model to be replicated in different educational environments and countries.

6. GEOGRAPHICAL AREA

Started in Germany.

Later on, was implemented in Austria, Colombia, Hungary and France. In Spain there have been sporadic experiments.

» SELECTED INNOVATION » SCIENCELAB

7. INCOME MODEL

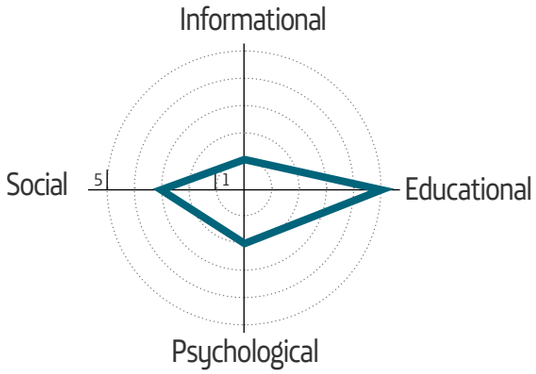
ScienceLab is now a social enterprise that generates revenue from the students and schools. In the after-school area, the instructors operate as franchisees: they pay a small licence fee plus a sum for continuing training; they fund the courses with a €10 fee per student. Heike Schettler has gained the sponsorship of companies with scientific interests in developing teaching materials and introducing the programmes in the areas in which they operate.

8. AUDIOVISUAL SUPPORT

http://goo.gl/qoYYfH

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Non-formal
- Formal

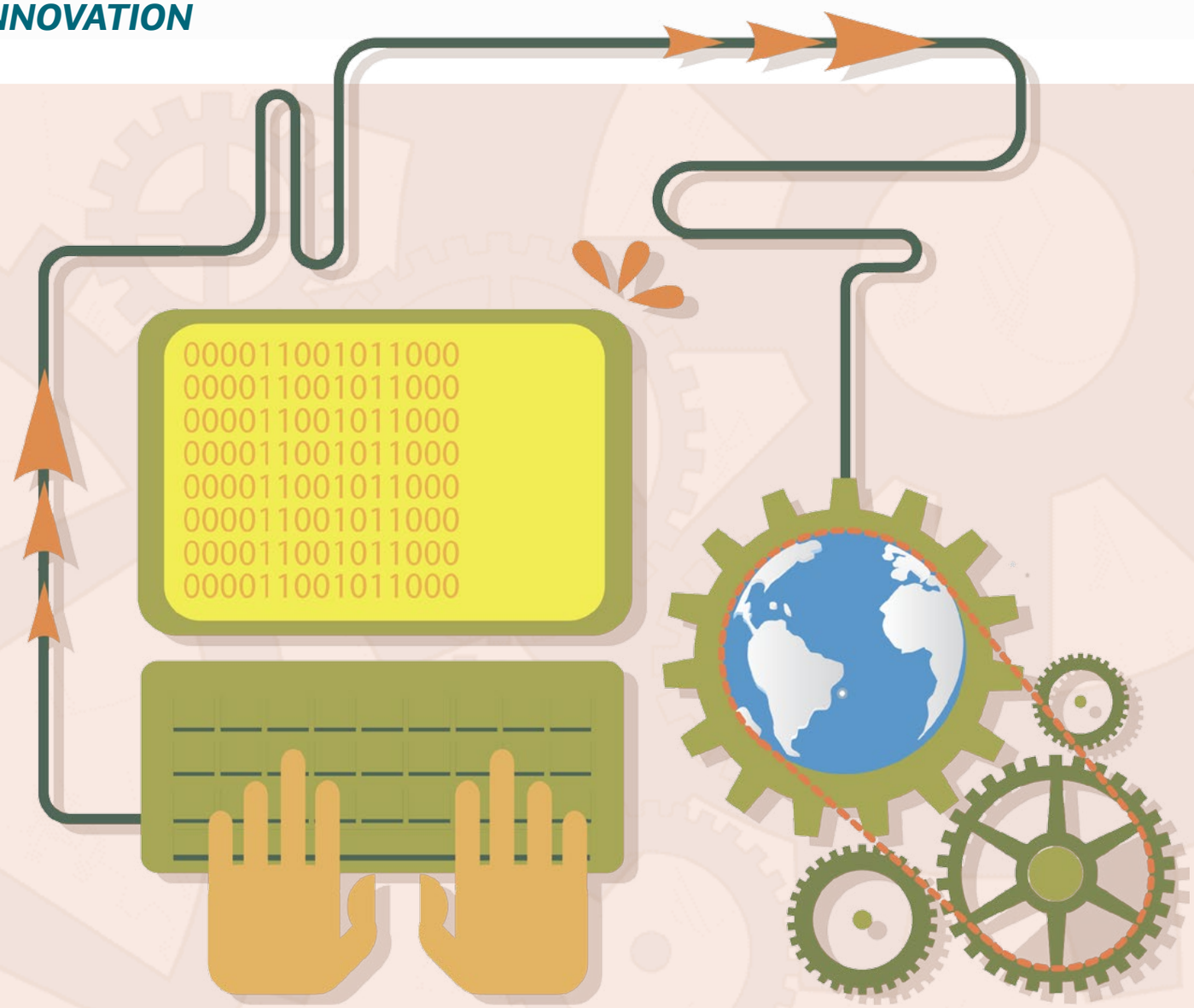
Audience:
- Students
- Teachers
- Family

» SELECTED INNOVATION

TYPE
Innovative teaching methods

INSTITUTIONS INVOLVED
Schools and non-formal centres

FIELD
Technology



Apps for Good

United Kingdom and Brazil

Apps for Good are programming apps to solve real-world problems in secondary school, with the aim of motivating adolescents and developing their entrepreneurial and programming abilities. Corporate volunteers are involved.

Apps for Good
Powered by cdi

Organisation:
CDI Apps for Good Founding

Name of innovator/founder:
Rodrigo Baggio

Official website:
http://www.appsforgood.org/

Other websites:
http://goo.gl/n3SdjG
http://goo.gl/qieB7A

Address:
5 Bath Street, London
EC1V 9LB

Video:
https://www.youtube.com/user/AppsForGood

Recognition/Awards:
- January 2012 – the UK Secretary of State for Education praised Apps for Good as a model of good practice.
- In 1996 Rodrigo Baggio was an Ashoka Fellow.

» SELECTED INNOVATION » APPS FOR GOOD

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Traditional education systems are wasting talent. Many young people are demotivated by traditional teaching methods that leave them ill-prepared for the real world.

Technology is advancing apace, exciting the imagination of young people, who want to use it to create, play and share. Yet traditional schooling lags well behind, missing this opportunity to engage and make good use of technology to create enriching learning experiences, especially those students most disaffected with standard lessons. Teachers who want to use technology to create more exciting ways to learn feel frustrated they cannot do more.

On the other hand, the technology of the world of education provides no answers for real-world challenges and problems. So it has no relevance for students.

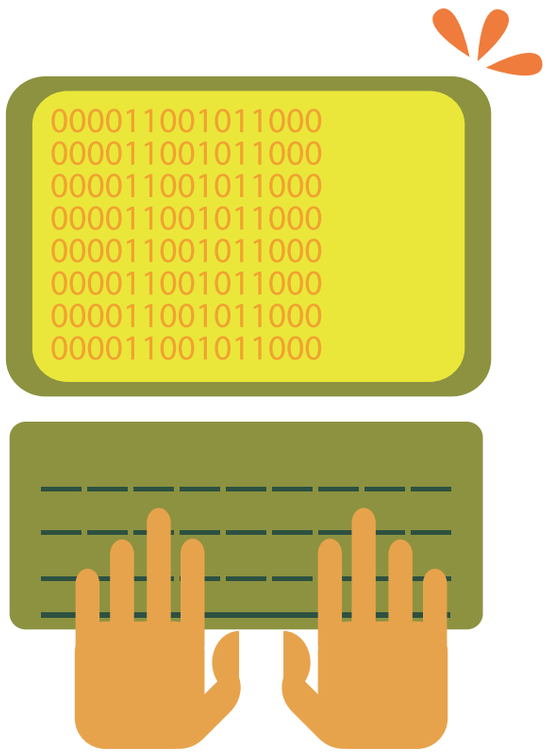
2. WHAT SOLUTION IS PROPOSED?

Apps for Good is a movement that links an education in open-source technology with the solution of real problems.

It wants to build a new global generation of problem solvers and makers: students who can create, launch and market new products that change the world. It starts from the concept that technology can be a great catalyst and a massive force for good, to transform lives and communities around the world.

Apps for Good partners with educators in schools and learning centres to deliver specific training to young people aged 10 to 18. It provides the course content, training and connections to the expert volunteers, and then lets teachers do what they are best at – inspiring and guiding young people.

Students work together as teams to find real issues they care about and learn to build a mobile, web or social app to solve them. Like professional entrepreneurs, students go through all key aspects of new product development, from idea generation, technical feasibility and programming to product design, deciding on business models and marketing.



3. HOW DOES THIS SOLUTION WORK?

The Apps for Good course teaches coding and the fundamentals of the digital world, while also developing skills in problem solving, creativity, communication and teamwork.

With a focus on solving real issues that matter to young people, the students learn the full software product development process in a hands-on way.

Apps for Good recognises that educators are at very different stages in terms of their students learning to code. Educators can therefore choose the depth of learning that is most appropriate for their students.

There are built-in opportunities throughout the course for the students to build working prototypes. From 2013/2014 onwards, there are four prototyping tiers for educators and students:

- **Tier 1 – Basic:** Balsamiq click-through wireframes/POP app;

With a focus on solving real issues that matter to young people, the students learn the full software product development process in a hands-on way

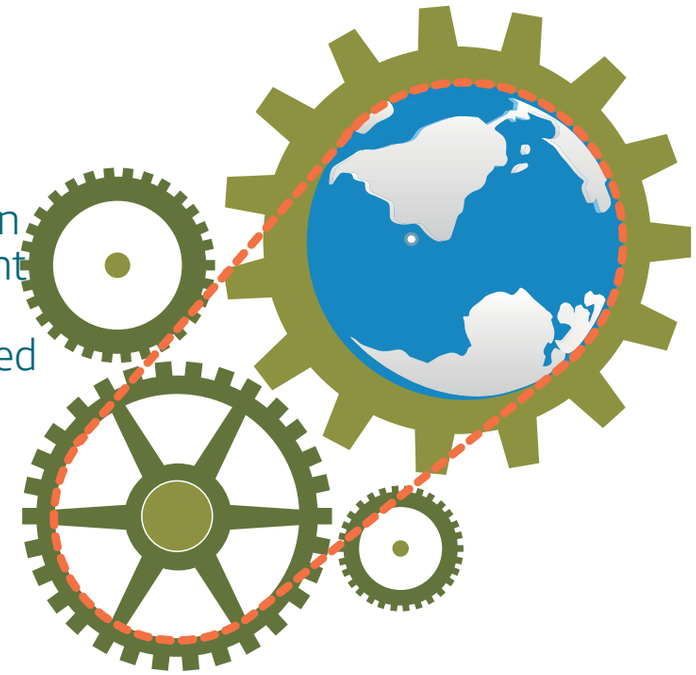
» SELECTED INNOVATION » APPS FOR GOOD

- **Tier 2 – Building blocks:** AppInventor 1 & 2 plus AppShed;
- **Tier 3 – Web:** Starting with Blockly (to show Javascript) and HTML+CSS (including code in JSBin or Thimble), moving on to plug-ins, framework and libraries and APIs;
- **Tier 4 – Social:** Javascript, social plug-ins and Facebook API (public & private) including JSBin, and also Facebook developer account.

Throughout the course, educators connect with the community of expert volunteers – technology professionals and entrepreneurs who help to bring the real world into the classroom for the students. Experts mentor the student teams in one-hour sessions via video conferencing or in person. They help the students to progress or pilot their ideas and provide inspiration and motivation. Experts also give teachers a hand in tackling the more challenging areas of the course.

At the end of the academic year, the Apps for Good Awards are presented. This is a nationwide competition in which the top student app teams from across the UK compete to have their apps launched commercially with the support of Apps for Good and its sponsors.

At the end of the academic year, the Apps for Good Awards are presented. This is a nationwide competition in which the top student app teams compete to have their apps launched commercially



4. IMPACT INDICATORS AND RESULTS

Since its beginnings in 2010 as an after-school activity at the Central Foundation School for Girls in Tower Hamlets, East London (with 25 students, one Apps for Good alumnus trained as an educator and five visiting experts), the initiative has reached substantial figures in the United Kingdom and Ireland:

- 17,000 students;
- 230 schools;
- 800 educators;
- 400 volunteer professionals.

By September 2014, the programme will have succeeded in involving 50,000 students in 1,000 schools.

5. INNOVATION HIGHLIGHTS

- Solid methodology.
- Educational combination with great potential: citizenship, entrepreneurship and technology.
- An international network to enrich the model and the experience.
- Significant cooperation from local companies.
- Capacity for rapid growth.

6. GEOGRAPHICAL AREA

Starting in London, there are currently 213 schools affiliated in the United Kingdom and Ireland.

In Catalonia, the initiative was launched as part of the Mobile World Capital Barcelona programme: http://mobileworldcapital.com/cat/pagina/67

By January 2014, it had spread to 6,000 students in 196 secondary schools in Catalonia.

» SELECTED INNOVATION » APPS FOR GOOD

7. INCOME MODEL

In the United Kingdom, the revenue comes from a £250 fee paid by private schools.

Thanks to its sponsors, it offers its services free of charge to community or non-profit educational establishments. It is estimated that a £6,000 donation covers the development of Apps for Good for three schools (300 students). This contribution covers training for the teachers, the development of the Apps for Good course and the annual competition.

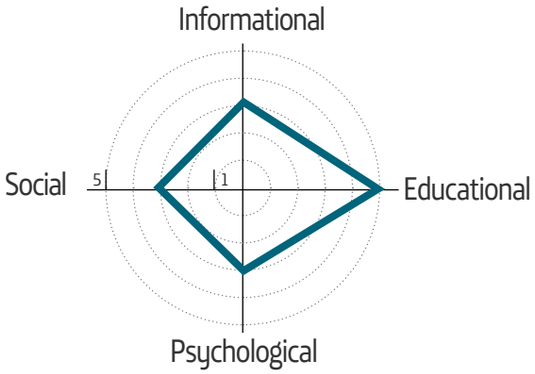
8. AUDIOVISUAL SUPPORT

https://www.youtube.com/user/AppsForGood

http://vimeo.com/51647651

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Formal

Audience:
- Students
- Teachers

» SELECTED INNOVATION

TYPE

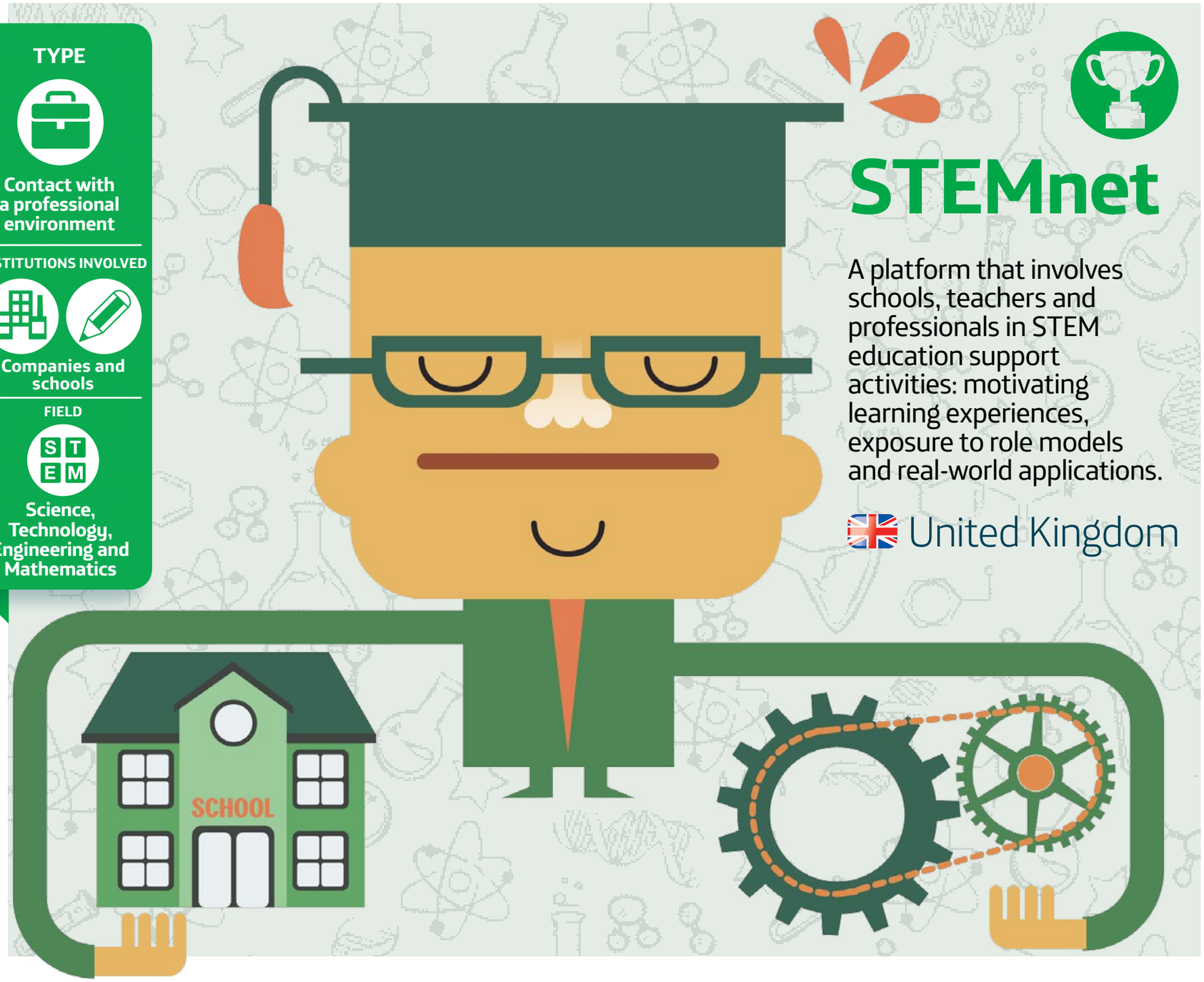
Contact with a professional environment

INSTITUTIONS INVOLVED

Companies and schools

FIELD

Science, Technology, Engineering and Mathematics



STEMnet

A platform that involves schools, teachers and professionals in STEM education support activities: motivating learning experiences, exposure to role models and real-world applications.

United Kingdom

STEMNET
Science, Technology, Engineering and Mathematics Network

Organisation:
STEMnet

Name of innovator/founder:
STEMnet

Official website:
http://www.stemnet.org.uk/

Address:
2nd Floor, Weston House,
246 High Holborn
London
WC1V 7EX

Video:
http://www.youtube.com/user/stemnetwork

» SELECTED INNOVATION » STEMNET

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Too many students are abandoning STEM subjects at school and university under the influence of stereotypes that label STEM professionals as "freaks".

For girls, there is the added perception that "science is only for boys".

Even when young people are studying for university degrees in STEM, they often end up in jobs outside this field.

2. WHAT SOLUTION IS PROPOSED?

STEMnet (Science, Technology, Engineering and Mathematics Network) aims to change this perception and create opportunities to inspire young people in STEM.

By working with thousands of schools, colleges and STEM employers, its aim is to enable young people of all backgrounds and abilities to:

- Meet inspiring role models;
- Understand real-world applications of STEM subjects;
- Experience hands-on STEM activities that motivate, inspire and bring learning and career opportunities to life.

3. HOW DOES THIS SOLUTION WORK?

This is a platform, in operation for more than 10 years, that involves schools, teachers and STEM professionals with the aim of developing activities that support STEM education. It delivers three core programmes:

- **STEM Ambassadors:** professionals who come from a wide range of careers and professions, including environmental scientists, civil engineers, marine biologists, medical physicists, pharmacists, energy analysts, architects and games developers. They volunteer their time and support to promote STEM subjects to young learners in a vast range of original, creative, practical and engaging ways. STEM Ambassadors not only inspire young people, they also support teachers in the classroom by explaining current applications of STEM in industry or research.
- **STEM Clubs Programme:** support to schools that want to set up a STEM Club. The clubs are a fun and rewarding way to boost enjoyment and learning across STEM, outside the classroom. They allow pupils to explore, investigate and discover STEM subjects.
- **School STEM Advisory Network:** offers free, impartial, tailored advice and guidance to schools to enhance the STEM curriculum. It gives access to a range of services, resources, activities, toolkits and advice, which supports the curriculum. And it uses STEMnet's business links and partnerships.

» SELECTED INNOVATION » STEMNET

STEMnet's programmes are delivered locally and regionally with national coordination. The network has contracts with 45 specialist organisations across the UK, which provide advice, services and fulfilment of requests for support at a local level. These organisations are the first point of contact for individual teachers, schools and STEM Ambassadors. This system ensures that the expert knowledge and advice is accurate, timely and relevant at a local level, while maintaining nationally consistent standards and measures of success.

This network is overseen by nine Regional Networks Managers, who are the first point of contact for employers, partner organisations, stakeholders and education providers on a regional basis.

4. IMPACT INDICATORS AND RESULTS

- Number of STEM Ambassadors: 26,000.
- Nine out of 10 secondary schools in the United Kingdom receive a visit from a STEM Ambassador at least once a year.
- Number of secondary schools affiliated with the STEM Clubs programme: 2,000 (as of 2010).

Independent evaluation of the STEMnet programmes by the National Foundation for Educational Research has shown that they work. The results show a positive impact on teachers and the employers who allow their staff to volunteer, as well as the STEM Ambassadors themselves.

STEM Ambassadors are seen by teachers as inspirational role models, able to motivate and enthuse pupils. They value their knowledge and insight into different career routes and pathways.

They hold similarly positive views of the support provided for STEM Clubs by STEMnet.

- 87% of teachers report an increased awareness of STEM subjects and their real-world applications among their students.
- 85% of teachers report increased pupil engagement in STEM subjects.
- 82% of teachers consider that STEM Ambassador activity improved pupils' motivation and aspirations to study STEM subjects further.

The STEM Ambassadors programme helps teachers bring the real world of STEM into the classroom.

Teachers also gain an increased knowledge of STEM careers options and the skills required by such careers and report that they have improved relationships with business and industry.

- 77% report increased awareness of STEM career and employment options.
- 67% report increased use of real-life contexts in teaching.
- 61% of teachers reported an increased likelihood of remaining a teacher of STEM as a result of running STEM Clubs in their schools.

The positive impact on the young people is significant. Case study participants report that they most enjoy activities that challenge their abilities and cover a range of different topics.

Their involvement in STEM Clubs appears to be particularly effective, with 74% rating their club as either "very good" or "good".

- On average, 55% of pupils around the country say they enjoy science. This figure increases to 71% for pupils who have had contact with a STEM Ambassador and 80% for STEM Club members.
- 62% of pupils say that they are doing well in science, increasing to 75% for those who have engaged with a STEM Ambassador and an impressive 84% for those who are members of a STEM Club.
- 49% of pupils who have had contact with a STEM Ambassador and 61% of STEM Club members want a job that involves STEM, compared with 37% of all pupils.

» SELECTED INNOVATION » STEMNET

5. INNOVATION HIGHLIGHTS

- Effective, sustainable coordination between schools and companies.

Effectiveness reported in the change of perception and motivation among students in regard to STEM.

6. GEOGRAPHICAL AREA

United Kingdom.

7. INCOME MODEL

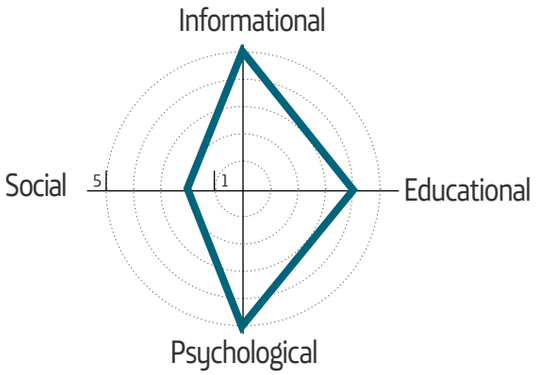
STEMnet is an independent educational organisation funded by UK Government Department for Business, Innovation and Skills (BIS); UK Government Department for Education (DfE); Scottish Government; and the Gatsby Charitable Foundation.

