

THE MINISTRIES OF EDUCATION STEM REPRESENTATIVES WORKING GROUP

Brussels, 15/03/2019

Introduction

The Ministries of Education Science, Technology, Engineering and Mathematics (STEM) representatives Working Group (MoE STEM WG) is a platform of discussion and exchange for Ministries of Education regarding their STEM education policies. The overall objective of this initiative is to help lay the foundations for medium and long-term strategies and activities between Ministries of Education (MoEs) and European Schoolnet¹ (EUN) in the field of STEM education, and especially within the Scientix² project, following an agenda that addresses the ministries' priorities and main interests. EUN coordinates the working group.

MoEs are responsible for appointing the members of the MoE STEM WG. The kick-off took place in March 2016 and set the first topics and actions of the working group. Since then, the MoE STEM WG has met three times more: Nov 2016, Oct 2017 and Dec 2018.

22 Ministries of Education from 21 countries have confirmed their participation and appointed a STEM representative as of 15/03/2019: Austria, Belgium (Flanders), Belgium (Wallonia), Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Israel, Italy, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, Serbia, Slovakia, Spain and Turkey.

Confidentiality level of this document: PU = Public.

Priorities of the working group

The main priorities in STEM education indicated by the MoE STEM WG are:

- Priority 1.** The importance of supporting primary schools with the teaching of STEM.
- Priority 2.** The limited information on STEM careers.
- Priority 3.** Results from projects presented by teachers and teacher collaboration as a way of sharing results with policy makers and among themselves.
- Priority 4.** Getting leading schools to work together and share expertise.

¹ European Schoolnet (EUN, <http://eun.org>) is a network of 34 European Ministries of Education, based in Brussels, Belgium. As a not-for-profit organisation, EUN aims to bring innovation in teaching and learning to all its key stakeholders: Ministries of Education, schools, teachers, researchers, and industry partners.

² Scientix (<http://scientix.eu>), the Community for Science Education in Europe, promotes and supports a Europe-wide collaboration among STEM teachers, education researchers, policymakers and other STEM education professionals. Scientix has been running since 2010 organizing teacher-training activities, dissemination conferences and events, and supporting the exchange of knowledge and experiences in STEM Education via its portal, publications and events. Scientix is funded by the European Union's Horizon 2020 research and innovation programme, and coordinated by European Schoolnet.



- Priority 5.** Supporting exchanges in the working group.
- Priority 6.** Scientix should support the federation or cohesion (dissemination) of national initiatives.
- Priority 7.** Ways to make research results more accessible to teachers.
- Priority 8.** How to mainstream innovative practices, validation and piloting from different initiatives.
- Priority 9.** Integrated STEM teaching and learning with a special focus on: 1) transversal themes; 2) secondary education and VET; 3) addressing pre-service and initial teacher training; 4) whole school as a learning ecosystem)

The first eight priorities were the result of the 1st meeting (Mar 2016), and reconfirmed in subsequent meetings. Priority 9 was added by the Ministries of Education during the meeting in Dec 2018.

Key results from the last meeting organized (Dec 2018)

- The main priorities highlighted during the kick-off of the MoE STEM WG were re-confirmed during the Dec 2018 meeting and priority 9 was added to develop an integrated STEM teaching and learning framework.
- The importance of STEM in primary education was highlighted during the meeting and a strategic partnership proposal about primary education and didactics could be submitted in either 2019 or 2020.
- The MoE STEM WG appreciated the collaboration with industry in activities like the STEM High Level Event planned for Malta 21-22 March 2019, and Scientix should be part of it.
- Further collaboration with the Interactive Working Group about the use of FCL / space for teaching in the area of STEM Education should be developed in 2019.

Support from Scientix 3

The Ministries of Education of the members of the MoE STEM WG also act as Scientix National Contact Points. In this role, they organize joint national / Scientix events depending on their priorities and needs at the national level³. An example of activities organised or planned at national level include:

- **Austria:** STEM tracks organised within several Education conferences (autumn 2018 and beginning 2019).

³ In countries where no MoE STEM representative was appointed at the beginning of Scientix 3, and therefore other organizations were selected (on the basis of a call for proposals) to act as National Contact Points for Scientix, these organizations are the ones in charge of identifying the activities to co-finance at national level. The countries and organizations in this situation are Bulgaria (IMI-BAS), Croatia (CARNet), FYRO Macedonia (Friends of Education), Italy (INDIRE), Latvia (University of Latvia), Poland (Institute of Geophysics, Polish Academy of Sciences), Romania (University of Bucharest), Serbia (Centre for the Promotion of Science) and Slovenia (National Education Institute Slovenia).