8. AUDIOVISUAL SUPPORT

http://www.youtube.com/user/stemnetwork

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Formal

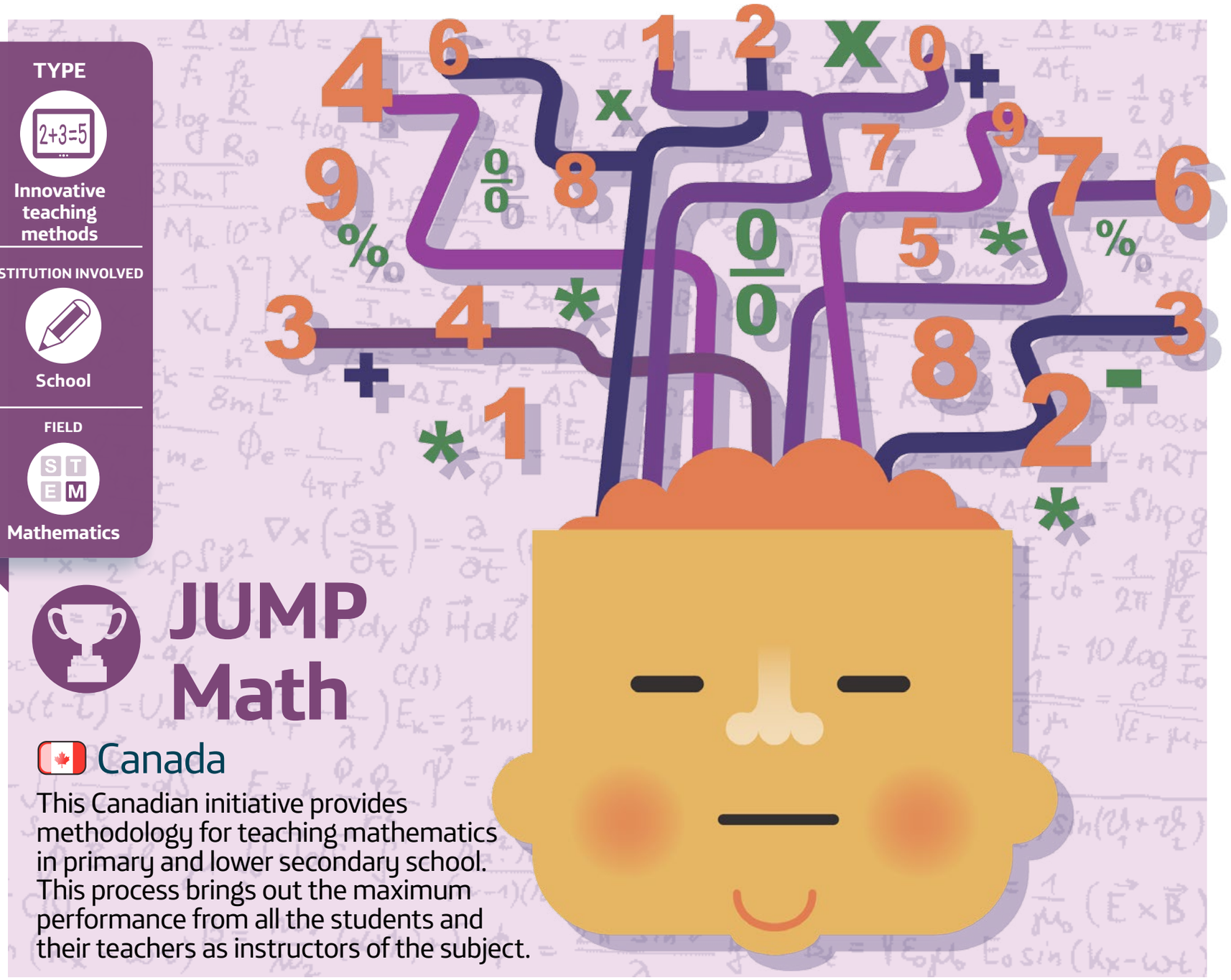
Audience:
- Students
- Teachers

» SELECTED INNOVATION

TYPE
Innovative teaching methods

INSTITUTION INVOLVED
School

FIELD
Mathematics



JUMP Math

Canada

This Canadian initiative provides methodology for teaching mathematics in primary and lower secondary school. This process brings out the maximum performance from all the students and their teachers as instructors of the subject.

jump math™
MULTIPLYING POTENTIAL.

Organisation: JUMP Math

Name of innovator/founder: John Mighton

Official website:
http://jumpmath.org/cms/

Other websites:
http://goo.gl/NO9bJ5
http://www.facebook.com/JUMPMath
http://twitter.com/JUMP_Math
http://goo.gl/TT4cC

Address:
One Yonge Street - Suite 1014, Toronto, Canada

Video:
http://goo.gl/cZTMZo

Recognition/Awards:
- 2013 Trico Foundation Social EnterPrize award, Calgary.
- 2004 John Mighton was chosen to be an Ashoka Fellow.

» SELECTED INNOVATION » JUMP MATH

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

At the international level, the results of students in mathematics are a major concern. If we only look at Spain, 24% of students do not reach the minimum levels in mathematics, according to the latest PISA report (2012).

Failing this subject is a barrier that leads to low self-esteem and demotivation among primary and secondary students. Unsuitable teaching methods, teachers who are not sure how to teach the subject and prejudices regarding the innate ability of the students contribute to this situation.

In addition, the students who can choose educational tracks that require a good command of maths only form 8% of the student body. If we take into consideration the fact that six out of every 10 jobs created in the future will require a good grasp of mathematics, it is necessary to make an effort to radically change these results.

2. WHAT SOLUTION IS PROPOSED?

JUMP Math has shown that all primary and secondary students can be successful and have a grasp of basic mathematical concepts.

Through a maths teaching programme implemented in the six years of primary and lower secondary school, JUMP Math gets the best out of all the students.

It has developed an innovative methodology that turns any teacher into an extraordinary maths instructor who improves the success rate of all his or her students in this subject. Proven procedures and resources are used to get the maximum potential out of every student.

The programme resolves the deficiencies that exist in classrooms where mathematics are taught:

- It creates participatory dynamics in the classroom;
- It breaks up the teaching-learning process into manageable steps that can be achieved by all the students;
- It reinforces the teaching staff, solving its problems of insecurity and lack of knowledge of how to teach mathematics.

3. HOW DOES THIS SOLUTION WORK?

The methodology is based on the latest advances in cognitive science. It focuses on learning as an active process of collaboration between the student and the teacher.

Using participatory dynamics, continuous assessment, dividing the lessons into small, easily assimilable, scaled units and a variety of innovative teaching methods, JUMP Math improves the scores of all the students in the classroom, with **93% passing the tests successfully**.

4. IMPACT INDICATORS AND RESULTS

JUMP Math has made controlled, random studies that show an extraordinary improvement in the learning of mathematics and a huge impact on the students' self-esteem and self-assurance.

- 110,000 children from the 1st year of primary to the 2nd year of secondary school and 20,000 in distance education are using JUMP Math in the 2013-2014 academic year.
- In 2009 in Lambeth (United Kingdom) JUMP Math was applied to a group of 353 students. The number of "distinctions" quintupled in two years.
- Jump Math Brock University Test (Canada) 2005: The students who follow JUMP Math learn twice as fast as those who follow other programmes.
- It has demonstrated its effectiveness with children suffering from behavioural problems and autism.

» SELECTED INNOVATION » JUMP MATH

5. INNOVATION HIGHLIGHTS

- There is enormous potential for JUMP Math to have an impact on academic performance, with solid evidence. The results in all countries (including a pilot scheme in Barcelona) are extraordinary.
- The impact on all the student body is that students with bad scores pass and more gifted students advance more rapidly and consolidate their basic knowledge better.
- It is easy to implement in all public and private schools since it does not involve great alterations or changes to the working methods of the schools.
- It turns teachers with less preparation in teaching mathematics into good instructors of this subject.

6. GEOGRAPHICAL AREA

It was originally developed in Canada and then expanded into the USA, United Kingdom and Bulgaria.

This year, with the support of the Barcelona Education Consortium, a pilot scheme has been implemented in 10 public schools.

7. INCOME MODEL

JUMP Math is a social enterprise that operates on a publishing business model, based on the sale of student assessment and practice books.

It also markets teacher training and distributes in-class materials for SMART boards.

In addition, it receives donations from public and private institutions to expand its programme.

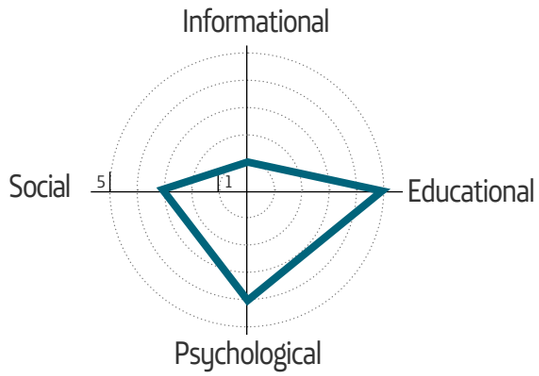
8. AUDIOVISUAL SUPPORT

http://goo.gl/C04Jv0

http://www.youtube.com/user/JumpMath

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Formal

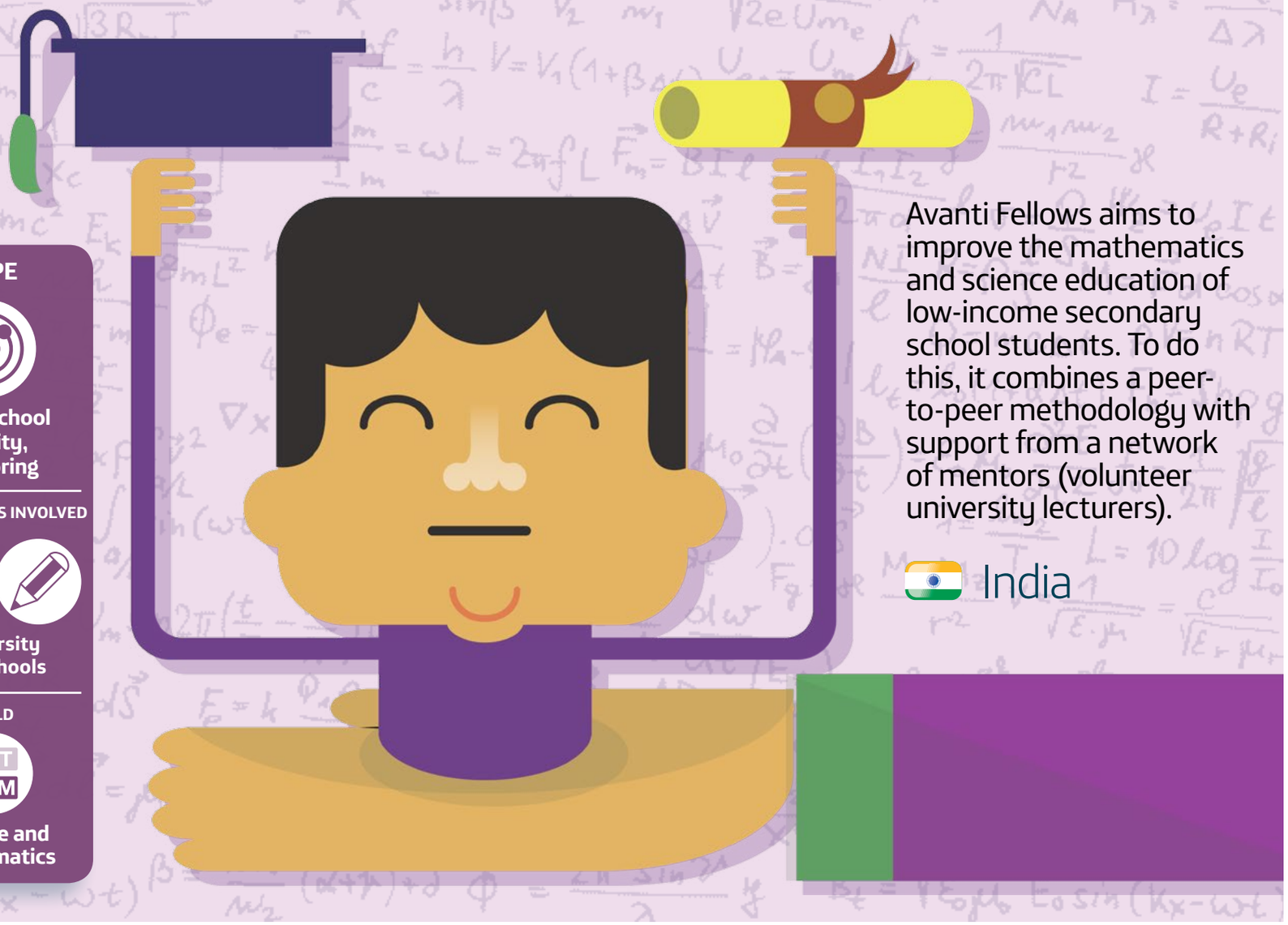
Audience:
- Students
- Teachers
- Family

Innovation Finalists

Innovation Finalists in the Education Challenge were selected by Fundación Telefónica from among the 100-plus educational innovations identified internationally.

» *INNOVATION FINALIST*

Avanti Fellows



TYPE

After-school activity, mentoring

INSTITUTIONS INVOLVED

University and schools

FIELD

Science and Mathematics

Avanti Fellows aims to improve the mathematics and science education of low-income secondary school students. To do this, it combines a peer-to-peer methodology with support from a network of mentors (volunteer university lecturers).

India

अवन्ती AVANTI FELLOWS

Organisation:
Avanti Fellows

Name of innovator/founder:
Akshay Saxena

Official website:
http://avantifellows.org/

Address:
Mumbai Office:
4th Floor, Candelar Building,
26 St John Baptist Road,
Near Mount Mary Steps,
Bandra (W), Mumbai 400 050

New Delhi Office:
2nd Floor
212 Shahpur Jat
New Delhi, 110017

Video:
http://youtu.be/IBWsHNN6W1M

Recognition/Awards:
- Akshay Saxena is a 2013 Ashoka Fellow.

» INNOVATION FINALIST » AVANTI FELLOWS

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

In India, only 13% of the 7.8 million secondary school graduates go on to study at university.

Of this percentage, very few belong to low-income families. The difference in the education level between private and public schools is great, accentuating the social gap. According to the Global Poverty Research Group (GPRG), students in Indian private schools score twice as high as students in public schools on reading, writing and arithmetic.

University entrance exams are particularly difficult, especially for STEM subjects. The secondary school curricula do not prepare the students for these exams. This situation has given rise to an entire tutoring industry to train the students for two or three years in advance and at an annual cost of at least $3,500.

As a result, only students with the resources to pay for private classes can take the exams with the preparation needed. To complicate matters further, each university has its own type of exam and model of assessment, forcing students to concentrate on preparing for one particular school.

In addition, a recent evaluation by the National Association of Software and Services Companies (NASSCOM) showed that ICT companies reject 90% of university graduates and 75% of engineering graduates as they are not sufficiently well educated to continue their training in companies.

2. WHAT SOLUTION IS PROPOSED?

With the aim of increasing the opportunities for students from less favoured socio-economic backgrounds to successfully enter the university, Avanti Fellows provides an alternative to expensive private classes to prepare students for the entrance exams. This programme lays a special emphasis on key subjects, such as mathematics and the sciences.

It views education as a social process, in which a social worker takes on the tasks of a facilitator, while the students enter into peer-to-peer training dynamics.

3. HOW DOES THIS SOLUTION WORK?

Avanti Fellows has an advanced pedagogy that considers learning to be a product of social engineering and not just a transfer of information between the teacher and the student.

It is based on a peer-to-peer methodology developed by the Harvard professor Eric Mazur. It was first implemented in public schools and then, based on the results, it opened its own centres: Avanti Learning Centres.

The implementation of this methodology does not use the conventional figure of the teacher: it is based on having social workers who focus their duties on being advisers and facilitators for the students in their charge.

The students enter a peer-to-peer learning system that is combined with mentoring.

These social workers, with strong community and social skills, maintain discipline and guide them in the learning process, as well as giving the students individual advice. They play an essential role in ensuring that the students are active and motivated.

If they note that a student needs guidance and academic support, they send that student to a mentor.

The mentors who are part of the Avanti network (one of the biggest in India, with more than 300 members) come from the faculties of engineering and law in the best private universities. The mentors guide the students through the curriculum with a clear focus on the university.

The mentors and students form strong ties in the two years that the Avanti programme lasts. This is one of the aspects that the students value most.

Avanti offers a two- to three-year programme for students in grades 9 to 12, which reinforces their science and mathematics education for the school leaving exams.

The programme is offered to children from low-income family, public school students, from whom Avanti selects 5% by means of a test and an interview process.

» INNOVATION FINALIST » AVANTI FELLOWS

4. IMPACT INDICATORS AND RESULTS

Avanti has its own centres in Mumbai (200 students), Delhi (45 students) and Kanpur (45 students); and centres associated with schools in Chennai (180 students). In addition, with the cooperation of the Tibetan Central Administration Department of Education, the programmes is also offered to three schools in Tibet (100 students).

The students who graduate from Avanti have a 25% higher possibility of passing the JEE Advanced Examination than the average student.

Avanti students are gaining admission to top-flight Indian universities and performing like the advanced students of the country's public and private technical colleges.

5. INNOVATION HIGHLIGHTS

- Orientation to equal education.
- Peer-to-peer methodology.
- Proven academic results in the sciences and mathematics.
- Mobilisation of high-level STEM mentors.

6. GEOGRAPHICAL AREA

India and Tibet.

7. INCOME MODEL

Avanti is registered as a non-profit organisation in India and the USA.

It receives significant donations from the Draper Richards Kaplan Foundation, Echoing Green, the PanIIT alumni organisation, UnLtd India.

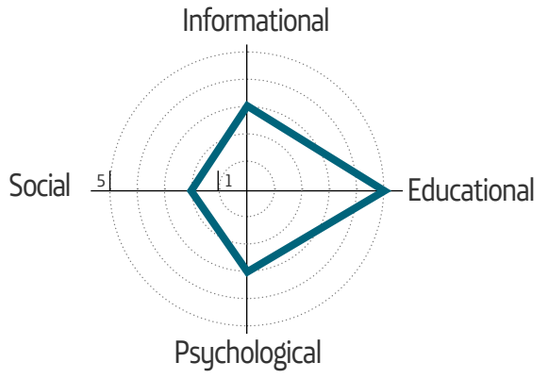
It also receives individual donations from India and the USA.

8. AUDIOVISUAL SUPPORT

http://youtu.be/IBWsHNN6W1M

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Non-formal
- Formal

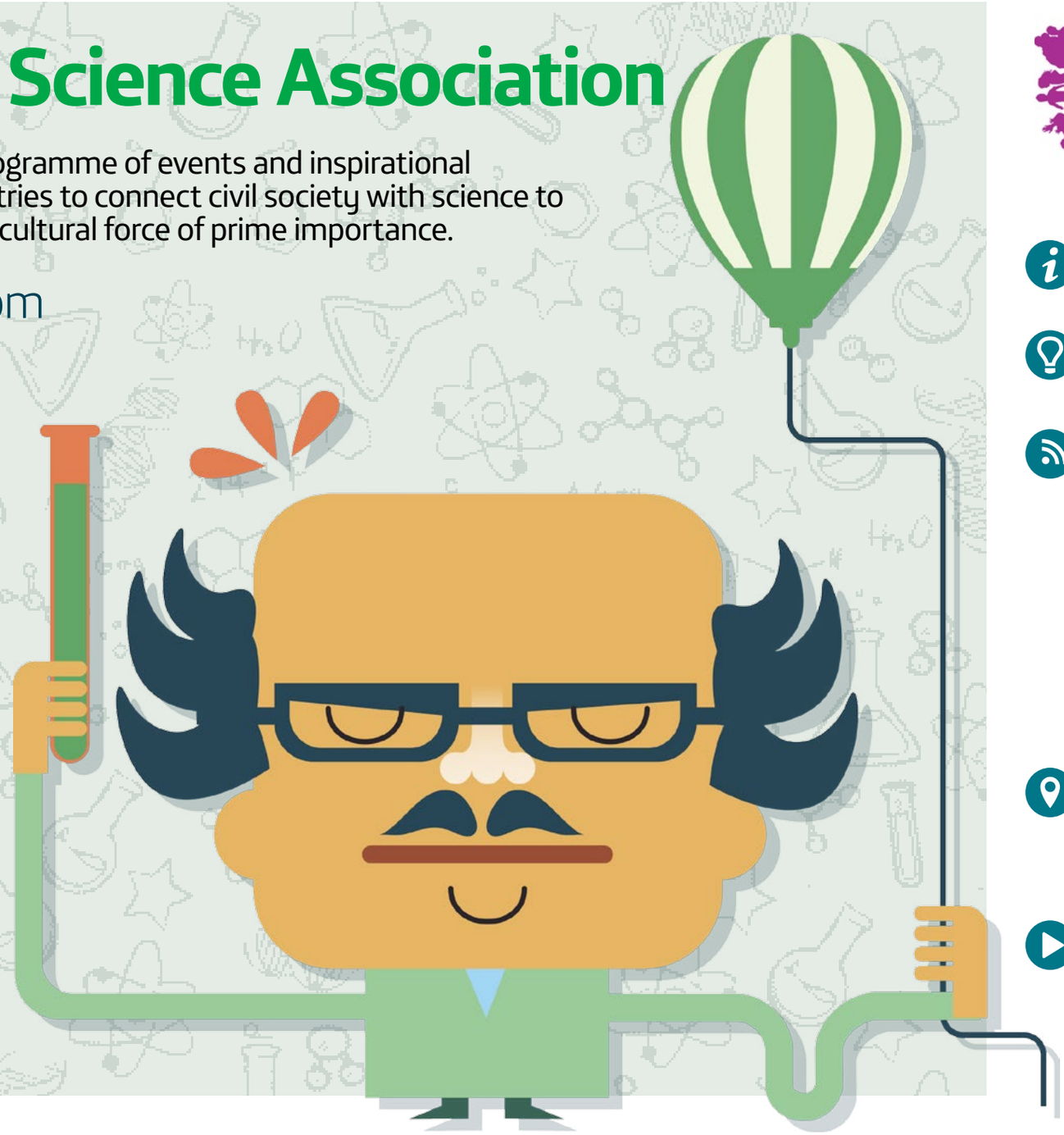
Audience:
- Students

» *INNOVATION FINALIST*

British Science Association

Through a solid annual programme of events and inspirational activities, the association tries to connect civil society with science to make it into an accessible cultural force of prime importance.

United Kingdom



TYPE

Networks, informational and out-of-school activities

INSTITUTIONS INVOLVED

Universities, schools and institutions

FIELD

Science

Organisation:
British Science Association

Name of innovator/founder:
Imran Khan and Rupa Kundu

Official website:
www.britishscienceassociation.org

Other websites:
http://en.wikipedia.org/wiki/British_Science_Association
www.oxfordscibar.com/
www.britishscienceassociation.org/sites/default/files/root/association/BSA_Annual%20review_FINAL.pdf

Address:
Wellcome Wolfson Building,
165 Queen's Gate,
London, SW7 5HD

Video:
http://www.youtube.com/user/BritishScienceAssoc

» INNOVATION FINALIST » BRITISH SCIENCE ASSOCIATION

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

The British Science Association (BA) is a body that was founded in 1831 by David Brewster, a scientist and editor of the Edinburgh journal of science. It came at one of the worst moments for English science, so from the start its mission was to improve the country's perception of science and scientists by publicising the major advances in this field.

The vision of the BA and its challenge is a society in which citizens of all social classes can have access to science, engage in its development and somehow be involved in its direction.

Throughout its history, the association has been able to adapt to situational changes, denounce the various barriers of the system to scientific development and publicise and propose a variety of activities that will bring this knowledge to the greatest number of citizens possible.

2. WHAT SOLUTION IS PROPOSED?

Starting from the British Science Association's vision of bringing scientific development to the whole of society and involving them in it, the association has expanded throughout the United Kingdom and has provided people of all ages with opportunities to debate, research, explore and challenge science.

Through an annual programme of attractive and inspiring events and activities, it tries to connect society with science, making it accessible and positioning it as a cultural force of prime importance.

Its main objectives are:

- To promote open discussions (by providing the necessary information) on science and its place in society;
- To attract adults and young people to science and technology and directly inspire them.

3. HOW DOES THIS SOLUTION WORK?

The association's mission is accomplished through four interrelated nationwide programmes:

1. **The British Science Festival**, which is one of the major STEM events in Europe. Held every September in a different city, in one week more than 250 events, activities, exhibitions and excursions take place. The programme is designed for families, school groups, adults and professionals interested in the latest research.
2. **National Science and Engineering Week** (NSEW), is a 10-day event with about 4,500 events that take place all over the United Kingdom in order to pay homage to science, engineering and technology and their importance to society. As there are no restrictions on the organisers, topics, public or spaces where they are held, the programme is very varied and eclectic, for people of all ages and abilities.
3. **The CREST Award** recognises and rewards projects created by young people aged 11 to 19, with the help of their teachers, scientists and engineers as partners or mentors.
4. **Science in Society** is a programme to support science communication and the research community. There is an annual science communication conference.

The association operates all over the United Kingdom at a network of sites at which programmes are held using local volunteers.

The association has expanded throughout the United Kingdom and has provided people of all ages with opportunities to debate, research, explore and challenge science

» INNOVATION FINALIST » BRITISH SCIENCE ASSOCIATION

4. IMPACT INDICATORS AND RESULTS

- 33 British Science Association sites in England and seven in Scotland.
- 300 researchers involved.
- 15,000 visitors to the X-change blog.
- 1,500 scientists have collaborated with events.
- 250,000 young people have taken part in the CREST Awards since 2007.
- 43,000 visitors to the British Science Festival.
- 12,000 schoolchildren have interacted in a British Science Festival event.

5. INNOVATION HIGHLIGHTS

- Involvement of scientists in its activities.
- Solid, diverse network of affiliates: universities, companies, research councils, professional associations, scientific centres, charitable organisations.
- Model for organisation and sustainability based on a network of local sites.
- Network of volunteers involved and integrated into the operations and structure of the association.
- Solid programmes.

6. GEOGRAPHICAL AREA

Currently there are 33 sites all over England and seven in Scotland. All are managed by volunteers.

7. INCOME MODEL

The revenue of the BA comes from charity activities, private donations, a membership fee and sponsors.

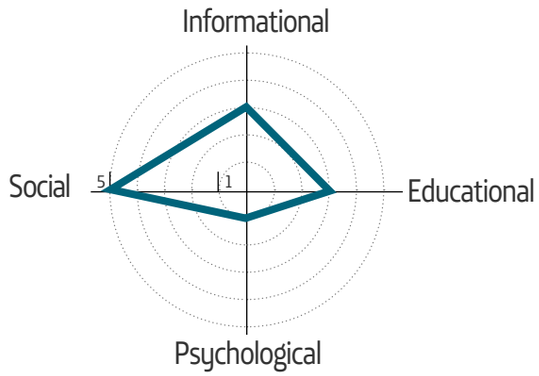
The different association sites receive funding from local government and local companies.

8. AUDIOVISUAL SUPPORT

www.youtube.com/user/BritishScienceAssoc

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical
- Organisational

Context:
- Informal
- Non-formal

Audience:
- Students
- Teachers
- Family
- Civil society

» INNOVATION FINALIST

CDI

COMMITTEE FOR DEMOCRACY IN INFORMATION TECHNOLOGY

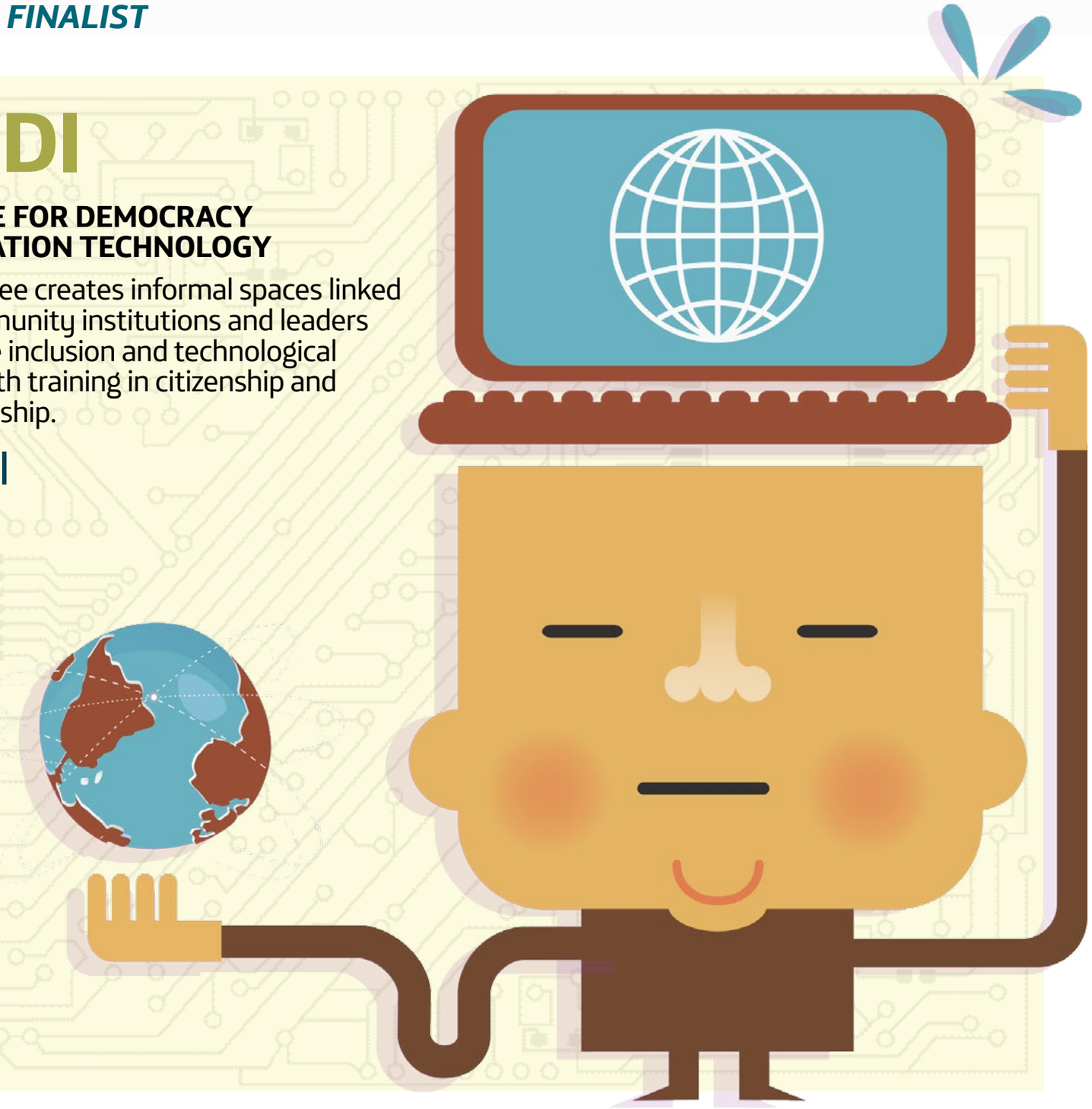
The committee creates informal spaces linked to local community institutions and leaders that combine inclusion and technological education with training in citizenship and entrepreneurship.

Brazil

TYPE
After-school activity

INSTITUTIONS INVOLVED
Local bodies

FIELD
Technology



TRANSFORMANDO VIDAS ATRAVÉS DA TECNOLOGIA

Organisation:
CDI: Committee for Democracy in Information Technology

Name of innovator/founder:
Rodrigo Baggio

Official website:
http://www.cdi.org.br

Other websites:
www.cdiglobal.org

Address:
Rua Alice, 150 – Laranjeiras
Rio de Janeiro / RJ – CEP 22241-020

Video:
http://www.youtube.com/user/redecdi

Recognition/Awards:
- Rodrigo Baggio has been an Ashoka Fellow since 1996.

» INNOVATION FINALIST » CDI

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Computer- and information system-based equipment and communications are opening up new opportunities in almost all fields of human activity. Distances are shrinking and the global village is rapidly becoming an everyday reality.

In education, at work and in many leisure activities, ICT skills are the difference between yesterday and today. Unfortunately, these resources are not being shared out fairly. In countries like Brazil where poverty is widespread and the public education systems are extremely deficient, access to the necessary equipment and a lack of training prevent these benefits from reaching the great majority of lower income people. As a result, the gap between rich and poor is widening, and the opportunities for the disadvantaged are shrinking proportionally.

The challenge facing the CDI is the urgent need to increase access to knowledge of computers and ICT among the disadvantaged and, by means of these skills, to improve their economic opportunities and give them more rewarding participation in all facets of life.

2. WHAT SOLUTION IS PROPOSED?

Rodrigo Baggio heads this growing movement to train young people in disadvantaged communities in digital skills and, in this way, to increase their chances of finding employment and being included in contemporary society. This is a movement that combines technological education with education in citizenship and entrepreneurship.

The CDI Communities are informal spaces for learning about computers and citizenship. They are implemented under the umbrella of institutions with links to the community.

A method has been developed that is being implemented in various countries:

http://www.cdi.org.br/onde-estamos/

This network, coordinated and supervised by 23 regional, national and international offices, has a presence in low-income communities, prisons, mental heath institutions, centres for those with disabilities, indigenous communities and rehabilitation centres for minors in custody. It operates in urban and rural settings. In Brazil the organisation has a presence in 15 states and the Federal District.

3. HOW DOES THIS SOLUTION WORK?

These spaces are headed by community leaders. In this way, the social issues, values and other special features of each community are respected and taken into account by the CDI. The digital inclusion and citizenship tasks can be adapted to local needs and audiences.

The training takes place in rooms that are made available free of charge by community organisations, schools, parish halls and so on.

The CDI Communities training programme provides the trainers with the necessary training. They are paid a salary when they start work.

The CDI offers basic and advanced courses in computing for a broad public, aged from seven years old to the elderly. These courses can be free but in some places a monthly fee is paid.

They have the enthusiastic support of companies in the community, which donate equipment and training manuals. The equipment is maintained by volunteers who work with the CDI.

Each CDI Community can include specific projects including, among others, the HP Life Project, Light Project, SMS-DC RJ Project and Friends of the Planet.

Projects have been developed with mobile devices, which are more accessible in these sectors.

» *INNOVATION FINALIST » CDI*

4. IMPACT INDICATORS AND RESULTS

By 2012, the CDI Communities network had trained 92,084 students and had 1,007 trainers trained in the CDI methodology.

Currently the initiative has 780 digital inclusion spaces in Brazil and 12 other countries.

5. INNOVATION HIGHLIGHTS

- Strong orientation to inclusion, through digital training.
- Solid methodology.
- High-potential educational combination: citizenship, entrepreneurship and technology.
- A widespread international network to enrich the model and the experience.
- Significant cooperation from local companies.
- Effective, accessible model for school support activities.
- Significant reach.
- Mobilisation of volunteers.

6. GEOGRAPHICAL AREA

As well as Brazil, it operates in Argentina, Chile, Colombia, Ecuador, Spain, USA, United Kingdom, Mexico, Peru, Portugal, Uruguay and Venezuela.

7. INCOME MODEL

The CDI's strategy places a special emphasis on each of the communities having self-management, financial independence and sustainability.

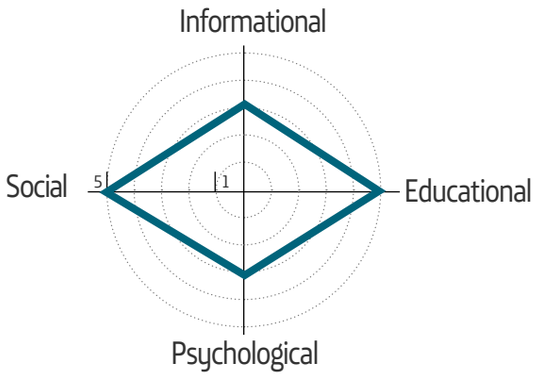
The funds needed to pay the salaries of the trainers and the maintenance of the installations are generated in part by student fees (in some cases) but other sources of income include becoming a part of the budget of public schools and using school equipment (outside school hours) in order to provide a variety of paid services to community groups or small local companies.

8. AUDIOVISUAL SUPPORT

http://www.youtube.com/user/redecdi

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Non-formal

Audience:
- Students
- Family
- Local communities

» INNOVATION FINALIST

TYPE
After-school activity

INSTITUTIONS INVOLVED
Companies and schools

FIELD
Science, Technology, Engineering and Mathematics

Citizen Schools

USA

Citizen Schools bridges the educational gap by offering quality extra-curricular support. They connect students who have no resources with adults in the community, who help them with training and guidance.

CITIZEN SCHOOLS

Organisation: Citizen Schools

Name of innovator/founder:
Erick Schwarz and Ned Rimer

Official website:
http://www.citizenschools.org

Other websites:
http://www.citizenschools.org/about/model/
http://goo.gl/c6IfNM

Address:
308 Congress Street, 5th Floor, Boston, MA, 02210

Video:
http://youtu.be/QrjPg8fRoSs

Recognition/Awards:
- Model national programme, from the White House.
- Fast Company Magazine Social Capitalist prize.
- Social Entrepreneur of the Year 2013.
- Skoll Foundation Entrepreneurship Award.

» INNOVATION FINALIST » CITIZEN SCHOOLS

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

There is a critical gap in education. But it isn't an "achievement gap" as the media often describes it. It's an opportunity gap.

Students in upper-income families spend 300 more hours each year with adults than do the three million students in lower-income families.

Upper-income students also benefit from almost $8,000 worth of enrichment activities yearly – robotics camp, piano lessons, academic tutoring and more.

This lack of adult models and support and of the economic resources needed to have access to extra-curricular formative activities undermine the opportunities of young people, especially for access to higher education and the world of work.

2. WHAT SOLUTION IS PROPOSED?

Citizen Schools aims to close this educational gap and assist students who do not have the support of training and guidance after school.

It connects students and adults in the community and mobilises leaders of education and companies and families to carry its model of after-school support forward.

The organisation's programmes focus on low-income secondary school students. It promotes workteam learning, basing it on practical, fun, discovery-oriented activities. The activities take place in the schools, with professional educators and volunteers who make up the Citizen Teachers team.

The keys to Citizen Schools are:

- To give attention and training to minors outside of school hours;
- To connect students with adults outside of school;
- To implement relevant learning activities;
- To promote skills, involvement and opportunities for students in order to give them guidance for post-secondary life.

3. HOW DOES THIS SOLUTION WORK?

The Citizen Schools programmes expand the learning day after school hours.

The procedure they follow to assist the students is to create links with entire schools.

The following blocks of activities are offered:

- **Learnings**: Because of their access to and contact with solid professionals, the students become young scientists, architects, lawyers and entrepreneurs who develop experiences for professional success.
- **Academic Support**: The students receive one or two hours of academic support to improve their performance and test results. This academic block includes:

  AIM: Aspire Invest Make the Grade: structured homework time that includes one-on-one goal-setting and coaching.

  Academic League: Classes in mathematics or literacy.
- **Explore**: Designed to get students working as a team, explore and expose them to the world of work and higher education through visits to local colleges and businesses.

All of these learning blocks are tied together with the goal of establishing College to Career Connections.

» INNOVATION FINALIST » CITIZEN SCHOOLS

4. IMPACT INDICATORS AND RESULTS

Complete details on Citizen Schools can be found in the following document:

http://www.citizenschools.org/eltsummit/report/

To give some examples:

- While 33% of eighth grade students around the country say they are interested in STEM careers, 80% of the students who are learning STEM through Citizen Schools say they are interested in these careers;
- Students in Citizen Schools spend seven weeks more at secondary school than their companions;
- Nine out of 10 Citizen School students pass the state graduation exams in Mathematics and English.
- In 2009, the results of an external evaluation by Policy Studies Associates showed that Citizen Schools are effective in involving secondary students who are in situations of risk. 75% of the students in Citizen Schools graduated from high school in four years, in contrast to 58% in other district high schools.

The general estimate for the 2013/14 school year is as follows:

- 32 partner schools;
- 5,300 children attending;
- 4,700 volunteers involved;
- 244 AmeriCorps members.

5. INNOVATION HIGHLIGHTS

- Proven results of improved student performance and involvement.
- Orientation to groups at risk.
- Committed to one key factor: adult mentoring during after-school hours.
- Reach and growth strategy.
- Mobilisation of community volunteers.

6. GEOGRAPHICAL AREA

It began in Boston, and currently operates in eight states: California, Massachusetts, Illinois, New Jersey, New York, North Carolina and Texas.

7. INCOME MODEL

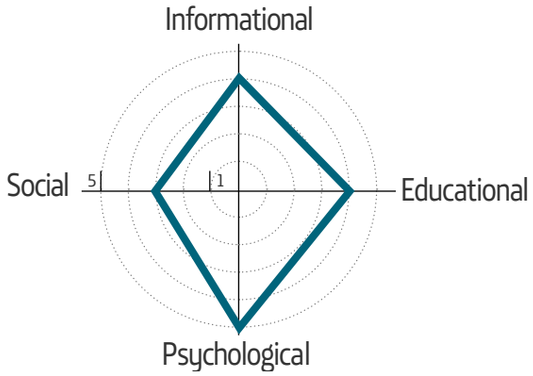
Citizen Schools is a non-profit organisation that is wholly financed by private and corporate donations. It has sponsors such as CISCO, WALMART and Google. The companies also provide corporate volunteers for student guidance and training activities.

8. AUDIOVISUAL SUPPORT

http://youtu.be/_XoLlrsmdLQ

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Formal
- Non-formal

Audience:
- Students

» *INNOVATION FINALIST*

CoderDojo

CoderDojo is an international community of free, volunteer-led coding clubs for young people. The focus is on peer-to-peer learning, tutoring and self-motivated learning.

Ireland

TYPE

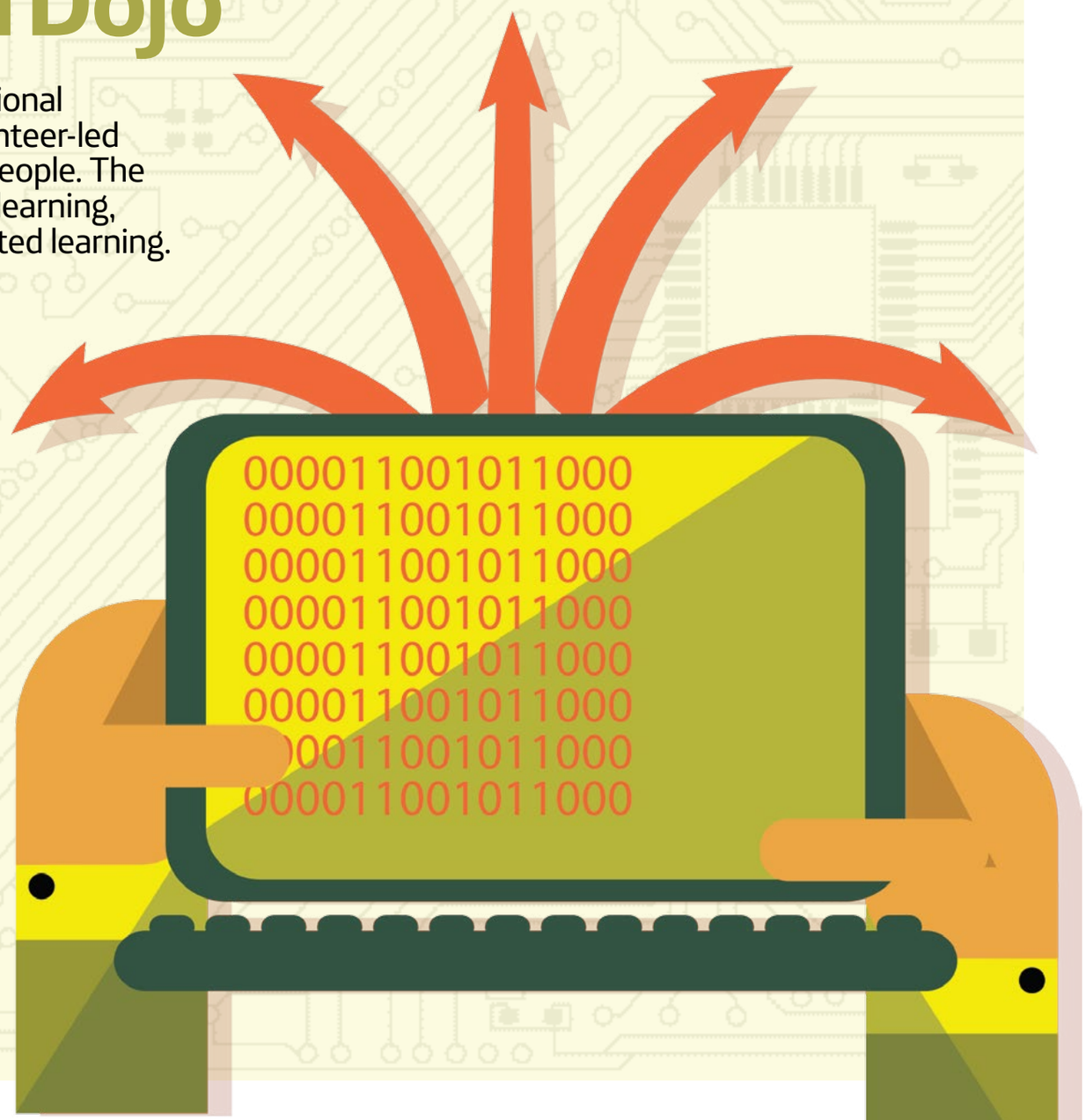
After-school activity

INSTITUTIONS INVOLVED

Companies and non-formal centres

FIELD

Technology



CoderDojo

Organisation: CoderDojo (Hello World Foundation)

Name of innovator/founder: James Whelton and Bill Liao

Official website: http://coderdojo.com/

Other websites:
http://helloworldfoundation.com/
http://www.coderdojobcn.com/
http://coderdojobio.org/

Address:
Hello World Foundation, Dogpatch Labs, The Warehouse, 35 Barrow Street, Ringsend, Dublin 4

Video: http://goo.gl/DrNrV0

Recognition/Awards:
- 2012 James Whelton Ashoka Fellowship.
- 2012 Social Entrepreneurs Ireland Impact.
- 2012 and 201 Ben &Jerrys Join Our Core Winner.

» INNOVATION FINALIST » CODERDOJO

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

At a time when Europe is suffering mass unemployment, technology companies are facing a critical shortage of talented ICT experts. This contradictory picture highlights the mismatch between the skills offered and the demand. According to the European Commission, there will be a shortage of up to 900,000 ICT professionals by 2020.

The aim of CoderDojo is to provide young people with the knowledge of ICT that they need to become confident creators of their own digital future.

CoderDojo also takes away the feeling of isolation of many young programmers, who tend to be self-taught and self-employed. The clubs, named Dojos, making coding fun and a social, collaborative activity.

2. WHAT SOLUTION IS PROPOSED?

Since the first Dojo was set up in Cork in 2011, CoderDojo has been working to facilitate the creation of free coding clubs for young people and to promote a self-motivation system, peer-to-peer learning of ICT skills and the autonomous creation of digital media all over the world.

One of the main goals of the Hello World Foundation (http://helloworldfoundation.com) is to support the CoderDojo community. Since 2013, it has implemented, among other things:

- Zendesk e-mail support and customer communication service;
- Forum administration, such as the CoderDojo Google Organisers Group;
- Community support, by sharing learning and information resources through the Kata knowledge base;
- Social media support on Twitter, LinkedIn and Google+;

http://vimeo.com/62684914

http://goo.gl/srwTgJ

- Administration of Zen, the Dojo database;
- Support for individual members of the community;
- Creation of a CoderDojo Community Committee.

3. HOW DOES THIS SOLUTION WORK?

CoderDojo is a worldwide community of free, volunteer-led coding clubs for young people. Its focus is on peer-to-peer learning, tutoring and self-driven learning, with an emphasis on open-source and helping others.

Its aim is to show how coding can be a force for change in the world.

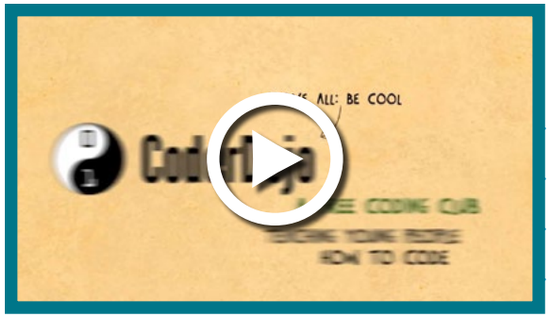
An important aspect of CoderDojo is promoting creativity and having fun in a social setting. CoderDojo makes learning to program and developing programs a fun, positive experience.

A Dojo is an independent, volunteer-led club created in a local community that is part of the CoderDojo network. It is organised by a CoderDojo master and his team of mentors and volunteers. In the Dojos, youngsters from seven to 17 learn how to code, develop websites, applications, programs and games and explore technology.

» INNOVATION FINALIST » CODERDOJO

As well as learning to program, the members meet like-minded people and can show off what they are working on. There is no standard Dojo and the activities vary by club, generally based on the skills of the mentors who are helping there. However, each Dojo shares the CoderDojo ethos and focuses on showing young people how to code, develop software and explore technology by working with others and showing off their work.

To become a registered Dojo, the Dojo Master must agree to the CoderDojo Ethics Charter.



http://www.youtube.com/watch?v=HntLmTymmyc

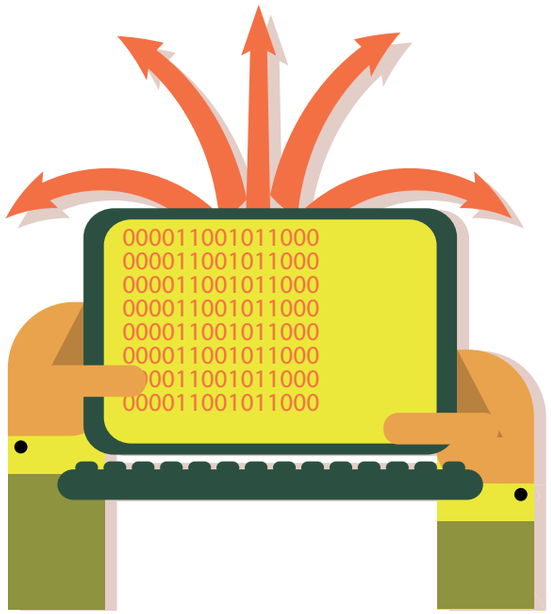
4. IMPACT INDICATORS AND RESULTS

As this is a new, rapidly growing organisation, it is difficult to measure the impact that it will have when the CoderDojo students become adults. However, the impact of CoderDojo can be measured in a variety of ways.

First, there are 380 Dojos, all over the world. This clearly shows that there is a huge demand for the initiative. On average, 30 young people regularly attend Dojos for weekly or monthly sessions. In Ireland, CoderDojo currently has more than 100 Dojos, in which some 3,000 children take part each month.

Second, the scope of the project can be seen from the inter-annual growth of the annual CoderDojo competition, which displays the most interesting projects. In 2011, 20 participants demonstrated their projects; in 2012 there were 63 projects. This year 150 projects are expected to be entered.