- **Belgium (Flanders):** Participation of 13 representatives identified by the Flemish Ministry of Education to attend the STEM High-Level Event 2019 which will take place in Malta on 21 to 22 March 2019.
- **Czech Republic:** Scientix National conference for STEM teachers and seminars for STEM teachers planned for 15 and 16 of February.
- **Estonia:** Estonian national Scientix conference planned for 28 Feb – 1 Mar 2019.
- **Finland:** Seminar for experts in the pedagogy of natural sciences and mathematics and for persons responsible for teacher training (Apr 2018).
- **France:** Scientix STEM national conference (16 Jan 2019).
- **Greece:** Greek Scientix National Conference with over 200 participants (Sep 2018).
- **Hungary:** 18 events would be to bring the international aspects of STEM education to national teachers in Hungary using Scientix (planned for autumn 2018 and Feb 2019).
- **Israel:** Scientix national conference (Dec 2017).
- **Italy:** A number of workshops and trainings organised.
- **Lithuania:** a number of workshops and exhibitions (done) as well as study trips (planned autumn 2018).
- **Luxembourg:** Participation of 10 teachers and heads of schools to the STEM High Level Event in Malta on the 21st-22nd of March 2019.
- **Malta:** several workshops and seminars on STEM education organised.
- **Portugal:** Portuguese Scientix national conference (Sep 2018).
- **Romania:** Romanian Scientix conference organised (autumn 2017).
- **Serbia:** Serbian Scientix national conference planned for 22 – 23 Feb 2019.
- **Slovakia:** Seminar for teachers on STEM examples and methodological considerations for implementation the new curriculum (autumn 2018).
- **Spain:** Spanish Scientix national conference organised (2 – 3 Feb 2019).
- **Turkey:** 35 STEM workshops organised across the country.

Other activities organised during Sep – Dec 2018

These are a few examples of activities organised with and for the MoE STEM WG members:

- **[Event] Scientix/eConfidence Experts’ seminar “Evidence-based development of serious games for the educational sector: challenges and perspectives”** (12 Sep 2018) – MoE Participation from: Romanian, Lithuanian, Hungarian, Estonian and Maltese. See: <http://www.scientix.eu/live/workshops/serious-games-seminar-2018>
- **[Publication]** MoE representatives commented on the **STEM Alliance / SYSTEMIC Teacher Placement guide for companies**. The guide is addressed to businesses and industry sector organizations engaged in Corporate Social Responsibility programmes

that support STEM education. In this guide, we emphasize the collaboration with the educational authority of the country where the teacher placement is taking place. See: http://www.stemalliance.eu/documents/99712/2405267/STEM_Teacher+placement-guide-for-companies.pdf

- **[Research] Scientix observatory STEM Education Policies** in Europe Policy report published with the support of Texas Instruments. MoE contributions received from Austria, Belgium, Denmark, Spain, France, Greece, Hungary, Italy, Lithuania, Malta, Portugal, Romania, Slovakia and Turkey. See the final publication: http://www.scientix.eu/documents/10137/782005/Scientix_Texas-Instruments_STEM-policies-October-2018.pdf
- **[Research] Scientix observatory STEM practices in Europe** report draws on the analysis of 3,780 responses (representing over 4,500 classes) to a STEM Education Practices Survey, answered by educators in 38 European countries. Its aim is to provide a grassroots, European-wide perspective on how STEM teachers organise their teaching, in terms of resources and pedagogical approaches used, on the current state of teachers' professional development and support, and on their opinions and attitudes, particularly in relation to their school environment and their openness to cooperation with STEM industries. The research was carried out by Scientix with the support of Texas Instruments. The final publication can be found here: <http://www.scientix.eu/documents/10137/782005/Scientix-STEM-Edu-Practices-DEF-WEB-Dec-2018.pdf> More information, as well as access to all the raw data: <http://www.scientix.eu/observatory/stem-education-practices-europe>

Upcoming activities

The Ministries of Education STEM representatives have been invited to:

- The **STEM High-Level Event 2019** (Malta, 21 - 22 Mar 2019). ~100 MoEs, companies and other STEM stakeholders, will analyse and promote the importance of the cooperation between industry and MoEs in the area of STEM education. Event by invitation. MoEs from MT, BE(nl), BE(fr), CZ, DK, FI, GR, HU, IT, LT, LU, PT, RO, TR, AT and ES attending, and 17 companies: Cisco, Transport Malta, Texas Instruments, Ineos (EPCA), Repsol, DELL, LEGO Education, Samsung Electronics, Makeblock, Microsoft, Oracle, Jobiri, EPCA, Amgen, IBM, DOW and GSMA
- The **SHARING INSPIRATION 2019: The Power of Realization conference** (Brussels 28 Mar 2019). Around 100+ education stakeholders from across Europe will share their viewpoints and experiences on successful STE(A)M education. PT, PL, GR and AT MoEs to attend. Open to all via <https://www.eiseverywhere.com/sharinginspiration2019>

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