Another way of measuring the impact of CoderDojo is from its growth on social media. It currently has 10,800 followers on Twitter, an average growth of 250 followers a week, and an estimated 284,670 views. Last month it received 1,400 tweets on Twitter. There are also 5,000 followers on Facebook, with an average growth of 150 a week.



5. INNOVATION HIGHLIGHTS

- Rapid international growth.
- Strong international brand recognition.
- Strong presence on global media (BBC International, *The Guardian*, *EuroNews*, *Wall Street Journal* and so on).
- Driven by a dedicated support community.
- Open Source: free to everyone.
- Focus on inclusion and strengthening social skills.
- Network of volunteers.
- Promotes peer-to-peer learning and self-driven learning.
- Emphasis on learning code that is applicable to solving real-world problems.

» INNOVATION FINALIST » CODERDOJO

6. GEOGRAPHICAL AREA

The first Dojo opened in Cork, Ireland in June 2011. Since then more Dojos have opened in Ireland and there are 380 dojos in 43 countries. See map: http://zen.coderdojo.com/

There are now networks all over the world, including Europe, USA, Canada, Haiti, Japan, Hong Kong and Africa, where the first AfriCoderDojos were recently launched in association with the US State Department.

Regional networks have been formed, such as CoderDojo Italy (http://www.coderdojoitalia.org/) and CoderDojo Belgium (www.coderdojobelgium.be/).

In Spain there are six Dojos and it is hoped to build up and expand the Spanish network.

7. INCOME MODEL

The revenue comes from payments for services by users, government subsidies and philanthropic donations. The foundation that supports it depends on philanthropic and corporate donations. This foundation focuses on support, scale and empowerment for CoderDojo around the world.

Most Dojos require a zero budget or very little funding to operate. The meeting places are donated free of charge and the volunteers offer their time to guide the members; donations of equipment are received frequently. Where a Dojo has needed funding, the amounts have been small (€300 per annum for insurance or similar).

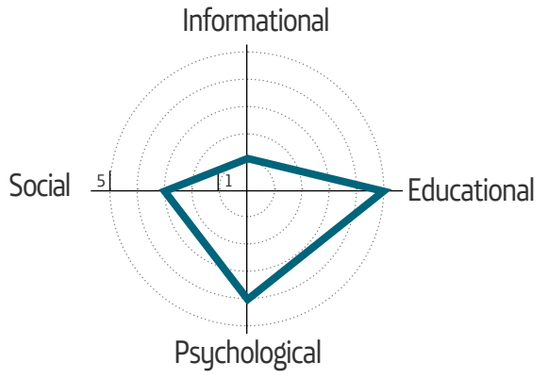
8. AUDIOVISUAL SUPPORT

http://goo.gl/y9lxmL

http://goo.gl/jyjZGg

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Informal

Audience:
- Students
- Family

» *INNOVATION FINALIST*

CORD

COMPETITION FOR ROBOT DESIGN

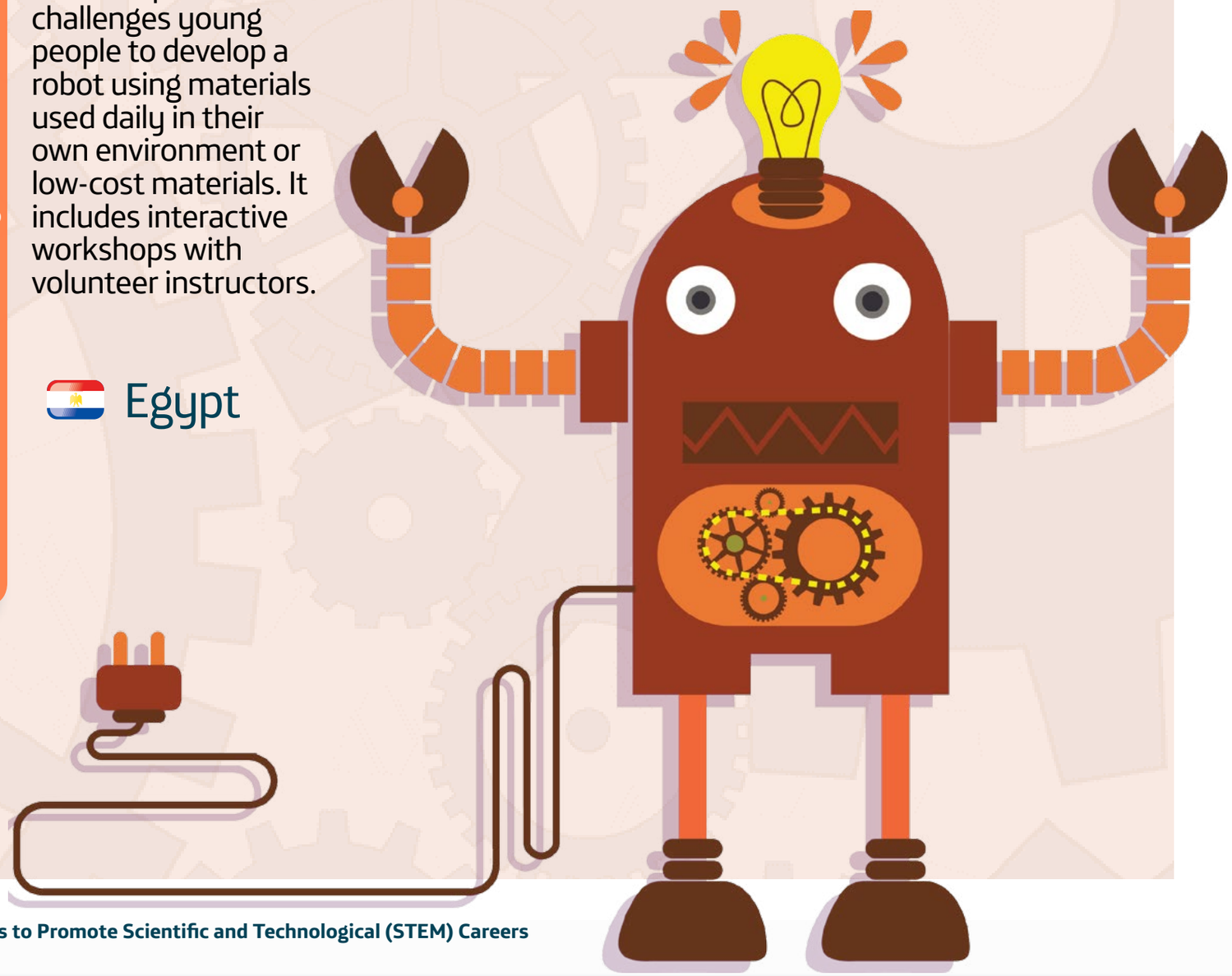
TYPE
After-school activity

INSTITUTIONS INVOLVED
Schools and non-formal centres

FIELD
Technology and Engineering

This competition challenges young people to develop a robot using materials used daily in their own environment or low-cost materials. It includes interactive workshops with volunteer instructors.

Egypt



Organisation:
CORD

Name of innovator/founder:
Mohammed A. ElRaffie

Official website:
www.cord-eg.com

Other websites:
www.facebook.com/CORDinc

Address:
1 D, Sama Cairo Buildings, Maadi. Cairo

Video:
http://goo.gl/kRqfjr

Recognition/Awards:
- 2010 winner of SISWY "Social Innovation Starts With You".
- 2013 Ashoka Fellow in the field of Education.
- 2013 "Mobaderoon Misr" prize for social enterprises.

» INNOVATION FINALIST » CORD

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Not understanding the importance of scientific knowledge and research results in less support for children to follow their scientific dreams and for scientific research centres.

A lack of interaction with science and technology leads to a non-analytical, consumerist attitude, with no real comprehension. A lack of consciousness of basic physics leads to a low ability to diagnose and solve problems efficiently.

Added to this is the lack of support for education in the home and low-cost tools to stimulate creativity and work habits.

2. WHAT SOLUTION IS PROPOSED?

Bringing science into the lives of young Egyptians and providing them with a learning experience that develops their self-esteem, creativity, ingenuity and team work.

This is achieved by means of an automaton design competition that challenges groups of young people to design a robot that moves, using materials that are in everyday use in their homes or communities, or very low-cost store-bought items. In this way, all socio-economic strata can be included. The competition also requires no previous knowledge, which offers more opportunities for participation.

It therefore makes the creation of a robot, which is seen by society as being a sophisticated machine, more approachable and accessible.

Also, through the Robot Academy, young people are given an opportunity to increase their knowledge of science and their innovative abilities.

While most of the proposals of this kind come from young people aged between 18 and 25, CORD also pays attention to a younger age group. After an initial pilot test that included 80 children between the ages of eight and 12, it is working with the Ministry of Education and a large Egyptian citizen's organisation to implement its plan in public schools. In this way, a robot creation curriculum will be implemented. The concept is to create "the best things out of nothing".

3. HOW DOES THIS SOLUTION WORK?

It places the focus on construction or production experience based on training and learning that take the form of a game. Through the experience of the game, the competition or simply participation in a workshop the solution is to provide an experience of more effective learning.

The official competition involves volunteer instructors (CORDians) who train groups of young people in robotics (basic concepts) through interactive workshops that last three to five weeks. After this initial training (generally in groups of three), they build a robot with low-cost materials that they provide themselves.

The robots are built with the goal of their being able to cross the playground. All those who manage this receive a prize.

This gives young people confidence and the ability to work by themselves, taking on challenges with their own resources and developing creativity. All this is done through a well-planned study programme.

» INNOVATION FINALIST » CORD

4. IMPACT INDICATORS AND RESULTS

The first CORD robot-building competition in 2007 – intended for engineering students – had 15 teams. The following year, the number increased to 300 teams from different situations and interests. In 2011, 1,000 teams entered, and this year the competition included 24 different centres all over the country.

The methodology has improved so that from 6% of competitors the first year, now 90% achieve their goal of moving their robot.

All the participants showed more interest in the subject and were able to tackle the robot construction activities. 80% of the competitors are formally and informally linked to the CORD organisation.

Now that the interest of the students in attending class and the number of female participants has increased, CORD is being set up in all the engineering institutes in the country.

In addition, it has succeeded in capturing the attention not only of engineering students but also other faculties, such as medicine.

Currently, up to 300 volunteers take part as instructors.

5. INNOVATION HIGHLIGHTS

- Production-based learning.
- Use of low-cost resources.
- Informative strategy.
- Effective motivation.

6. GEOGRAPHICAL AREA

CORD was initially implemented at a Cairo engineering campus. It expanded to campuses of different specialisations, camps and science events, as well as summer camps for kids and schools. It has been replicated around Egypt and Tunisia.

7. INCOME MODEL

CORD collects funds through the sale of its products, which are very cheap compared with the competition.

They have received subsidies for social enterprises, which have made it possible to produce new products.

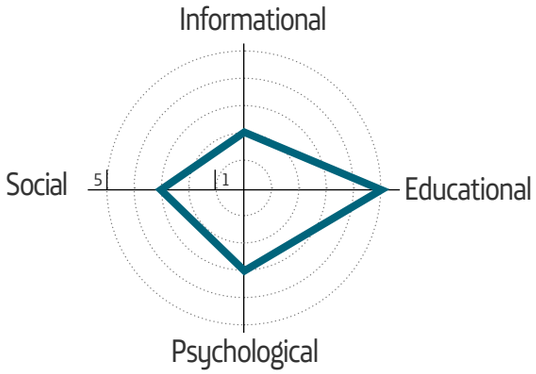
8. AUDIOVISUAL SUPPORT

http://youtu.be/bYlW3p2Mqyw

http://goo.gl/sXsy6O

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Informal

Audience:
- Students

» *INNOVATION FINALIST*

TYPE

Knowledge and contact with professionals

INSTITUTIONS INVOLVED

Companies, schools and the public administration

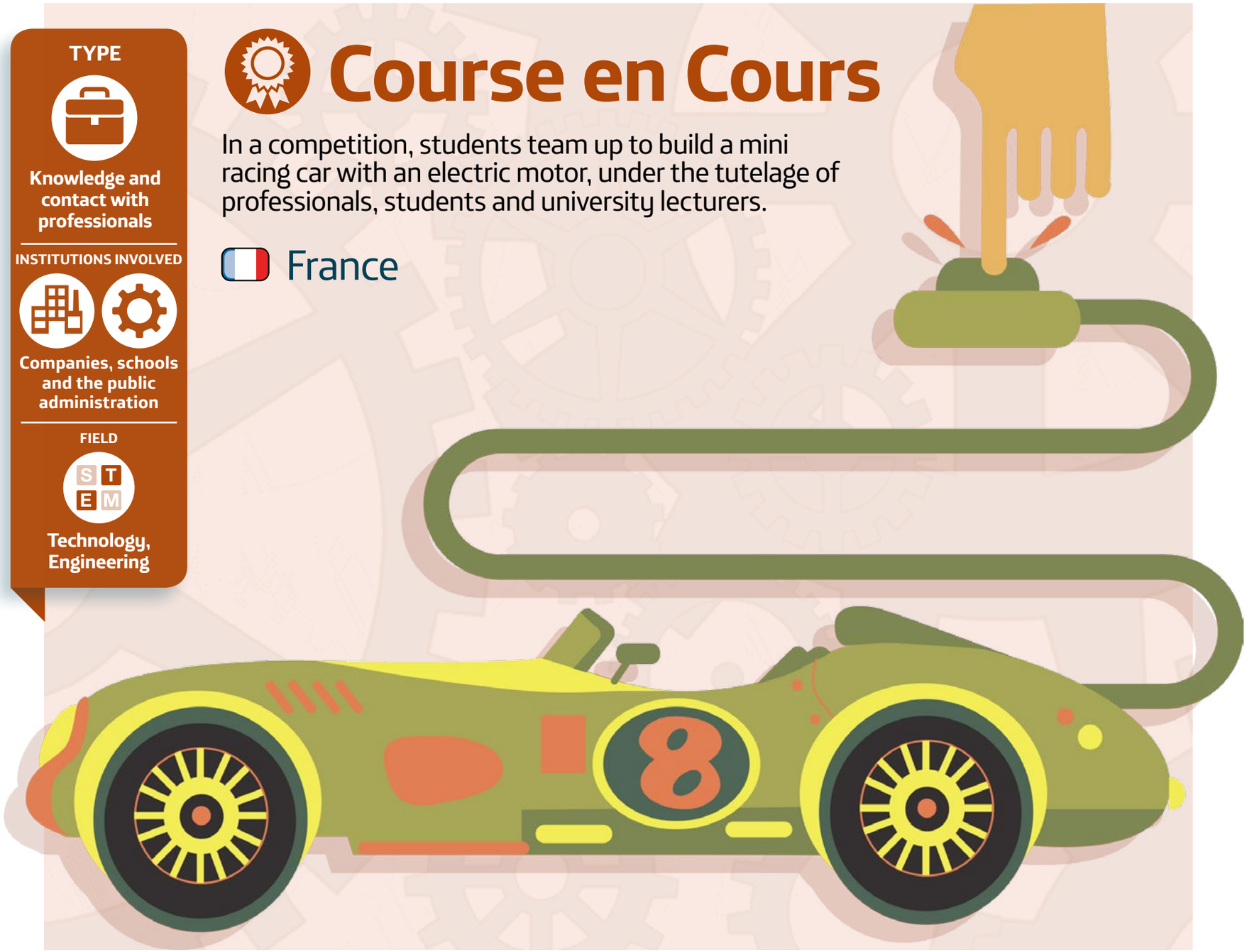
FIELD

Technology, Engineering

Course en Cours

In a competition, students team up to build a mini racing car with an electric motor, under the tutelage of professionals, students and university lecturers.

France



Course en Cours – Grand Prix des Collèges et Lycées

Organisation:
Course en Cours

Official website:
http://www.course-en-cours.com/

Other websites:
http://www.education.gouv.fr/cid61242/course-en-cours.html

Address:
BP 17 - 78520 Limay

Video:
http://www.course-en-cours.com/saison_ancienne.php

» INNOVATION FINALIST » COURSE EN COURS

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Course en Cours responds to two challenges: to promote scientific and technical vocations and promote equal opportunities.

Course en Cours aims to promote access to higher education, especially in scientific and technical subjects, by giving each student an equal opportunity to triumph in education and society.

Course en Cours helps all students to develop their potential by reinforcing their self-learning and teamwork skills.

2. WHAT SOLUTION IS PROPOSED?

Course en Cours is a multidisciplinary competition for secondary school students that is designed to promote scientific and technical vocations through a motivating project. It provides an initiative that makes it possible to build a bridge between secondary and higher education.

An innovative learning-teaching method has been developed that consists of designing, manufacturing, promoting and operating a miniature racing car with an electric motor.

As well as the scientific and technical knowledge needed to develop the car, the project aims to promote teamwork skills.

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3. HOW DOES THIS SOLUTION WORK?

The initiative is organised by the Course en Cours association with the support of Dassault Systèmes, Renault and PFA (Plateforme de la Filière Automobile).

The students face a challenge: to build a miniature Formula 1 racing car under the tutelage of professionals (mainly university students and lecturers) using the same tools as professional designers. This is a cooperative effort between secondary school teachers, university lecturers and company professionals.

Teams are formed of between four and six students, who have one school year in which to build their own electric vehicle motor racing team. They must invent, design in 3D, manufacture and operate a miniature racing car with an electric motor, using the same tools and processes as the F1 professionals.

The racing car must compete on a 20-metre straight track against vehicles built by other teams from all over France.

The teams of students involved in the Grand Prix design and manufacture their cars at a resource centre. The centres are linked to a higher education institution. The Course en Cours association provides all the high-tech equipment needed:

- Official test track for the cars;
- Materials for manufacturing.

The teams take part in one-day regional finals in April and May. They compete in various tests: evaluation of their stand, oral presentation, a 20-metre track test and so on. Each team is evaluated on a variety of criteria that are related to all the STEM disciplines found in secondary school: technology, mathematics and physics.

The regional winners come together for the national final. The prizes are given to the best teams in the general classification of the competition (the total number of points for all the categories) and to those who have the best performance in each category, as evaluated by the jury.

» INNOVATION FINALIST » COURSE EN COURS

The calendar tends to be as follows:

- **Beginning of June:** open pre-registration for teachers;
- **Mid-September:** the student teams are set up by the teachers and registration opens for the teams;
- **During October:** contact between the teachers and the resource centres;
- **October-May:** management of the Course en Cours project by the teams registered;
- **April-May:** regional finals;
- **End of May-beginning of June**: national finals.

4. IMPACT INDICATORS AND RESULTS

During the 2009-2010 academic year, 400 schools, 1,500 teams and more than 7,500 students from all over France took part in the Course en Cours challenge.

For the 2010-2011 season, the initiative confirmed its success: 2,200 teams and 11,500 students.

5. INNOVATION HIGHLIGHTS

- An initiative that offers students real-life experience with a STEM project under the tutelage of university lecturers and professionals.
- Model of organisation and cooperation between companies, schools and universities.
- Scope of participation.

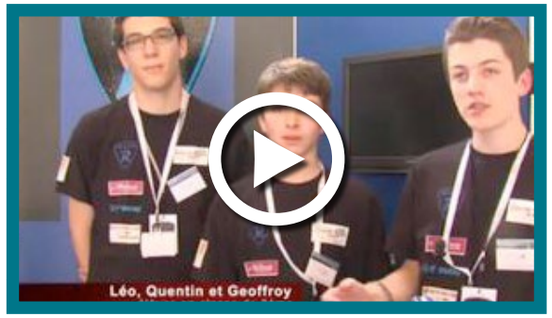
6. GEOGRAPHICAL AREA

France.

7. INCOME MODEL

The development of the initiative was made possible by the involvement of the education sector, through the Ministry of Education, and the professional sector. Two big companies have supported the competition financially, technologically and logistically: Dassault Systèmes (in the creation of the device) and Renault.

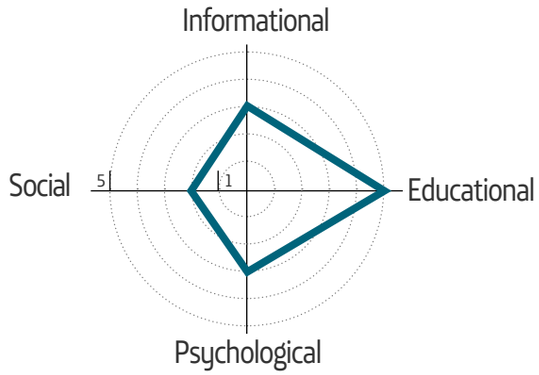
8. AUDIOVISUAL SUPPORT



http://goo.gl/tvbHWP

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

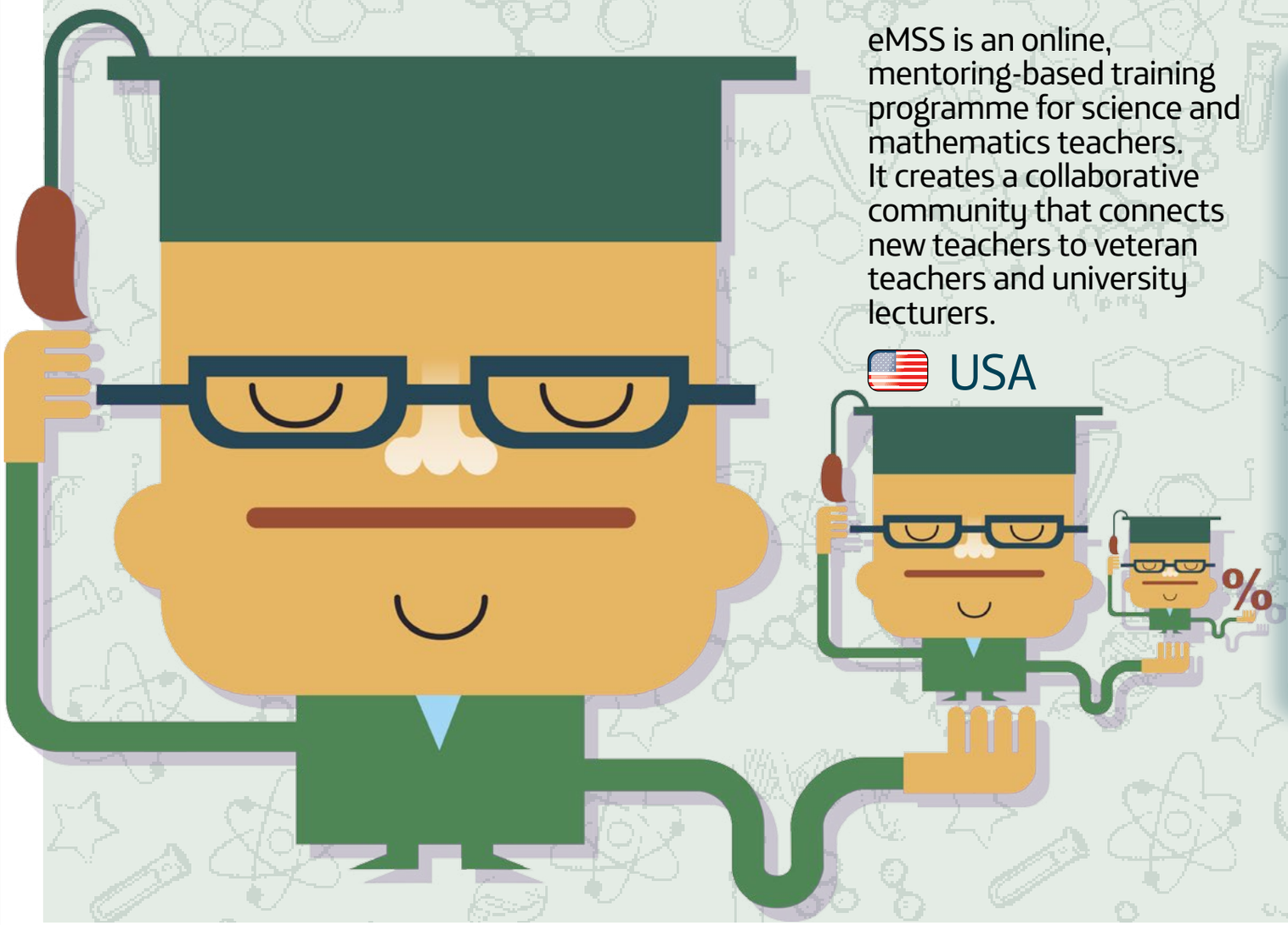
Context:
- Formal

Audience:
- Students
- Teachers

» INNOVATION FINALIST

eMSS

e-MENTORING FOR STUDENT SUCCESS



eMSS is an online, mentoring-based training programme for science and mathematics teachers. It creates a collaborative community that connects new teachers to veteran teachers and university lecturers.

USA

TYPE
Teacher training

INSTITUTIONS INVOLVED
School, universities and institutions

FIELD
Science, Mathematics

New Teacher Center

Organisation:
New Teacher Center

Official website:
http://www.newteachercenter.org/services/emss

Address:
725 Front Street, Suite 400
Santa Cruz, CA 95060

Video:
http://goo.gl/gd7mSf

Recognition/Awards:
- Readers' Choice Awards of School Media in 2012.

» INNOVATION FINALIST » EMSS

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

It is often difficult to find qualified teachers with extensive experience who have enough time to train new teachers, especially in the area of sciences and mathematics.

The situation is even worse in the country and in small schools, where a novice teacher may be alone. Even in the few cases where tutoring or induction programmes are offered to new teachers, there can be difficulties with finding support for specific professional development content or needs.

2. WHAT SOLUTION IS PROPOSED?

e-Mentoring for Student Success (eMSS) is an online training programme for science and mathematics teachers. It is based on mentoring and on the results of research by the New Teacher Center.

eMSS puts new teachers into contact with veteran teachers and university lecturers so that they can collaborate in an asynchronous, interactive community.

This community facilitates the exchange of information, ideas, experience and knowledge within a curriculum based on research and best practices for online teacher training and learning.

The eMSS provides participants with a support system that is continuously evaluated and improved, both by experts in the field and by the participants themselves.

Participation in eMSS gives the teachers taking part a number of benefits, including:

1. An individualised relationship with a mentor who has experience in the same subject at the same education level (the mentor-learner link is not simply based on proximity);
2. Asynchronous access at any time and from anywhere to a national online network of educators and university lecturers, who facilitate the exchange of information, ideas and resources;
3. A curriculum that focuses on content and teaching methods, to guarantee that all questions will receive an answer;
4. An opportunity to talk, exchange ideas about planning teaching practice and reflect on in-class teaching with other novice teachers and with mentors who are working on the same objectives;
5. Personalised activities based on the interests and needs of the participants;
6. An easy-to-use technological tool.

3. HOW DOES THIS SOLUTION WORK?

The eMSS programme has the following components:

1. Mentoring for new teachers by experienced teachers known for their value as educators. The mentoring takes place online and can be individual or in small groups;
2. Eight-week professional development exploration-modules that tackle key STEM teaching methods (for example, how to make a lab session effective);
3. Forums and resource repositories. Teachers can discuss specific problems on these forums. They also have access to educational resources chosen for their design.

» INNOVATION FINALIST » EMSS

The eMSS technological platform is made up of:

- **Our place:** A private place where new teachers work one-on-one with their mentors to develop their teaching practice and take advantage of the vision and knowledge of a more experienced teacher at the same educational level and of the same subject;
- **Mentor place:** Discussion forums for groups of mentors who provide support and continuing professional development;
- **Exploration Community Forums:** Tutored professional development modules focusing on teaching or content practices, with small groups of participants working on the cycle of plan/prepare, teach/evaluate and analyse/reflect;
- **Resources:** A community space with access to resources, where teachers take part in content discussion forums, focusing on the dilemmas of teaching practice and tutored by exemplary, expert teachers.

These components combine to provide new teachers with the personalised support they need for their classes.

4. IMPACT INDICATORS AND RESULTS

It should be noted that eMSS fits into the New Teacher Center teacher induction model, which from 2010 to 2013 has reached 17,643 mentors, 62,941 novice teachers and 4.4 million student beneficiaries.

The New Teacher Center impact evaluation system measures the effect of its programmes by: novice teacher retention (discouraging them from abandoning the profession, with the resulting cost and loss of professional talent); improvement in teaching; and student performance.

Data highlights:

- In the Santa Cruz new teacher project, which uses the New Teacher Center model, the percentage of teacher retention was 32 points above the national average and 12 points above the California average. The retention rates are even higher (up to 94%) if the school leaders and administrators who have attended it are included.
- The students of teachers who had been in the New Teacher Center programme for two years went from the 50th to the 58th percentile in mathematics.

For more information, see:

http://www.newteachercenter.org/impact

Specifically, eMSS reached almost 700 new teachers in 50 states and 70,000 students during the 2012-13 school year. Throughout its existence, the eMSS system has had more than 4,000 teachers take part.

Independent third-party research by Horizon Research confirms that eMSS participants attribute their learning and professional development to the support received from the mentors, as well as reading, discussion, practice and reflection on their experiences in the eMSS programme.

In particular, eMSS has significantly benefited participants in:

- Their confidence and ability to teach specific content and prepare to teach difficult skills;
- Their preparation in basic teaching skills and classroom management;
- Their willingness to experiment (especially when traditional methods do not work);
- Their general satisfaction with being a teacher;
- Their motivation to continue being teachers.

» INNOVATION FINALIST » EMSS

5. INNOVATION HIGHLIGHTS

- Reinforcement of the methodological abilities of novice teachers.
- Use of technological tools to connect teachers with differing profiles and situations.
- An immediate solution to teachers' problems.
- Impact assessment model.
- Significant outreach.
- Mobilisation of volunteers.

6. GEOGRAPHICAL AREA

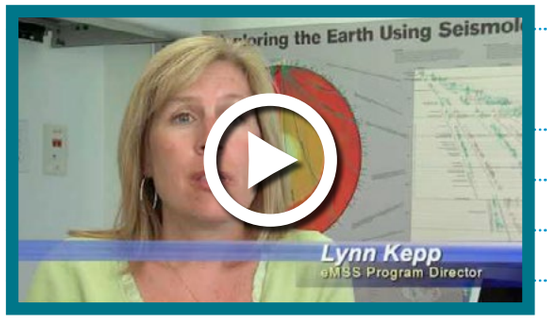
USA.

7. INCOME MODEL

The eMSS arose out of a collaboration between the National Science Teachers Association (NSTA), New Teacher Center (NTC) and Montana State University Science Math Resource Center (SMRC@MSU) with financing from the National Science Foundation to develop a national online mentoring network for novice science and mathematics teachers. **In 2007, it received financing from Goldman Sachs to fully develop eMSS Math**.

Currently the revenue that supports the programme comes from payment for some of the content and use of the platform from the centres at which the teachers being tutored work. Donations are also received from philanthropic bodies.

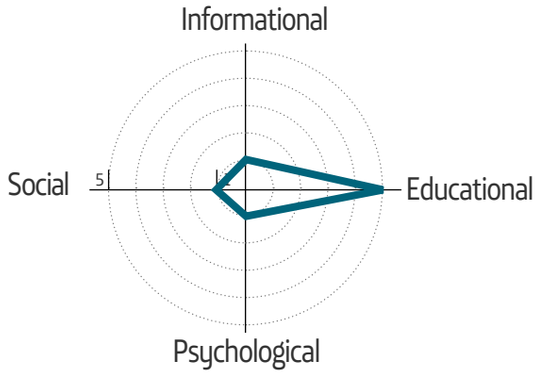
8. AUDIOVISUAL SUPPORT



http://www.newteachercenter.org/multimedia/e-mentoring-student-success

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Formal

Audience:
- Teachers

» INNOVATION FINALIST

TYPE

Knowledge and contact with the work environment

INSTITUTION INVOLVED

School

FIELD

Science, Technology and Mathematics

High Tech High

USA

High Tech High is an innovative model for schools that focuses on developing the skills needed for success after secondary school. The students undertake projects that combine technical and academic education.

HIGH TECH HIGH

Organisation:
High Tech High

Name of innovator/founder:
Larry Rosenstock

Official website:
http://www.hightechhigh.org/

Other websites:
http://goo.gl/w4Z2B
http://goo.gl/bXh25u
http://en.wikipedia.org/wiki/High_Tech_High_charter_schools

Address:
High Tech High
2861 Womble Rd.
San Diego, CA 92106

Video:
http://vimeo.com/10000408

Recognition/Awards:
- Ashoka Felllow.
- McGraw Prize – 2010.
- Ford Foundation Innovations in State and Local Government Award in 1992.

» INNOVATION FINALIST » HIGH TECH HIGH

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Public secondary schools in the USA do not succeed in improving the academic results of their students and their opportunities for real success, especially the most disadvantaged, African American and Hispanic students.

In a recent national assessment (NAEP), 74% of 12th grade white students obtained grades equal to or above the "basic" level, and 20% had grades equal to or above "proficient". In the case of African American students, 31% had grades equal to or above "basic", and 3% a grade equal to or above "proficient". In the sciences, the gap is even wider.

In addition to the academic gap, schools are reproducing the segregation of students by ethnic group and social class. At least 75% of Hispanic and African American students attend a school where they are in a minority, while Caucasian students normally attend schools in which 80% are white. Poor students are continually funnelled to technical training programmes, while the students from more affluent areas are prepared to enter university. This distinction is already one of the strongest determinants of future possibilities of success. Schools are steering the students from disadvantaged backgrounds toward future failure, even before they complete their secondary education.

Specifically, when High Tech High (HTH) started in 2000 in San Diego, thanks to a coalition of education leaders and entrepreneurs from the high-tech industry, its concern was to meet the demand for a qualified workforce in the technology sector. It is particularly interested in the low number of women and representatives of disadvantaged ethnic groups in the STEM fields.

2. WHAT SOLUTION IS PROPOSED?

High Tech High's mission is to develop and support innovative public schools where all students develop the academic, workplace and citizenship skills for post-secondary success.

The goals of each HTH school include:

- Serve a student body that mirrors the ethnic and socio-economic diversity of the local community;
- Integrate technical and academic education to prepare students for post-secondary education in both high tech and liberal arts fields;
- Increase the number of educationally disadvantaged students in mathematics and engineering who succeed in high school and post-secondary education;
- Graduate students who will be thoughtful, engaged citizens.

High Tech High eliminates the barriers between technical training (the offer for low-income kids) and preparation for university (traditionally for more affluent students). Instead, HTH offers a highly stimulating educational environment that motivates students to become involved in experiences related to real-world options or professional careers.

Instead of attending classes, taking exams or doing homework, HTH students spend four years mainly doing individual and group projects that combine technical or manual work with the academic curriculum. The students are assessed for both their individual and team work.

The value of HTH is that it succeeds in ensuring students graduate well prepared for the world of work and with good results on standard examinations and university entrance tests.

» INNOVATION FINALIST » HIGH TECH HIGH

3. HOW DOES THIS SOLUTION WORK?

The design of High Tech High is based on four principles:

- **Personalisation:** the teachers know their students well and guide them by paying attention to their interests and needs. Each student regularly meets with an advisor and a reference group to build a community, support their academic progress and plan for the future;
- **Adult World Connection:** this is achieved through internships, community service and contact with professionals. The school facilities themselves have a distinctive "workplace" feel, with meeting rooms, high-tech laboratories and so on;
- **Common Intellectual Mission:** HTH schools pay attention to diversity and inclusion. Enrolment is not based on selecting the students by academic ability. All the students pursue a rigorous curriculum that provides the foundation for entry to university, as well as success in the world of work. The model is based on acquiring 21st century skills, the integration of hands and minds and the merging of academic disciplines;
- **Teacher as Designer:** HTH teachers work in interdisciplinary teams to design the courses that they teach. They participate in critical decisions regarding curriculum, assessment, professional development, hiring and other significant areas of the school.

Apart from its academic model, HTH presents innovations in the area of school management, such as the architecture of the school itself, which does not have the stereotypical rooms of a public high school.

Its promoter, Larry Rosenstock, convinced the state of California to approve new legislation on teaching credentials. As a result, HTH can now recruit and hire professional physicists, mathematicians and computer technicians to be teachers. These successful professionals join HTH because it is a place where they can continue to be creative while also sharing their knowledge.

Currently, HTH has a network of 12 schools, both primary and secondary. It also sponsors a teacher credentialling programme and a graduate school of education.

Recognised nationally as "the school of the future", HTH serves as a public "learning laboratory" and receives 1,000 visitors a year who are interested in learning about its model.

4. IMPACT INDICATORS AND RESULTS

- 5,200 beneficiary students.
- 98% of HTH's graduates have gone on to college, with about 75% attending four-year courses at a variety of universities, such as Johns Hopkins University, Massachusetts Institute of Technology and Stanford University.
- About 35% of HTH graduates are first-generation university students.
- More than 30% of the students at HTH choose careers in mathematics or the sciences, in contrast to the national rate of 17%.
- HTH's African American students outperform their district and state-wide peers by a wide margin vis-à-vis test scores.
- Through the Academic Internship Program, HTH students have completed more than 1,000 internships in over 300 community businesses and agencies, including the SPAWAR Systems Center, General Atomics and The San Diego Oceans Foundation.

» INNOVATION FINALIST » HIGH TECH HIGH

- HTH is the first California public school organisation authorised to operate its own teacher-credentialling programme.
- HTH facilities have received numerous design awards, such as the 2001 Educational Design Excellence Award from the American School & University Architectural Portfolio.
- HTH opened its Graduate School of Education in 2007, the first graduate school of education to open in California in more than 20 years and the only one located within a K-12 learning community.

5. INNOVATION HIGHLIGHTS

- Inclusive, integrative pedagogical focus.
- Solid, benchmark model of management and educational attention.
- Proven results in promoting STEM vocations.

6. GEOGRAPHICAL AREA

It was originally developed in San Diego.

The Bill and Melinda Gates Foundation is supporting the replication of the HTH in nine other locations in the USA.

7. INCOME MODEL

In San Diego, High Tech High receives $5,700 per student from state funds, while district public schools generally operate with an average cost of $7,600 per student. The public investment is therefore profitable.

HTH is supported by public funds and revenue from local funding (companies, private organisations) or commissions for services performed.

The Bill and Melinda Gates Foundation has committed to an additional budget of $1,000 per student in the locations where the schools are replicated.

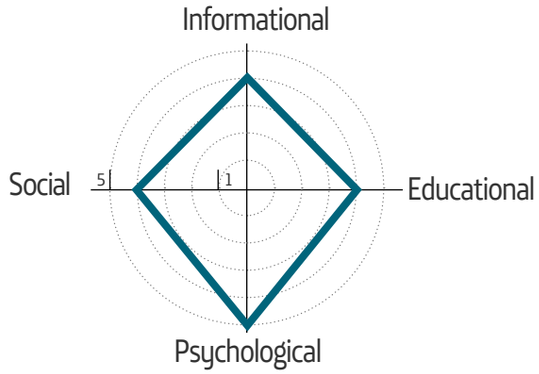
8. AUDIOVISUAL SUPPORT

http://vimeo.com/10000408

http://goo.gl/5CqVu6

9. ANALYSIS OF INNOVATION

Factors:



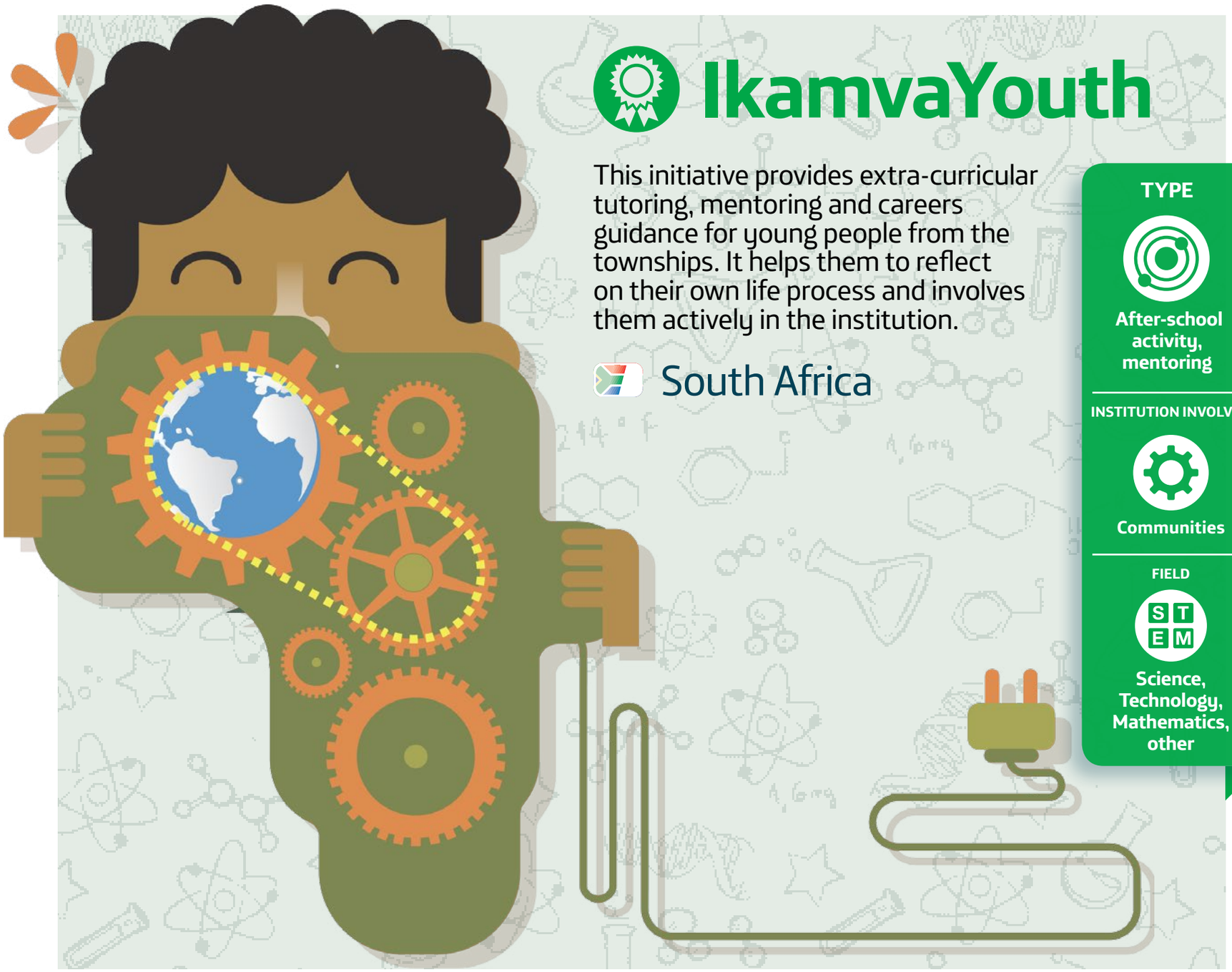
Educational level (age):

Potential:
- Pedagogical

Context:
- Formal

Audience:
- Students
- Teachers

» *INNOVATION FINALIST*



IkamvaYouth

This initiative provides extra-curricular tutoring, mentoring and careers guidance for young people from the townships. It helps them to reflect on their own life process and involves them actively in the institution.

South Africa

TYPE
After-school activity, mentoring

INSTITUTION INVOLVED
Communities

FIELD
Science, Technology, Mathematics, other

Organisation:
IkamvaYouth

Name of innovator/founder:
Joy Olivier and Makhosi Gogwana

Official website:
www.ikamvayouth.org

Other websites:
www.ikamvanitezone.org

Address:
46 Plein Street, Cape Town, 8001

Video:
http://vimeo.com/74187609

Recognition/Awards:
http://ikamvayouth.org/node/756

» INNOVATION FINALIST » IKAMVAYOUTH

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

South Africa has a large number of infra-educated young black people. No quality education is offered to the lowest socio-economic classes.

This situation undermines the students' ability and possibilities of going on to post-secondary education or an occupation, and increases the risk of their dropping out of school.

Only 56% of students who start school finish this stage. This is about 500,000 young people.

As a result, there is an enormous percentage of unemployed young people: 45% of young South Africans between the ages of 18 and 25 do not study or work.

This number stems from a combination of factors: significantly poor results in mathematical skills and literacy; a lack of qualified teachers; a high drop-out rate; and a shortage of information channels regarding opportunities beyond school.

The reality is that South African youth is "unemployable" as it is not prepared for university, access to the labour market or active civic commitment.

These "unemployable" youngsters mainly live in the townships around the big cities, with high rates of criminality, drunkenness and drug abuse, gangs, adolescent pregnancies, HIV, child abuse and high unemployment. All this increases the lack of motivation and social involvement on the part of young people.

The challenge is to increase the possibilities of employment for these young people; give them the skills to continue their education and enter the labour market; and inspire them so that on their own and with the help of others they can get out of poverty.

2. WHAT SOLUTION IS PROPOSED?

The five guiding principles of IkamvaYouth are:

1. A culture of responsibility for self and others;
2. Collaboration and peer-to-peer support;
3. Commitment to impact through democratic processes;
4. Integrity and openness;
5. Paying-it-forward (a chain of help – you give back the help that has been given to you, supporting another person who needs it later on).

By applying these values, IkamvaYouth has developed a tutoring model for young people as a solution to the challenges mentioned.

IkamvaYouth offers free after-school tutorial support to students aged eight to 12 who attend voluntarily three times a week. The tutoring sessions take place in libraries, schools and community centres between 3.30pm and 5.30pm, and between 9.30am and 12.30pm on Saturday mornings.

There are no academic requirements for taking part, but the students must attend at least 75% of the sessions to keep their place in the programme.

The volunteer tutors, 77% of who are ex-students who are repaying back the service that they received in the past, work with a group of five students. This ratio of 1:5 allows the students to have sufficient attention to make progress and receive feedback in real time. The small groups also use peer-to-peer learning, the cornerstone of the model, through which the students increase their confidence and gain greater control over the learning.

As well as the tutorial programme, IkamvaYouth holds digital literacy and eLearning classes and workshops on career guidance, Media, Image and Expression, and health and life skills. The students take part in all the activities, from scientific experiments to photography workshops. They are stimulated by trips to museums or famous places.

IkamvaYouth currently has 10 branches in five provinces and works with 1,607 students.

» INNOVATION FINALIST » IKAMVAYOUTH

3. HOW DOES THIS SOLUTION WORK?

The core of IkamvaYouth is after-school tutorial support, mentoring and career guidance for young people from townships on the outskirts of the big cities.

Through the tutorial support, the students begin to identify their weaknesses in comprehension and where the basis of their learning lies. The tutorial support also bolsters the non-academic skills needed for learning, critical thinking, resilience and an ability to ask for help.

Providing the students with the tools for their own learning has an empowering effect. Because of the peer-to-peer help model, this sense of autonomy extends to the entire group and the IkamvaYouth network.

Each centre has a branch committee that makes the decisions. It is made up of students, tutors and staff. Being involved in the branch committee encourages the students to make responsible choices.

In the tutorial support area, the students' commitment grows and they become active, reflective and sociable, turning into conscious members of a community. When this process of identification and commitment occurs, their probability of dropping out of school and the programme is drastically reduced.

This situation extends beyond the secondary school: a recent survey of ex-learners showed that the probabilities of "Ikamvanites" dropping out of higher education in their first year is one half of the national average. The career guidance and mentoring contribute to improving the employability of the young people.

4. IMPACT INDICATORS AND RESULTS

Since 2005, 77% of the young people in IkamvaYouth have entered the education system, training or a job only two and a half months after entering the programme.

Indicators of interest on IkamvaYouth:

- Percentage graduating from high school: between 85% and 100% since 2005;
- Improvement in mathematics and the sciences. In 2013 the students doubled their probability of passing physics and mathematics;
- In 2012, 94% of the students in the programme were suitable for university education;
- Since 2005, 70% have accessed higher education;
- 46.7% of "Ikamvanites" have obtained a post-school qualification, compared with 2.9% of black South Africans.

5. INNOVATION HIGHLIGHTS

- A system of peer-to-peer support, based on reciprocity.
- Tutoring model with a ratio of 1:5 that allows personalised attention and a reference group.
- Commitment and empowerment of the students and ex-students. (77% of ex-students return the service).
- Low cost and high impact. The programme costs an average of 6,000 Rands (€415) per student per year. This cost makes it possible to scale up the proposal.

» INNOVATION FINALIST » IKAMVAYOUTH

6. GEOGRAPHICAL AREA

There are currently 10 centres in five provinces in South Africa.

7. INCOME MODEL

Most of the funding for IkamvaYouth comes from South African corporations. Last year, this base became international. This year, IkamvaYouth has a total of 14 sponsors.

The contribution to the team of the young people who already passed through IkamvaYouth is also important for its sustainability.

The beneficiaries have never been charged any fees, but a business model is being developed to bring greater sustainability.

IkamvaYouth has been consulted by a scholarship management organisation to supply tutorial support in mathematics and English to first year students.

Another method of generating revenue and a model of self-sustainability for expansion is the Community Collaboration Project. This project is training and linking organisations and individuals who wish to implement tutorial support programmes in their communities.

There is also a potential return from fees for consulting, training and facilitation services.

8. AUDIOVISUAL SUPPORT

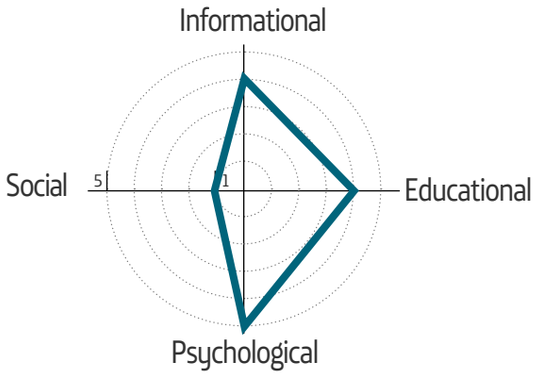
http://vimeo.com/74187609

http://goo.gl/zB3hJC

https://www.youtube.com/user/IkamvaYouthTV

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Non-formal

Audience:
- Students

» *INNOVATION FINALIST*

iThra Youth Initiative

A transmedia programme to promote a knowledge of and motivation for STEM: TV production; viral learning videos; interactive workshops; film production; science and mathematics camps.

Saudi Arabia

TYPE

Informational, after-school activity

INSTITUTIONS INVOLVED

Universities, schools and town councils

FIELD

Science and Mathematics

Organisation:
King Abdulaziz Center for World Culture

Name of innovator/founder:
Dr. Khalid Al-Yahya

Official website:
http://en.kingabdulazizcenter.com/node/415#.UxnkO_mSzAk

Other websites:
http://www.wise-qatar.org/content/ithra-youth-initiative

Address:
King Abdulaziz Center for World Culture, Dhahran - 31311

Video:
http://youtu.be/hhj_IsHF0Rs

Recognition/Awards:
- 2013 World Innovation Summit for Education (WISE) Award.

» INNOVATION FINALIST » ITHRA YOUTH INITIATIVE

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

In a social context in which a large part of the population does not take part in meaningful cultural events (cinemas are prohibited, girls are excluded from experiencing the theatre and so on), the Saudi public has developed a resistance to global citizenship, healthy intellectual scepticism, appreciation of cultural diversity and the promotion of a culture of innovation. There is no link between the population and fields such as art or STEM.

With a young, emerging society (50% of the population is under 25) and the appearance of new communications media, an opportunity can be glimpsed for creating a paradigm change toward education as the practice of freedom. This is a change that starts with student-centred learning and not teacher-centred learning, as in the traditional education system.

Like any new idea, it is meeting a great deal of resistance from educational bureaucrats, who have a different mentality. They confuse teaching with education, a diploma with competence and information with knowledge.

http://goo.gl/Zv3WZ4

http://goo.gl/Q6PcA8

2. WHAT SOLUTION IS PROPOSED?

Focusing on STEM education, creativity and character building, the initiative is a broad-based project to develop young people who wish to contribute to the transition to a knowledge-based society.

Based on the concept of transmedia, it transmits meaningful experiences, carefully designed to inspire and get commitment from a youthful audience. It offers learning, entertainment and enjoyable events to everyone, teachers and young people of different age groups.

This series of unique courses and high-quality production takes place in a stimulating environment that is respectful of all the members of the family and the values that are important to them.

Ithra Youth was considered to be innovative due to its ability to dominate transmedia communication (which requires the execution of various programmes and formats). The content is delivered through:

1. A popular television programme;
2. Viral learning videos;
3. Film production;
4. Contests at various levels in reading and creative writing;
5. A creativity festival;
6. 20-hour inspiration workshop;
7. 200-hour transformational camps.

3. HOW DOES THIS SOLUTION WORK?

The following actions take place:

- **TV production**: science and art magazine *Subscriu@ ithra* (weekly audience of two million);
- **Production of youth learning videos** that show off local talent (more than five million views on YouTube);
- **Production of films** made by young people;
- Creation of a **national reading and creative writing contest** that ends with various theatrical events (more than 20,000 beneficiaries);

» INNOVATION FINALIST » ITHRA YOUTH INITIATIVE

- **Inspiration workshops (iSpark)**: interactive science workshops that take place in schools, last one week and give out certificates. Trained personnel visits schools and in 20 hours over five days hold workshops with 100 students, with challenging, exciting projects designed by the University of Berkeley – Lawrence Hall of Science (1,000 students each week; a total of 40,000 to date);
- **Transformational camps (iDiscover)**: dedicated to science and mathematics. In the first stage, iDiscover conducted 45 camps in nine different cities, for both boys and girls. Five camps were held simultaneously in each city with content designed by the University of California – Berkeley, Idea Maths, and a network of international experts with the aim of promoting critical thinking, creativity, innovation and the ability to solve real-world problems.

4. IMPACT INDICATORS AND RESULTS

Apart from the quantitative data on the activities of Ithra Youth, there is demand from the public to hold these activities in different cities. Some local universities are researching the impact of this programme. The results will be published in November 2014.

5. INNOVATION HIGHLIGHTS

- Wide-ranging informative potential: the transmedia approach.
- Involvement of young people and local talent. Average age of most of the instructors is 24.
- Promotion of both creative and scientific talent.

6. GEOGRAPHICAL AREA

Saudi Arabia.

7. INCOME MODEL

A combination of fee for services, sponsorship and philanthropy.

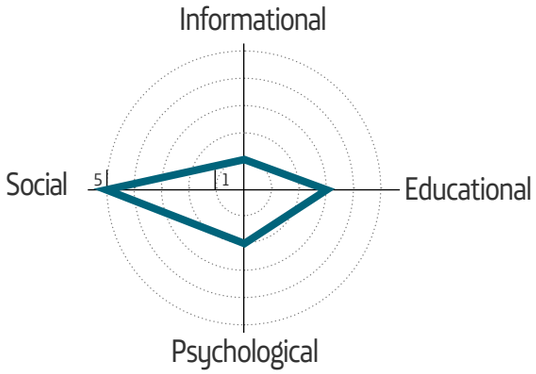
8. AUDIOVISUAL SUPPORT

http://goo.gl/cfQ7hk

http://youtu.be/CKjj7Xk3UZE

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Non-formal

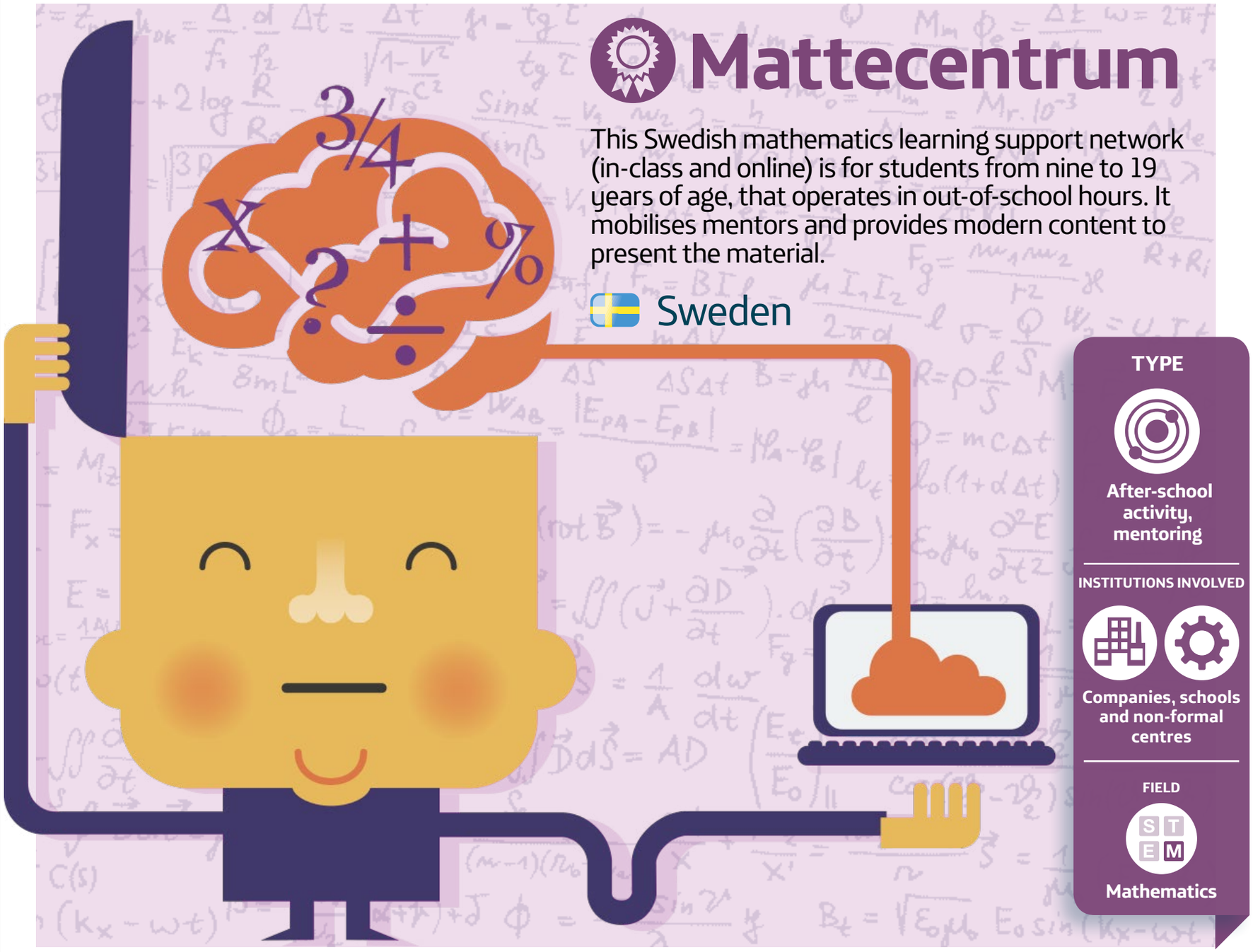
Audience:
- Students
- Family

» *INNOVATION FINALIST*

Mattecentrum

This Swedish mathematics learning support network (in-class and online) is for students from nine to 19 years of age, that operates in out-of-school hours. It mobilises mentors and provides modern content to present the material.

Sweden



TYPE

After-school activity, mentoring

INSTITUTIONS INVOLVED

Companies, schools and non-formal centres

FIELD

Mathematics

Organisation: Mattecentrum

Name of innovator/founder: Johan Wendt

Official website: www.mattecentrum.se

Other websites:
www.matteboken.se
www.matematikcenter.dk
www.webmatematik.dk
www.mathplanet.com

Address: Grev Turegatan 40, 114 38, Stockholm

Video: http://goo.gl/HZIGLu

Recognition/Awards:
- Ashoka Fellow 2012.
- First runner up European Social Innovation Competition 2013.
- Social Capitalist of the Year 2011.
- Winner of Ben&Jerry's Join Our Core 2012.
- Changeleader, Reach for Change.
- Entrepreneur of the Year 2013.

» INNOVATION FINALIST » MATTECENTRUM

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Various international studies (TIMSS, PISA, TIMSS advanced) repeatedly show that in the last 10 to 15 years the mathematics scores of European children and adolescents have fallen both in comparison with other countries and results from previous years.

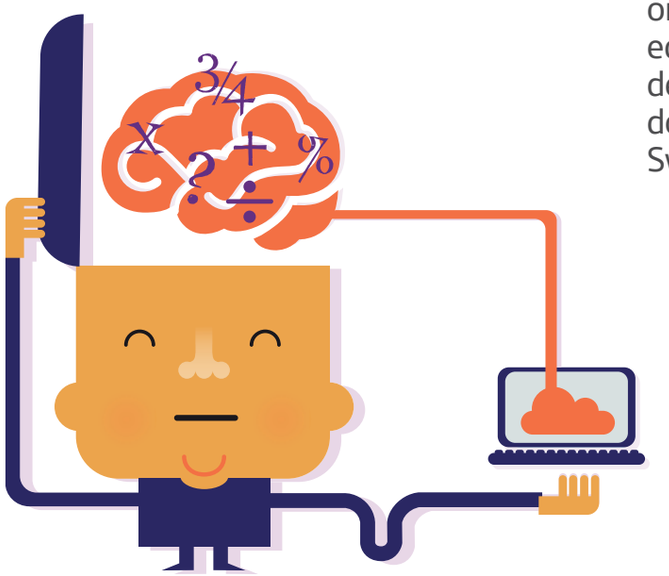
The studies have shown that the number of students who lack a basic knowledge of mathematics has increased and the number of students at the more advanced levels has fallen. The most significant change has occurred among males. The studies also highlight a decrease in equality in the Swedish school system, with a great difference between schools, classes and teachers.

2. WHAT SOLUTION IS PROPOSED?

Johan Wendt founded Mattecentrum as a solution to this problem.

If free help with learning mathematics is offered using an inspiring, entertaining method, knowledge and interest in mathematics will increase among young people.

Mattecentrum provides free help with mathematics for all children who need or want it. It does this in two ways: free, face-to-face tutoring sessions (mathlabs) and online through www.matteboken.se.



3. HOW DOES THIS SOLUTION WORK?

Johan Wendt has created a mathematics learning support network for children and young people aged between nine and 19 that operates in after-school hours.

Small groups of students have mentors who are professionals or mathematics experts. The methodology is based on:

1. The freedom of the students to choose their mentor;
2. The creation of original materials for presenting mathematics, such as using famous singers to give a maths class. An online programme linked to an educational app has also been developed, which is the most downloaded programme in Sweden, Norway and Denmark.

It has already benefited half a million children and young people. Mattecentrum provides free tutorials for 70,000 youngsters each month in two ways:

- **Tutorial sessions:** 67 sessions (mathlabs) are held each week in 24 cities in Sweden, involving 400 volunteers. The volunteers are people with a good knowledge of mathematics, most of whom have a degree in the sciences. Students attend four times a week for three years, with a great change in their interest, perception and performance in mathematics;
- **On the online platform,** the children receive video lessons from matteboken.se (in Swedish) and mathplanet.com (in English). The website includes theory, examples, forums and 800 video lessons that have been viewed more than four million times. More than 150,000 students study with mattboken.se each month – that's 17% of the children in Sweden aged between nine and 19.

» INNOVATION FINALIST » MATTECENTRUM

4. IMPACT INDICATORS AND RESULTS

For six years, Mattecentrum has helped thousands of children in Sweden to increase their knowledge of mathematics.

- 4,000 regularly attend the study sessions.
- More than 150,000 students study with mattboken.se each month.
- More than half a million people have studied online (this figure can be measured on Google Analytics).

5. INNOVATION HIGHLIGHTS

- Focus on improving performance in a basic skill.
- Effective, accessible model for school support activities.
- Significant reach.
- Mobilisation of volunteers.

6. GEOGRAPHICAL AREA

Mattecentrum originally launched in Stockholm. It is expanding around the country and now operates in 24 cities. Since 2011 it has also spread to four cities in Denmark.

7. INCOME MODEL

Mattecentrum is a youth organisation and as such receives annual funding from the Swedish National Board for Youth Affairs according to the number of members in the organisation.

It is linked to a variety of international companies that sponsor it under multi-year contracts.

Mattecentrum is also funded by the Swedish Department of Education.

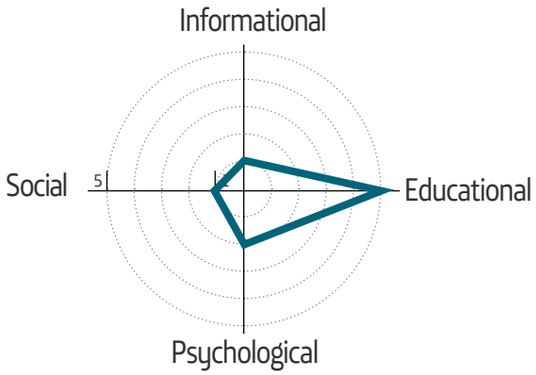
In its first year, 2008, Mattecentrum received €2,000. Its funding had grown to €875,000 in 2013.

8. AUDIOVISUAL SUPPORT

http://goo.gl/EQ2fMi

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Formal
- Non-formal

Audience:
- Students

» *INNOVATION FINALIST*

The Perach Tutorial Project

The Weizmann Institute of Science develops the knowledge and commitment to society of university volunteers through a personalised tutorial service for underprivileged children.

Israel

TYPE
Mentoring

INSTITUTIONS INVOLVED
University and schools

FIELD
Science

פר"ח
פרויקט חונכות

Organisation:
The Perach Tutorial Project

Name of innovator/founder:
Rony Attar and Haim Harari

Official website:
http://www.perach.org.il

Other websites:
http://goo.gl/d9olYI
http://www.havayeda.org.il/english/
http://goo.gl/YE7i8L

Address:
Weizmann Institute of Science, P.O. Box 26, Rehovot 76100

Video:
http://goo.gl/RKoNzq

Recognition/Awards:
- 2008 Israel Prize.

» INNOVATION FINALIST » THE PERACH TUTORIAL PROJECT

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Many children from disadvantaged backgrounds, even if they have talent and potential, do not have the necessary support at home and will never have access to certain levels of education.

There are also other problems, such as funding for students for university education or mixing with the different sectors of Israeli society.

In this context, it is necessary to work to:

- Enrich and improve the lives of children from underprivileged backgrounds from all sectors of society – Jewish, Arab and Druze – through a warm and caring relationship with a personal mentor;
- Help university students meet the cost of higher education, by providing partial scholarships and/or academic credits in return for their work with needy children;
- Allow university students (the country's future leaders in every field) to experience first-hand some of its most pressing social problems, thus helping to narrow the gaps in Israeli society;
- Promote tolerance and understanding among different sectors of society (including Jews and Arabs), through joint activities.

2. WHAT SOLUTION IS PROPOSED?

The Weizmann Institute of Science proposes to pair up children from disadvantaged backgrounds with university students who act as their tutors, giving them personalised attention (often lacking for those children) and serving as a model to be emulated.

The care that Perach children receive from their mentors helps them to realise their potential and develop their motivation.

The scheme takes advantage of the abilities of university volunteers, who, by providing this service, develop their own knowledge of and commitment to society.

3. HOW DOES THIS SOLUTION WORK?

Mentors meet with their mentees for two hours, twice a week.

Meetings take place at the pupil's home (to acquaint the mentor with the child's home and family life), at the university campus, at playgrounds, libraries, museums or at Perach's enrichment centres.

The activity is supervised and monitored by Perach coordinators but leaves the mentor-mentee pair a lot of leeway in deciding what to do – prepare homework, play computer games or soccer, go to the movies, go on nature hikes and so on.

Perach has a pyramid-like structure, with a small head office located at the Weizmann Institute of Science and a few regional branches at universities around the country.

» INNOVATION FINALIST » THE PERACH TUTORIAL PROJECT

Each of Perach's regional branches is headed by a manager, who is in charge of 50-70 coordinators. The coordinators, all of whom are students and former mentors themselves, are each responsible for 50 mentors. The coordinator pairs up each mentor with a mentee, after interviewing them separately and obtaining background information on the mentee. Perach's staff receives professional guidance and support all year long.

There are also workgroups, with programmes taking place all over the country. The syllabuses of these programmes are prepared by professionals, who provide the tutors with written materials and guidance. These programmes are offered in a variety of areas, mostly the sciences. **They cover topics such as health and dental care, science education, nature and environment, law and order, music and many more**.

The Perach project has both enrichment centres and "Havayeda Teva" science centres (Havayeda means "knowledge" and "fun" in Hebrew). The enrichment centres are located mostly in peripheral areas, are open in the afternoons and provide a quiet setting where mentors and mentees can spend quality time together. The facilities are equipped with educational games, books, videos, art materials and computers.

At the Havayeda Teva science centres, children are encouraged to play with interactive exhibits, which allow them to experience first-hand some natural phenomena related to their own environment and lives. The basic assumption is that children are naturally curious about their surroundings and learn best by active experimentation. The centres are therefore an informal, playful learning environment that attracts children to the world of science.

The centres offer an appealing exposure to science to audiences that, due to geographical and/or socio-economic obstacles, are hindered from participation in the services offered by bigger science museums. The Havayeda Teva are located mostly in peripheral towns and under-resourced neighbourhoods throughout Israel.

4. IMPACT INDICATORS AND RESULTS

Today, about 15% of all students in Israel's institutes of higher education and tens of thousands of children in need take part in the project each year. A significant percentage of Perach's mentors and mentees come from minority groups. Perach has become a source of inspiration and practical support to similar organisations, now operating in about 20 countries worldwide.

Figures for 2012:

- 60,000 children;
- 25,981 mentors;
- 1,216 schools;
- 198 cities;
- 560 coordinators.

The number of visitors to the Havayeda Teva is also large – about 200,000.

» INNOVATION FINALIST » THE PERACH TUTORIAL PROJECT

5. INNOVATION HIGHLIGHTS

- A mentoring programme set up over 30 years ago.
- An initiative focusing on the underprivileged.
- Mobilisation (numbers and organisation) of university volunteers.
- Concept and outreach of interactive science centres in peripheral areas.

6. GEOGRAPHICAL AREA

Israel. The model has been replicated in 20 countries.

7. INCOME MODEL

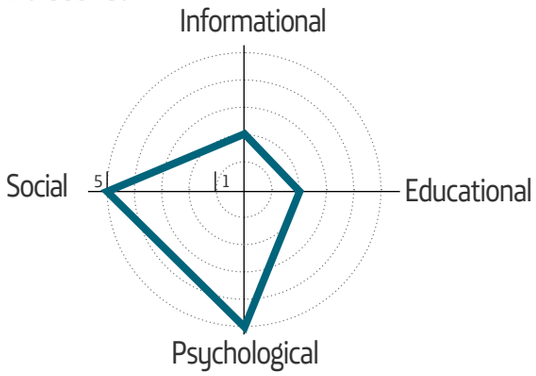
Perach receives most of its revenue from the government. The project is also sponsored by the Abraham and Sonia Rochlin Foundation and the Enkin Family (Canada).

8. AUDIOVISUAL SUPPORT

http://www.youtube.com/user/PerachOrg

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Informal
- Non-formal

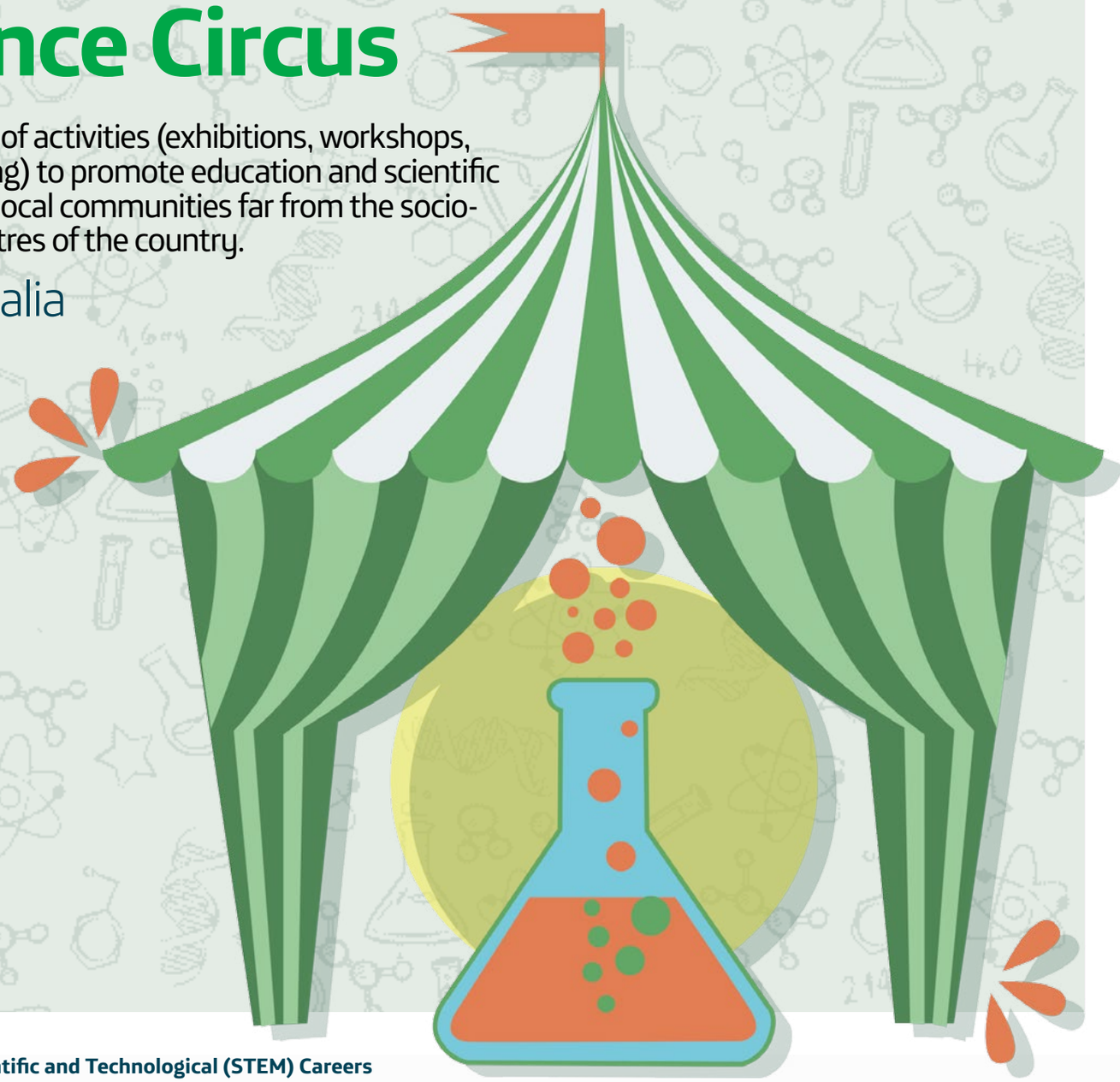
Audience:
- Students

» *INNOVATION FINALIST*

Shell Questacon Science Circus

A programme of activities (exhibitions, workshops, teacher training) to promote education and scientific knowledge in local communities far from the socio-economic centres of the country.

Australia



TYPE

Informational activities

INSTITUTIONS INVOLVED

Companies, universities, schools

FIELD

Technology

Questacon
The National Science and Technology Centre

Organisation:
Questacon & Shell

Official website:
http://www.questacon.edu.au/outreach/programs/science-circus

Other websites:
http://www.shell.com/global/environment-society/society/social-investment/education.html

Address:
Location Code 940, PO Box 5322, Kingston ACT 2604

Video:
http://goo.gl/Kj7amH

Recognition/Awards:
- 2004 Outstanding Long-Term Collaborations.
- 2006 Prime Minister's Award for Community Business Partnerships.
- Joint winner of the 2010 IMAGinE Award.

» INNOVATION FINALIST » SHELL QUESTACON SCIENCE CIRCUS

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

Given the size of Australia, regional and remote areas can be in geographically hard-to-reach places.

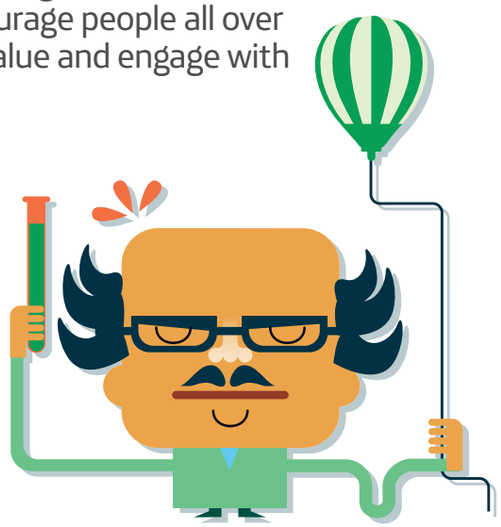
These regions can therefore be disadvantaged through lack of access to quality educational opportunities, opportunities that metropolitan-based children take for granted.

The Science Circus is an outreach programme designed to fill this gap and encourage people all over Australia to value and engage with science.

2. WHAT SOLUTION IS PROPOSED?

Established in 1985, the Shell Questacon Science Circus is a successful partnership between Shell, The Australian National University (ANU) and Questacon – The National Science and Technology Centre.

Students from the Master of Science Communication Outreach perform lively presentations of some aspect of science in towns and schools throughout rural Australia.



Students from the Master of Science Communication Outreach perform lively presentations of some aspect of science in towns and schools throughout rural Australia

3. HOW DOES THIS SOLUTION WORK?

Science Circus inspires and engages local communities with science through its interactive public exhibitions, school workshops, workshops for the elderly, professional development workshops for teachers and specialist development programmes for remote Indigenous communities. It also raises awareness of regional science and engineering career possibilities, with the senior high school-focused Beyond School programme.

The programme includes a wide range of proven strategies for involving young people in science and other related areas. It targets those at every educational stage from early childhood right through to senior secondary level.

Given the size of Australia, it is important that the Science Circus embraces new technology and digital capabilities to supplement and reinforce the face-to-face learning experience.

The experience includes a programme for schools and communities that delivers hands-on workshops via video conferencing technology from the studio at Questacon in Canberra.

The Science Circus has five key components:

- In-school delivery;
- Professional development workshops for teachers;
- Public exhibitions in communities throughout rural and remote Australia (interactive science exhibitions);
- Video conferencing delivery;
- Science communication education.

The differentiating value and sustainability of this initiative comes from its relationship with the Master of Science Communication Outreach at the Australian National University (ANU). Each year, up to 16 students take part in this initiative to complete their Master's degree. The degree gives students an opportunity to implement their science communication skills through practical experience.

Since 1985, more than 350 graduates have completed the course associated with the Science Circus programme.

» INNOVATION FINALIST » SHELL QUESTACON SCIENCE CIRCUS

4. IMPACT INDICATORS AND RESULTS

In 28 years, Shell Questacon Science Circus has:

- Made more than 8,300 visits to schools;
- Held 310 professional development workshops for 4,700 teachers;
- Visited 90 indigenous communities and 490 towns in remote areas of Australia;
- Reached more than 2.2 million Australians who have experienced the Shell Questacon Science Circus activities.

Evaluation studies show the programme:

- Meets a recognised need for high-quality science education in regional and remote areas;
- Supports science teachers in the classroom;
- Builds science communication capacity nationally;
- Encourages greater student engagement with science.

Some students exposed to the programme during the 1980s have also reported long-term influences on their career decisions, leading them to train as scientists and science educators (copies of this study are available on request).

In addition, Science Circus also serves as a research and evaluation tool for academics studying aspects of informal learning and science communication.

5. INNOVATION HIGHLIGHTS

- Links with the university and science communications students that allow for sustainability, continuing improvement of the information strategy, training of future trainers.
- Creates opportunities in peripheral areas and those far from population centres.
- Solid experience over time.

6. GEOGRAPHICAL AREA

Australia.

7. INCOME MODEL

A private company, Shell, covers about 47% of total operating costs.

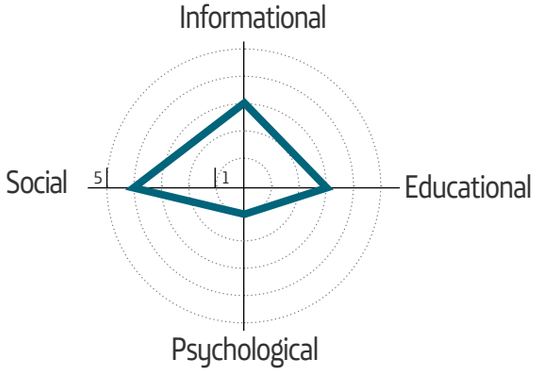
The rest is funded by payment for the service, at a cost of $5 per student.

8. AUDIOVISUAL SUPPORT

http://goo.gl/Kj7amH

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Informal
- Non-formal

Audience:
- Students
- Civil society

» *INNOVATION FINALIST*

Stars of Science

Stars of Science proposes to inspire young people to dedicate their lives to science-based innovation using a reality TV show. The programme is based on a competition between young inventors (men and women aged 18 to 30).

Qatar

TYPE

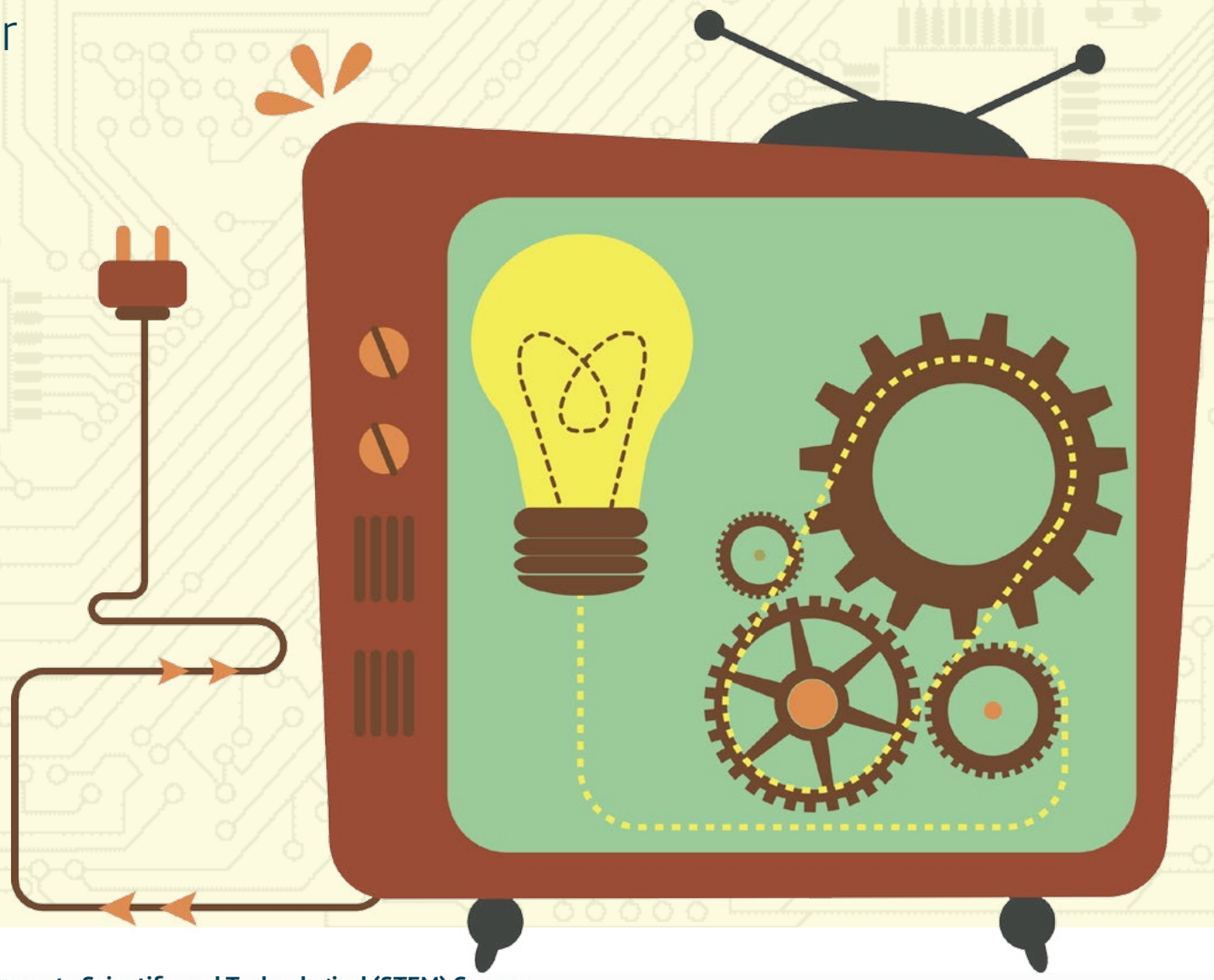
Informational activity

INSTITUTIONS INVOLVED

Companies and universities

FIELD

Science, Technology and Engineering



Organisation:
Stars of Science

Name of innovator/founder:
Dr. Fouad Mrad

Official website:
http://www.starsofscience.com/sos/en/default.asp

Other websites:
http://www.wired.com/magazine/2012/01/mf_starsofscience/
http://ihtbd.com/ihtuser/print/old%20THT/OCT-2012/17-10-2012/a1710x16xCQxxxxxx.pdf

Address:
Business & Creative Park – Dora Seaside Road - Beirut, Lebanon – P.O. Box 16-6562

Video:
http://www.youtube.com/user/Starsofsciencetv

» INNOVATION FINALIST » STARS OF SCIENCE

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

To improve the perception of engineering among young people in the Arab world.

Qatar is a small, rich country, but with an economy based on natural gas and oil. The goal is to transform it into a knowledge-based economy by unlocking its human potential, thereby contributing to regional and international development.

The Qatar Foundation is pursuing this mission under three fundamental pillars: education; science and research; and community development.

2. WHAT SOLUTION IS PROPOSED?

The aim of the Qatar Foundation's (QF) science and research strategy is to build the country's innovation and technology capacity by developing and commercialising science-based solutions. QF therefore presents one of its key projects, Stars of Science.

By employing the communications media (reality TV), it proposes to inspire young people to dedicate themselves to science-based innovation.

Stars of Science is the first Pan-Arab reality-TV programme dedicated to innovation, aiming to shine a spotlight on the next generation of young Arab innovators.

3. HOW DOES THIS SOLUTION WORK?

It is a pioneering idea for television consisting of a reality show in which the participants have to turn their ideas into inventions and transform these into products.

Concept:

- 16 inventors;
- Men and woman aged 18 to 30;
- Arabic speaking;
- Competing to create their invention.

First, they go through a three-step selection process: expert committee (chooses the innovative ideas); innovator casting; attendance at workshops in Doha for three months by the 16 contestants selected.

The project chosen must meet some basic criteria: the possibility of turning the idea into a prototype in three months; the usefulness of the product for society; respect for both the laws of science and the protection of intellectual property rights.

The television programme also has three rounds: proof of concept; product engineering; and business model and marketing.

The programme consists of:

- eight episodes aired at prime time, which include: project development; working with the experts; the "invention gains life"; and evaluation and screening;
- 30 daily episodes: getting to know the 16 candidates, connecting at the emotional level and knowledge of their efforts and successes.

Stars of Science receives the support of a series of experts and mentors, such as Dr. Farouk El-Baz, an Egyptian-American scientist famous for his work with NASA and with top-flight companies and universities that are partners of the Qatar Foundation. These include the Virginia Commonwealth University in Qatar; Weill Cornell Medical College in Qatar; Texas A & M University in Qatar and the Carnegie Mellon University in Qatar. Other participants are the College of the North Atlantic in Qatar and Qatar Science & Technology Park.

» INNOVATION FINALIST » STARS OF SCIENCE

4. IMPACT INDICATORS AND RESULTS

- A Pan-Arab television programme broadcast in 22 Arab countries.
- Five successful seasons since 2009.
- In the second season, more than 7,000 applications were received.
- More than 20 nationalities are represented among the candidates and production team of *Stars of Science*.
- The programme has more than 100 experts from every continent in a wide range of disciplines, from engineering to business.

5. INNOVATION HIGHLIGHTS

- Its media potential, with millions of viewers exposed to the culture of innovation.
- The Qatar Foundation networking with educational institutions involved in the Arab world.
- Reinforcing a culture of self-confidence in inventing and creating.
- Exposure of the learning process and satisfaction of the participants.
- International audience.

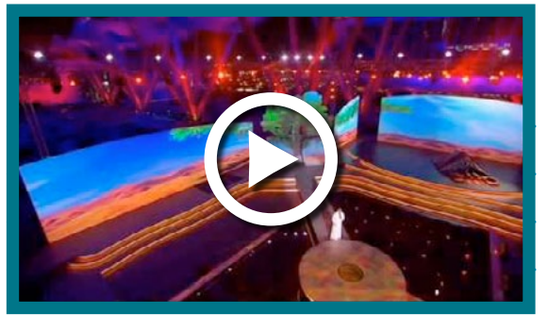
6. GEOGRAPHICAL AREA

Currently shown in eight Arab countries: Egypt, Saudi Arabia, Jordan, Lebanon, United Arab Emirates, Tunisia and Kuwait.

7. INCOME MODEL

The income model is the sponsorship of the television programme by the Qatar Foundation and companies.

8. AUDIOVISUAL SUPPORT



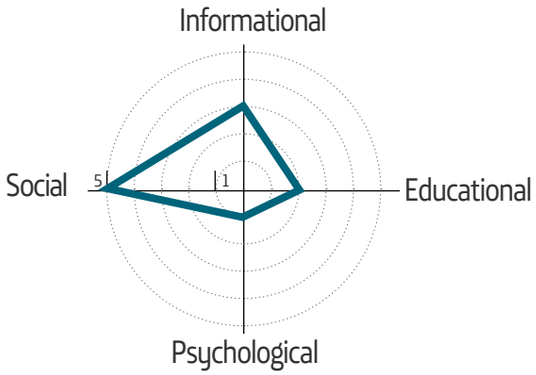
www.youtube.com/user/Starsofsciencetv

http://goo.gl/KgDzCU

http://goo.gl/Ktwf4H

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical

Context:
- Informal

Audience:
- Students
- Family
- Audience in general

» *INNOVATION FINALIST*

WISE

WOMEN INTO SCIENCE AND ENGINEERING

To attract, retain and develop female talent in STEM from classroom to boardroom. It therefore offers a variety of services from school to starting employment.

United Kingdom

TYPE

Contact with a professional environment

INSTITUTIONS INVOLVED

Companies, schools, universities and others

FIELD

Science, Technology, Engineering and Mathematics

WISE

Organisation:
WISE – Women into Science and Engineering

Official website:
http://www.wisecampaign.org.uk/

Address:
Quest House, 38 Vicar Lane, Bradford, BD1 5LD

Video:
http://goo.gl/DSX04Q

» INNOVATION FINALIST » WISE

1. PROBLEM THAT THE INNOVATION TRIES TO SOLVE

WISE was established in 1984 following the Finniston Report on the future of engineering in the UK, which emphasised the need for a broad talent pool of scientists and engineers. It was set up as a campaign to encourage and inspire more girls to consider science and engineering careers.

Whether it is because of the image painted by the media, pressure from friends or unsuitable counselling, young women often do not consider careers in STEM to be interesting or well paid.

This fact is causing a loss of female talent in STEM and gender inequality in the workforce in these sectors.

To achieve economic growth, it is necessary to boost the STEM talent pool and, from this perspective, to increase the presence of women in STEM.

WISE has taken on this challenge in the United Kingdom, with the goal of pushing the presence of women in STEM occupations 30% by 2020.

2. WHAT SOLUTION IS PROPOSED?

In 1984, the Engineering Council collaborated with the Equal Opportunities Commission to launch the Women into Science and Engineering (WISE) year. Spearheaded by Baroness Beryl Platt, Chair of the Equal Opportunities Commission at the time, the initiative intended to highlight the career opportunities for girls and women in science and engineering professions.

Since then, WISE focuses on attracting, retaining and developing female talent in STEM "from the classroom to the boardroom". Its campaign is therefore based on constructing and maintaining the "pipeline", in other words, reinforcing the process followed by women from school to total integration into the world of work in STEM, even into boardrooms.

It provides the guidance, training and support services needed to increase the presence of women in these sectors.

WISE works directly with girls and women, but it also cooperates creatively with public institutions, education and companies.

In this work, WISE considers that women must be secure enough to be able to choose between a wider range of careers, without the limitations imposed by stereotypes and archaic ideas. It therefore adopts a creative approach, promoting the attractiveness of STEM employment opportunities. The campaign is based on listening to the girls and young women themselves, understanding their concerns and communicating the message to the rest of society.

When working with institutions, WISE offers models, tools and strategies for supporting organisations in STEM fields that wish to overcome traditional views, working toward a gender balance in their organisations or contributing to promoting female talent in a variety or ways (funding, training and so on).

3. HOW DOES THIS SOLUTION WORK?

WISE gives priority to activities that:

- Focus on the results of girls and young women in education and training;
- Contribute to existing plans to maximise their impact on girls and young women;
- Act on influential stakeholders to promote effective polices for the female population;
- Innovate and create models, tools and pilot approaches;
- Explore and measure success factors.

WISE works on three levels to attract, maintain and develop female talent in STEM fields:

1. **Documenting the situation:** By means of reports that gather evidence of the situation of women in STEM (for example, the report containing statistics on the place of women in STEM in the United Kingdom), it publicises the current situation in the media and among public bodies, with the aim of generating a change that will have an impact on gender inequality;

» INNOVATION FINALIST » WISE

2. **Building the "pipeline":** WISE works with schools and training institutes, and with families, providing guidance, aid programmes, work experience and recruitment agency services (job exchanges and so on) to attract and develop female talent in STEM;
3. **Maintaining the "pipeline":** Instead of focusing only on working directly with young women, WISE also cooperates with companies and other organisations that are already working on or wish to promote the presence of women in their area of STEM. It provides counselling services, training and network creation; and presents awards to women and organisations that are actively addressing the core concerns of WISE.

WISE offers the following services:

1. **For girls and women:**

- **Girls**
  Learning programmes (workshops, apprenticeships and so on) and information on STEM careers and professions. It also has resources for parents: a guide to help parents understand the benefits of their daughters doing an apprenticeship in STEM; information on educational institutions that they can attend; and a guide to institutions that support STEM education.
- **Women**
  1. Mentoring: many employers provide mentoring support for employees and this can be particularly beneficial for women working in STEM, where they are often in a minority and can benefit from additional encouragement and support.
  2. Scholarships and Awards: the WISE Awards are about showcasing the talents and achievements of women and girls in the STEM environment and highlighting positive role models and case studies to inspire others.
  3. Job vacancies.
  4. Role models: videos, documentaries and so on are presented on women in STEM whose experiences can serve as a model. The WISE blog should also be mentioned. On it, each month a scientist, inventor, technician to name a few describes her choice of career.

2. **For the education sector:**

WISE has a mission to increase the involvement of young women and other under-represented groups in STEM education. In this section, WISE provides resources (toolkits and guides) to help institutions (administration, schools, management teams and so on) to increase the involvement of girls in STEM. It also provides special activities in schools, institutes and universities, workshops for parents, girls and teachers; a set of resources (Tomorrow's Engineers, posters for schools and so on); reports on choosing careers in STEM; scholarships, awards for schools and so on.

3. **For business and industry:**

WISE has considerable experience and expertise in working with employers and a wide range of organisations in STEM. Almost 100 organisations have worked with WISE, from small, medium and large companies to universities and technology centres.

WISE helps them to review and improve their gender diversity and inclusion policies and practices.

These organisations can also become members of WISE and receive advice on how to contribute to improving the involvement of women in STEM and how to offer some of the WISE services (mentoring, scholarships and so on).

In turn, this cooperation brings benefits to the companies: recognition and contact with the administration, exchange of good practices, possibility of having interns, publication of job vacancies, corporate social responsibility and more.

» INNOVATION FINALIST » WISE

4. IMPACT INDICATORS AND RESULTS

WISE has been promoting female talent in STEM for 30 years. Its programmes have reached a wide audience, such as the WISE vehicle programme, which aimed to provide technological activities for 13- and 14-year-old girls. Between 1983 and 2004, 370,000 girls benefited from this programme; 4,500 visits were made to schools in England, Scotland and Wales; 2.5 million pounds were donated by 100 sponsors.

According to data for 2009, WISE has helped to double the percentage of women engineering graduates, from 7% in 1984 to 15% in 2009.

5. INNOVATION HIGHLIGHTS

- Integrated, long-term focus on strengthening the education and employment of young women.
- Solid, deep-rooted framework of action, in operation over 30 years.
- Network of partner organisations.

6. GEOGRAPHICAL AREA

United Kingdom.

7. INCOME MODEL

WISE receives resources from partner organisations (Jaguar, British Gas, Royal Air Force and so on). These contribute both their own resources (personnel and facilities) and funding for WISE events and awards.

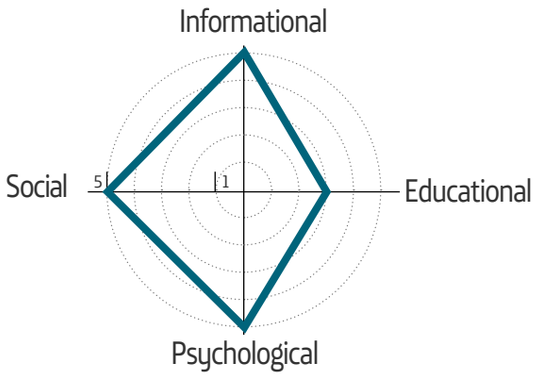
In addition, this year WISE now incorporates the UK Resource Centre (UKRC) for Women in STEM, which had a contract from the Government from 2004-12 to increase opportunities for women in science, engineering and technology through support services to business, education and women returners. The UKRC is now an independent Community Interest Company trading as WISE. It is supported by individual contributions and payment for the different services offered to business and education.

8. AUDIOVISUAL SUPPORT

http://goo.gl/lsKv75

9. ANALYSIS OF INNOVATION

Factors:



Educational level (age):

Potential:
- Pedagogical
- Organisational

Context:
- Formal
- Non-formal
- Informal

Audience:
- Students
- Teachers
- Families

Other innovations

» OTHER INNOVATIONS

Espaço Ciência Viva

Brazil

Espaço Ciência Viva (Live Science Space) is the first participatory science museum in Brazil. It was founded 30 years ago by a group of scientists and educators who were interested in bringing science to the general public through non-formal education.

Website:
http://www.cienciaviva.org.br/espaco_ciencia_viva

Video:
http://goo.gl/g8RwFA

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Quèquicom

Spain

Quèquicom is a very well-known, highly successful, weekly popular science television programme that aims to give viewers a basic knowledge of science so that they can understand nature and the scientific and technological aspects of society.

Website:
http://blogs.tv3.cat/quequicom

Video:
http://www.youtube.com/show/quequicom
http://goo.gl/O7mGBR

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

HP Catalyst Initiative

USA (All over the world)

The HP Catalyst Initiative is a worldwide network of educators, educational institutions, NGOs and educational policy leaders from different countries that explores new approaches to STEM education.

Website:
http://goo.gl/LjUroi

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

Creative Partnerships

United Kingdom

Creative Partnerships trains teachers and creative professionals, such as visual artists, scientists, architects, designers, musicians, journalists and film makers, to work in the classroom with the aim of changing teaching methods.

Website:
http://www.creative-partnerships.com/

Video:
http://vimeo.com/channels/94571

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

Danish Science Municipalities

Denmark

A collaborative network of 25 Danish towns promotes scientific education by activating an ecosystem in each town to support scientific education and stimulate the exchange of experiences.

Website:
http://www.ind.ku.dk/projekter/science_kommuner/Science-kommuner_-_engelsk.pdf/

Type of innovation:
NETWORKS

Educational level (age):
4 8 12 16 18 +18

Urban Advantage

USA

This is a collaborative programme between New York City public schools and scientific cultural institutions. Its aim is to help students understand the scientific research process.

Website:
http://www.urbanadvantagenyc.org/

Video:
http://goo.gl/VOHTAz

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Greenpower Education Trust

United Kingdom

In this real-life engineering project, the challenge is for teams to build a car from a supplied kit or from scratch, and see how far it can go in 90 minutes on one charge.

Website:
http://www.greenpower.co.uk/

Video:
http://goo.gl/KA1Pra

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

Science Forward

Ireland

Bord Gáis Networks (a gas supply company), in association with Junior Achievement Ireland, has developed the Science Forward programme, to bring the world of science and university education to primary school children in disadvantaged schools.

Website:
http://www.bordgaisnetworks.ie/Scienceforwardinfo

Video:
http://youtu.be/TaUzN7RbLxc

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

SciGirls

USA

SciGirls includes a television series, websites and initiatives concerning popular science and engineering, aimed at girls aged between eight and 14, to increase their participation in STEM fields.

Website:
http://scigirlsconnect.org/

Video:
http://scigirlsconnect.org/vídeo/scigirls-sizzle-reel

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):

Techbridge

USA

Techbridge aims to inspire girls in disadvantaged communities to discover a passion for science, technology and engineering through real-life, practical experiments.

Website:
http://techbridgegirls.org/

Video
http://goo.gl/DPJ79x

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):

Science Career Ladder

USA

The Science Career Ladder is part of the New York Hall of Science (NYSCI) education programme. Secondary and university students work at NYSCI, taking part in tutorials and the development, preparation and implementation of museum activities.

Website:
http://nysci.org/projects-main/explainers-folio/

Video:
http://vimeo.com/14777398

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):

C.E.S.A.R

Brazil

C.E.S.A.R is a company that creates products and services for companies using ICT. Its mission is to transmit a knowledge of information technology to society and the academic world in a self-sustainable manner.

Website:
http://www.cesar.org.br/english/

Video:
http://goo.gl/hLnWhK

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):

» OTHER INNOVATIONS

Relay Graduate School of Education

USA

Relay Graduate School is an initiative created to improve the training of teachers for Uncommon schools. It is a teacher training school in New York.

Website:
http://www.relay.edu/

Video:
http://vimeo.com/31923672

Type of innovation:
TEACHER TRAINING

Educational level (age):
TEACHERS
4 8 12 16 18 +18

InvestigArte

Spain

InvestigArte is a science and technology visual arts contest designed for researchers, students and teachers. It was created by researchers who have a passion for photography to explain scientific innovations to society.

Website:
http://www.investigarte.es/

Video:
http://goo.gl/8mZYTN

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Primo

United Kingdom

Primo Play Set is a product that helps children over the age of three to learn the basic logic of programming, sequences and basic algorithms and to go on to more complex programming to be applied in the future.

Website:
www.primo.io

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

Lottolab Studio

United Kingdom

Lottolab Studio is the world's first public perception research space. One single research space integrates the sciences, art and education around a central theme: perception.

Website:
http://www.lottolab.org/

Video:
http://www.lottolab.org/videos.asp

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

MIT+K12

USA

MIT+K12 is a project at MIT (Massachusetts Institute of Technology). It is an online database of video lessons in science and engineering for primary school students, created by MIT students.

Website:
http://k12vídeos.mit.edu/

Video:
http://www.ted.com/talks/tyler_dewitt_hey_science_teachers_make_it_fun.html

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):

Apollo's Children/CERN

United Kingdom

This is a web site featuring the various television programmes by scientist and physician Professor Brian Cox that inspire new generations of young people to study the sciences.

Website:
http://www.apolloschildren.com/

Video:
https://losmundosdebrana.wordpress.com/2013/02/28/vídeoteca-brian-cox/

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):

HacKIDemia

USA

HacKIDemia is a mobile laboratory. The creation of local networked centres gives access to the latest technologies and tools and allows the community to solve the great local challenges (access to power, drinking water and so on).

Website:
http://www.hackidemia.com

Video:
http://www.youtube.com/user/HacKIDemia

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):

The Big Van Theory

Spain

The Big Van Theory is a group of scientist comedians who popularise science in a pleasing, accessible way in secondary schools. It has 12 researchers in biology, chemistry, mathematics, physics, geology, engineering and so on.

Website:
http://www.thebigvantheory.com/

Video:
http://goo.gl/2bFl7a

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):

» OTHER INNOVATIONS

STEM Behind Hollywood

USA

This initiative from Texas Instruments enjoys the support of scientists and experts from Hollywood. It offers technological solutions for implementing classroom activities in mathematics and the sciences, all related to television and film themes.

Website:
http://education.ti.com/en/us/stem-hollywood

Video:
http://goo.gl/NRC9o6

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Trivselsprogrammet

Norway, Sweden

This programme improves the atmosphere in schools by promoting an internal contest in which the students must choose the classmate with the most values with whom to carry out activities during break time. It provides training in 400 pre-designed activities that are ready to implement.

Website:
http://www.trivselsleder.no/no/HJEM/

Video:
http://goo.gl/L1K9fV

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

iMentor

USA

This is a mentoring model that provides personalised support to students over the age of 12 to reinforce the learning process up to the university stage. The mentors and students interrelate online and in monthly in-person sessions.

Website:
http://www.imentor.org

Video:
http://www.youtube.com/user/iMentorNYC

Type of innovation:
MENTORING

Educational level (age):
4 8 12 16 18 +18

The After-School Corporation

USA

The After-School Corporation is an organisation focused on securing investments for extra-curricular activities. This allows it to direct its activities to the needs identified in the city.

Website:
http://www.tascorp.org

Video:
http://vimeo.com/tasc

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

Science has Future

Czech Republic

This project from the Czech Republic sponsors cooperation between local companies and schools, with the aim of improving the perception of scientific and technical jobs.

Website:
http://www.vedamabudoucnost.cz

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

Girls Who Code

USA

Girls Who Code promotes the creation of girls' clubs focused on ICTs. It offers an annual programme of projects and workshops, as well as a summer camp highlighting web design and the development of apps. It has the support of businesses and engineering companies.

Website:
http://girlswhocode.com/

Video:
http://goo.gl/YeOtCG

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Girlstart

USA

This intensive annual programme provides STEM education for girls in school (K-12). These programmes take the form of extra-curricular activities, summer camps, talks and STEM community programmes.

Website:
http://www. girlstart.org/

Video:
http://goo.gl/uua76q

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Experimentàlia

Spain

This programme offers scientific activities in education centres, such as workshops and shows, for living with science in a participatory and playful way. Its aim is to strengthen scientific vocations.

Website:
http://www.experimentalia.es/

Video:
http://goo.gl/7S1YxI

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

Minds-on-Math

USA

Sci-Port, a science centre in Shreveport, has created an extra-curricular programme to help students who have difficulty with mathematics. It uses museum educators and local teachers to provide support for seven weeks.

Website:
www.sciport.org

Video:
http://www.youtube.com/user/sciport

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

The Museum of Mathematics

USA

This museum in Manhattan organises a variety of activities to help teachers provide inspiring activities to the student body.

Website:
http://momath.org/

Video:
https://www.youtube.com/user/MuseumOfMathematics

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

MATHCOUNTS Foundation

USA

This NGO provides students with tools for overcoming their fear of and increasing their self-esteem through mathematics. It promotes a video contest made by the children about solving a maths problem.

Website:
http://mathcounts.org/

Video:
http://vídeochallenge.mathcounts.org/what-math-vídeo-challenge
http://goo.gl/wZUwc0

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

BLOODHOUND SSC

United Kingdom

The aim of this national project is to promote interest in STEM, by giving primary and secondary school students and university teachers and students information on the development of a supersonic car.

Website:
http://www.bloodhoundssc.com/education

Video:
http://goo.gl/sPiH9q

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

4x4 in Schools Tech. Challenge

United Kingdom

4x4 presents schools with a technological challenge: the design and construction of a radio-controlled 4x4 vehicle. It organises a national contest in which teams from different schools present their projects.

Website:
http://www.4x4inschools.co.uk/

Video:
http://goo.gl/UCBEN8

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):

F1 in Schools Ltd

United Kingdom

This is an international competition in which groups of three to six students compete to design and create the fastest miniature car. It is a way to learn STEM subjects in a creative and motivating manner.

Website:
http://www.f1inschools.co.uk/

Video:
http://www.youtube.com/user/F1inSchoolsUK
http://www.thechronicle.com.au/vídeos/f1-schools-regional-titles/14849/

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):

Engineering is Elementary

USA

This project, developed by the Boston Museum of Science, provides schools with educational materials on engineering for each age group, as well as a summer camp.

Website:
http://eie.org/engineering-everywhere

Video:
http://goo.gl/WOsa8d

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):

LEGO League

International

This is a benchmark initiative in robotics at the international level. It organises a team competition, in which they have to create a robot with certain parts and qualities.

Website:
http://www.firstlegoleague.org/
http://www.firstlegoleague.es/

Video:
http://www.youtube.com/user/FLLGlobal

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):

» OTHER INNOVATIONS

Escuela de Ciencia

Spain

This initiative from Science Fantasy, a popular science company, offers science courses, workshops and shows. Young people experiment with topics from creating robots to video games, dealing with disciplines such as chemistry and biology.

Website:
www.escueladeciencia.com

Video:
http://youtu.be/XKYCVkgLMeM

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 6 8 12 16 18 +18

Innovation and Entrepreneurship Lab

Guatemala

This project is a technology company incubator that came out of the Laboratorio de Innovación de Universidad Galileo. It brings students closer to this world with the aim of turning them into creators of technology, not just consumers.

Website:
http://innovacion.galileo.edu/

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

EscueLab

Spain

EscueLab was created by a group of young people from different disciplines. The organisation creates educational material for children and young people that are presented through workshops that are an introduction to research. The workshops are based on a video, a discussion and an experiment.

Website:
www.escuelab.es

Video:
http://youtu.be/jgV0DLyvTc4

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

Red Mapache

Colombia

Red Mapache develops interactive books to help children to improve their reading comprehension skills. They have developed an intelligent algorithm with which the apps measure the children's progress.

Website:
http://www.linkedin.com/in/rickyjim
www.redmapache.com

Video:
http://vimeo.com/85857935

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

Womaths

Chile

This is a platform for Spanish-speaking schoolchildren that evaluates mathematics concept by concept, depending on what the teachers is teaching, with a tutor to give feedback and metacognition of what has been done.

Website:
http://womath.com/

Video:
http://goo.gl/R6OXOI

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

Unicoos

Spain

In order to become a platform with integrated services, a YouTube channel has been created with 600 videos in Spanish about mathematics, physics and chemistry to altruistically help students, teachers and parents.

Website:
http://www.unicoos.com

Video:
http://www.youtube.com/unicoos

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

Cienciaterapia

Spain

This initiative is designed to bring science to children and young people who are in hospital in Huelva, Spain. They have fun and learn in the afternoon through entertaining experiments.

Website:
www.cienciaterapia.es

Video:
http://goo.gl/1babff

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 9 12 14 16 18 +18

Puentek

USA/South America

The aim of this mobile laboratory is to empower young people and local entrepreneurs in low-income areas in Latin America. It offers entertaining, practical activities in the use of technology from the perspective of problem solving and idea transformation.

Website:
www.puentek.com

Video:
http://goo.gl/6sSFzC

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 9 12 14 16 18 +18

» OTHER INNOVATIONS

iKidsFuture

Spain, USA, Dom. Rep.

This project centres on creating a learning ecosystem (parents/children/teachers) through a web site with a special focus on 21st century skills.

Website:
http://ikidsfuture.com

Video:
http://goo.gl/bhjqdu

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

CanSat Perú

Peru

People are given an opportunity to experiment with the typical stages of a real space project: taking part in multidisciplinary activities, teamwork, drafting documentation and so on, from ground tests to a campaign to launch rockets or weather balloons.

Website:
http://cansatperu.wikidot.com/

Video:
http://goo.gl/o8StLP

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

TecnoCampus

Spain

The TecnoCampus of the Universitat Pompeu Fabra has developed Xnergic. The aim is to reveal, practically and experientially, the possibilities offered by technology and pass on a passion for programming and development.

Website:
www.tecnocampus.cat
www.xnergic.org

Video:
http://goo.gl/ECWnRK

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 13 16 18 +18

Third Space Learning

United Kingdom

This is a new tool that accelerates the progress of students in mathematics. It provides support to children aged four to seven by providing online access to mathematics experts.

Website:
http://thirdspacelearning.com/

Video:
http://goo.gl/cFLgli

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

Udacity

USA

Udacity provides online courses that form a bridge between the skills of the academic and professional worlds. It has the help of industry experts who share their experiences at Google, Facebook, Cloudera and MongoDB.

Website:
www.udacity.com

Video:
http://goo.gl/lUIj0H

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 13 16 18 +18

Studio Schools Trust

United Kingdom

These education centres are highly focused on the professional world in order to motivate students aged 14 to 19 and provide them with the work skills they need. They learn through projects with local companies, although the centres also offer the national curriculum.

Website:
http://studioschoolstrust.org/

Video:
http://www.ted.com/talks/geoff_mulgan_a_short_intro_to_the_studio_school

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 13 16 18 +18

Eureka Child Foundation

India

This is an organisation that works to ensure the quality of education for all children in India. It works with local communities, schools and organisations to create suitable methodologies and resources for everyone.

Website:
http://www.eurekachild.org/

Video:
http://goo.gl/Foq0WL

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

Frontières du Vivant

France

Through an interdisciplinary live science programme, based on an innovative methodology and learning through research, the centre seeks to give access to this kind of advanced education to students with fewer possibilities.

Website:
http://cri-paris.org/

Video:
http://vimeo.com/channels/cri/20882843
http://vimeo.com/criparis

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

Inst. Yachay Wasi

Peru

The Yachay Wasi method is an innovative, alternative proposal for the teaching of the natural sciences, chemistry, biology and physics for years one to five of secondary education. It is based on training teams of teachers.

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

Matemática Activa y Creativa

Costa Rica

This is a teacher training school to improve mathematics learning.

Website:
http://www.facultadeducacion.ucr.ac.cr/unidades-academicas/escuela-de-formacion-docente

Video:
http://www.slideshare.net/MatematicaActivayCreativa/historia-mac

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
TEACHERS
4 8 12 16 18 +18

Science for Mums

Australia

Science for Mums offers training workshops for mothers on the scientific content that their children are learning in school. It seeks to give the mothers confidence and allow them to help their children at home, by making science a more approachable activity.

Website:
http://cpas.anu.edu.au/study/short-courses/science-communication-mums

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

MATENA

Sweden

This primary teacher training course is based on cooperation with technology companies, such as AB, Volvo and Sweco, among others. The training focuses on mathematics, science and engineering.

Website:
http://www.matena.se/

Video:
http://goo.gl/PTqsaz

Type of innovation:
TEACHER TRAINING

Educational level (age):
TEACHERS
4 8 12 16 18 +18

» OTHER INNOVATIONS

Rescate Matemático

Chile

This programme is run by final year university students. They hold tutorials in upper primary school classrooms with groups of four students using packets of materials.

Website:
http://www.araucaniaprende.cl/rescate-matematico/

Video:
http://goo.gl/FI0OK7

Type of innovation:
MENTORING

Educational level (age):
4 7 12 16 18 +18

The Mountain TV show

Ireland

This television programme consists of a science adventure contest for two teams. The teams have to pass some tests on science in the form of an adventure. The winning team is the one that manages to get to the top of the mountain.

Website:
http://www.rte.ie/trte/themountain/

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Primary School Science Intervention

South Africa

This project, financed by SAASTA, is dedicated to promoting science in schools. The project takes place nationwide every year and is intended for secondary teachers. Each year areas are identified that must be tackled in that academic year.

Website:
http://goo.gl/NzrfyL

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

ENT3R

Norway

Promoted by the Norwegian Ministry of Education and Research, this is an extra-curricular programme in which students go to university to take part in mathematics sessions, do their science homework and carry out small STEM projects.

Website:
http://www.realfagsrekruttering.no/verktoy-for-laerere-og-elever/ent3r-2-2/

Video:
http://goo.gl/sbIyO3

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

Get into TECHNIC

Austria

Get into Technic is a project by the Association of Industrialists and the University of Salzburg. Using a contest, the aim is to challenge gender prejudices regarding technological and scientific careers. The participants learn different activities such as robotics over five lessons.

Website:
http://www.die-salzburger-industrie.at/Schulworkshops.49.0.html

Video:
http://goo.gl/yCbK8p

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

Lektor2

Norway

This project promotes the sciences in secondary school. It involves professionals who take a direct part in teaching science in schools to improve the skills and interest level of the students.

Website:
http://www.lektor2.no/

Video:
http://www.youtube.com/user/ntscenteret

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

National Centre for Science Education

Denmark

The NCSE is a centre where teachers can find materials and information on workshops, debates and presentations on the latest research to improve their students' knowledge of science.

Website:
http://nts-centeret.dk/eu/

Video:
http://goo.gl/PWxRIW

Type of innovation:
TEACHER TRAINING

Educational level (age):
4 8 12 16 18 +18

STEM Career Role Models

United Kingdom

STEM Career Role Models is a global supplier for the education sector of online professional development services through videos. Videos made in real classroom environments provide a service to improve the ability of teachers to communicate and teach STEM in a practical, interesting and effective way.

Website:
http://www.teachersmedia.co.uk/series/stem-career-role-models

Video:
http://goo.gl/YMYjhf

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

PEEP and the Big Wide World

United Kingdom

PEEP is a benchmark programme worldwide to train pre-school children in the sciences.

Website:
http://www.peepandthebigwideworld.com/

Video:
https://www.youtube.com/user/PeepWGBH

Type of innovation:
INFORMATIONAL ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Noa & Max

Spain

This is an animated series to promote a talent for innovation and learning about creativity in ICT among young people. An interactive audiovisual platform has also been created.

Website:
www.noamax.tv

Video:
www.vimeo.com/71327151

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

Science Club for Girls

United Kingdom

Science Club for Girls works to increase self-esteem and STEM literacy among primary school girls through extra-curricular activities with scientists who provide practical learning experiences, tutoring and leadership.

Website:
http://scienceclubforgirls.org/

Video:
https://www.youtube.com/user/ScienceClubforGirls

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Da Vinci Science Center

USA

This is a science centre focusing on promoting the wonders of science through entertaining, practical activities for children, young people and groups.

Website:
http://www.davincisciencecenter.org/

Video:
http://goo.gl/EAwktf

Type of innovation:
TEACHER TRAINING

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

LASER

USA

Washington State LASER is a science education programme led by the Pacific Science Center and Battelle and supported by various school districts and the State of Washington. It has created a network of students, teachers, companies, professionals and so on to coordinate activities.

Website:
http://www.wastatelaser.org/

Video:
http://goo.gl/SVewjX

Type of innovation:
NETWORKS

Educational level (age):
4 8 12 16 18 +18

Critical Zone Observatories

USA

This network of observatories serves the international scientific community through research, infrastructure, data and models. It includes an education section that is accessible to students and schools interested in including science related to the critical areas of the school curriculum.

Website:
http://www.psiee.psu.edu/publications/newsletters/2010Summer/scasd.pdf

Video:
http://goo.gl/ZpFSO6

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

Illinois Pathways

USA

Illinois Pathways provides various activities in which schools and industry cooperate aim to provide the student body with information on careers in STEM.

Website:
http://www.illinoisworknet.com/ilpathways

Video:
http://goo.gl/kSfgOj

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

The National STEM Centre

United Kingdom

This is a platform with educational resources on which different actors involved in improving STEM education cooperate. It has an eLibrary containing visual resources on research and expert projects in this area of education.

Website:
http://nationalstemcentre.org.uk/

Video:
http://www.nationalstemcentre.org.uk/STEMmanager/planner.html

Type of innovation:
NETWORKS

Educational level (age):
4 8 12 16 18 +18

» OTHER INNOVATIONS

Wyeth

Ireland

The pharmaceutical company Wyeth promotes science among primary and secondary students. It involves its workers in annual science initiatives. The projects include Challenge Science, SciFest and Science Gallery (events and workshops).

Website:
http://www.bitc.ie/case_study/wyeth-working-in-partnership-to-inspire-students-to-explore-careers-in-science/

Video:
http://goo.gl/MbdeuY

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

P-TECH

USA

P-TECH is a school that links the elements of high school and the professional world through associations with local industry. Opportunities are created to continue studying for a career in STEM and to start working in the technology industry.

Website:
www.ptechnyc.org

Video:
http://vimeo.com/60801268

Type of innovation:
KNOWLEDGE AND CONTACT WITH THE WORK ENVIRONMENT

Educational level (age):
4 8 12 16 18 +18

Biology Levers Out of Mathematics

USA

This new way to teach basic biological concepts designs engineering challenges that students must solve by using a combination of practical materials, mathematics and basic simulations.

Website:
http://www.lrdc.pitt.edu/schunn/research/design.html

Video:
http://goo.gl/unC29o

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

EntusiasMAT

Spain

EntusiasMAT is a didactic and pedagogical project based on multiple intelligences that makes working with mathematics easy and practical. It offers teachers a variety of methods and resources to motivate their students.

Website:
http://www.entusiasmat.org/

Video:
http://goo.gl/SbsQ1o

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
3 8 12 16 18 +18

» OTHER INNOVATIONS

ASSET STEM Education

USA

ASSET is an organisation that helps schools to implement a standard science programme using practical materials and discussion. The material helps teachers to achieve and improve the national level of STEM subjects.

Website:
http://www.assetinc.org

Video:
http://goo.gl/mDw8Lg

Type of innovation:
TEACHER TRAINING

Educational level (age):
4 8 12 16 18 +18

C-STEM Challenge

USA

This initiative seeks to inspire the next generation of innovators and opinion leaders through participation in practical, real-world, problem-solving projects to bolster talent, self-confidence, communication and STEM subjects.

Website:
http://www.cstem.org

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

Wolf Trap Early Childhood

USA

Wolf Trap Education is associated with the Fairfax Country public schools and the American Institute for Research, with the aim of developing, implementing, evaluating and publicising the arts included in STEM study plans and improving children's learning of mathematics.

Website:
http://www.wolftrap.org/Education/Institute_for_Early_Learning_Through_the_Arts/STEM_and_the_Arts.aspx

Video:
http://goo.gl/ks1DFz

Type of innovation:
INNOVATION IN TEACHING

Educational level (age):
4 8 12 16 18 +18

MET-lab

USA

MET-lab focuses on research into digital media technology in order to apply it to music and entertainment. It is also involved in programmes for primary and secondary students and organises a technology and music summer camp.

Website:
http://music.ece.drexel.edu/

Video:
http://goo.gl/ykLMnS

Type of innovation:
EXTRA-CURRICULAR ACTIVITIES

Educational level (age):
4 8 12 16 18 +18

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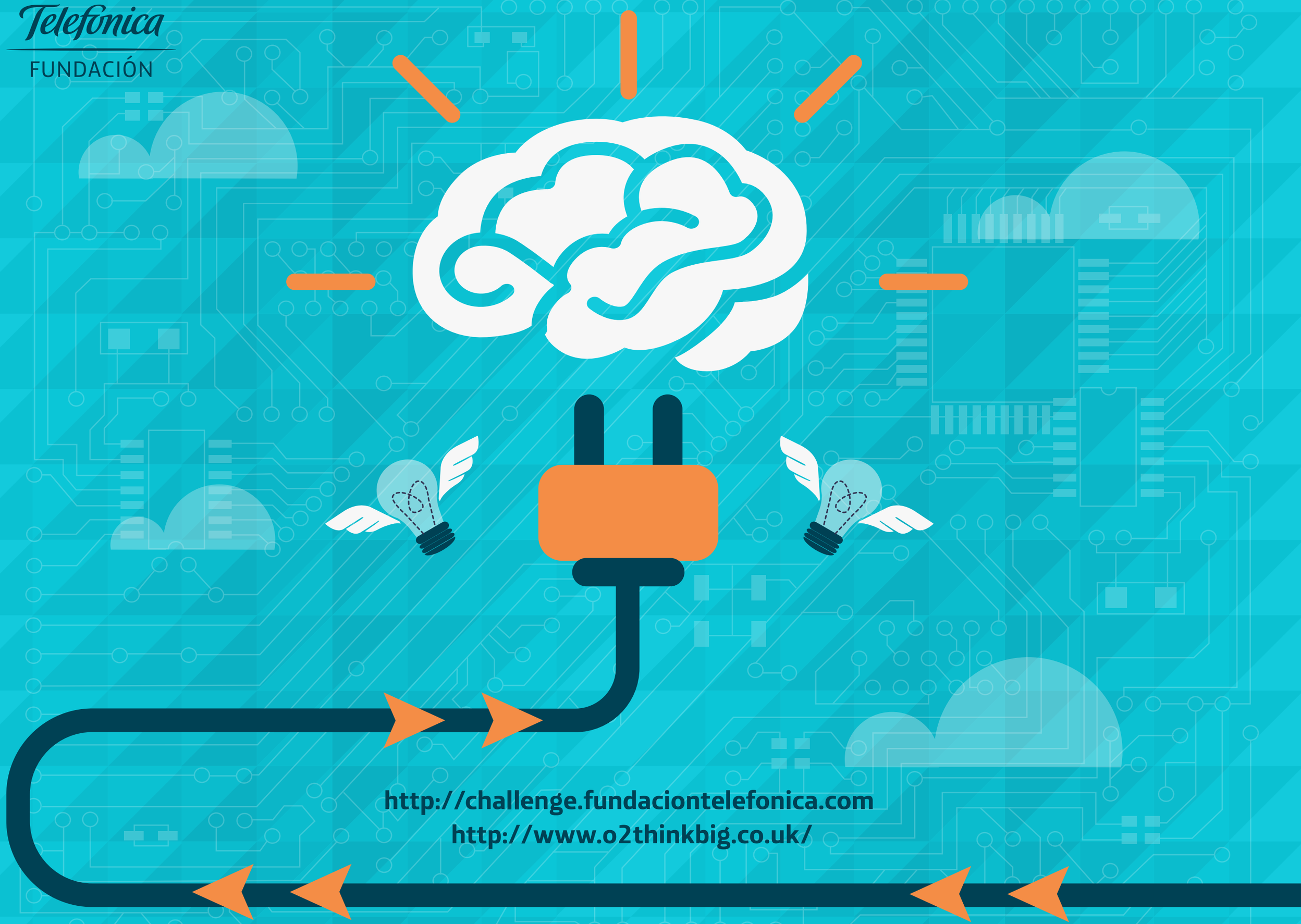

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