STE(A)M IT 2ND CO-CREATION WORKSHOP – SUMMARY

On Friday October 2nd, 2020, the STE(A)M IT project organized its 2nd co-creation workshop. **The 60 participants attending included representatives from 6 companies** (Airbus Foundation, GSMA, Sissa Medialab, Texas Instruments, Transport Malta and LEGO Education) and **14 Ministries of Education** (from Check Republic, Denmark, Spain, Georgia, Greece, Croatia, Hungary, Italy, Luxemburg, Malta, Poland, Portugal, Romania and Turkey), as well as 8 **experts in STEM Education**, 5 **researchers** and 15 **teachers**. All participants had the opportunity to discuss and exchange on the status and development of the STE(A)M Integrated framework and the enrichments of its various components.

Dhr. Jessica Niewint Gori from Indire, kicked off the day by explaining the ingredients needed for the composition of a STE(A)M IT Integrated Learning scenario. The STE(A)M IT Integrated learning scenario is a teacher's detailed description of the course of instruction or "learning trajectory" for a lesson, a guide and a document that is continuously improved and updated by the teacher. Each lesson needs to combine at least three subjects, with two of the subjects being STEM and the third subject being a non-STEM subject. The lesson plan is about designing educational activities that facilitate deep learning to enhance 21st century skills such as critical thinking, collaboration, communication and creativity and divergent thinking. Designing a path based on methodologies such as Problem, Project and Challenged
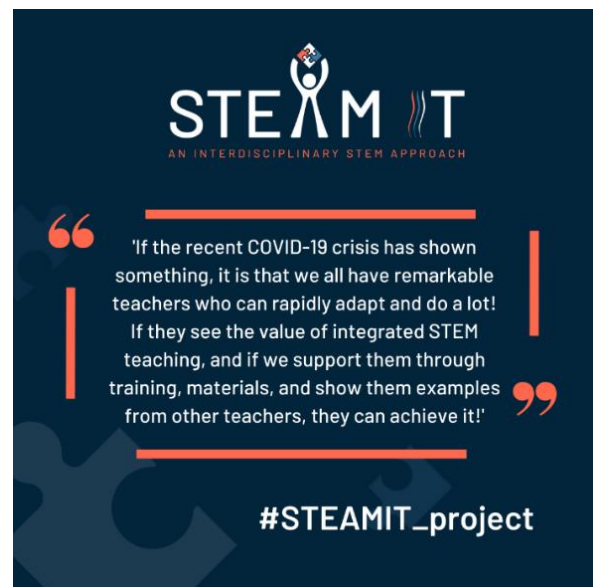
Based learning allow to incorporate problem-solving, inquiry and design-based learning into the learning activity taking care of real-world challenges in an authentic context. **Raluca Maxim, User Experience Researcher** added the idea that social-emotional learning elements can be added in all learning scenarios to cultivate respect, empathy, inclusion, collaboration, ethical responsibilities, conflict resolution and acceptance.

Two primary teachers (**Ana Maria Louro** from Italy and **Ivana Gugić** from Croatia) and two secondary teachers (**Preeti Gahlawat** from Sweden and **Carmelita Cippolone** from Italy), all members of the STE(A)M IT pilot teachers group, presented their learning scenarios, including examples of the organised activities and the students' learning products. Students' work varied and their outputs included drawings, models, digital designs, graphs and even a garden. Here **James Serra**, from NHL Stenden shared a video in which student teachers are teaching vocational students about sustainability, debating, construction and wind turbines.

Among the challenges that teachers faced during their implementations, the additional technological integration needed due to the Covid-19 crisis, has also been presented. Carmelita Cippolone explained how due to lockdown imposed in Italy at that moment, her learning scenario had to move completely online. Extra implementation time had to be foreseen and content adaptations had to be made. However, students' motivation was high, and the teachers involved enjoyed the collaboration and the variety of activities.

On the policy side, **Katarina Grgce from the Croatian Ministry of Education**, congratulated teachers on their efforts and complimented their learning scenarios. In terms of readiness, and as the Covid-19 crisis proved, there are teachers who are ready to adopt new methodologies. Once the added value of STE(A)M integrated learning is presented to them and support, guidance and training are offered, then more and more teachers will embrace this approach.

The importance of STEM careers and the need to support teachers into integrating the most up to date and relevant information on skills and competences needed by industry, has also been discussed.

Stephan Griebel **from Texas Instruments** underlined the need for education to approach the 21st century skills in a holistic way. Integrated teaching and learning can play an important role in this direction while the creativity of STEM subjects i.e. Physics and Mathematics, offer many opportunities for integration. **Laetizia Cinganotto from the Italian University Line (IUL)**, added that educators should foster and pursue collaboration with industry in order to raise students' awareness on what is going on outside school and the competences they need in order to pursue STEM careers. On this point, it is important to highlight the new STE(A)M IT Repository of STEM Jobs Profiles launched following the request from STEM Alliance partners and Ministries of Education STEM representatives. The tool supports teachers and career advisors in their mission of motivating pupils to study STEM subjects and undertake STEM-related careers. It provides them with resources, such as videos, podcasts, and career sheets, created with the support STEM professionals.

Achilles Kameas from the STEAMonEDU project and **Irene Pizzo** from the CHOICE project also joined the discussion. Their two projects are also working on STE(A)M Integrated teaching and learning and are regularly exchanging with STE(A)M IT. STE(A)M IT and STEAMonEdu both strive to define the competences of STE(A)M educators by investigating and engaging educators of formal and non-formal education. CHOICE differentiates by taking into account the needs of the students in STEM and STE(A)M Education and actively involves them along with educators in Creative Leadership Teams keeping them close to the labour market and STEM/STE(A)M career oriented approaches. Many common elements have been identified under the projects' common goal, and the projects will continue to work closely to promote each other activities i.e. MOOCs, trainings but to also complement each other's work with specific components (i.e. STE(A)M practice evaluation framework by STEAMonEDU and Framework for reforming STEM curricula by Choice).

Dr Tasos Hovardas from the University of Cyprus took the floor to explain the advantages of using learning products to evaluate Integrated STE(A)M teaching. Learning products may vary in nature and range from spreadsheets to drawing or physical models. Nevertheless, the development of learning products allows for hands-on practice of what students have been taught and their quality indicates their level of understanding, knowledge acquired, and research they did. Learning products can also connect to with the acquisition of specific skills and competences learning. This session opened a discussion on whether "setting general objectives and also personal interest objectives, would be good" with the consensus that "it would be great if the "general learning goal" could be defined, but how to reach it could be personalised, depending on the preferences / strengths of each student".

The capacity building programme, that STE(A)M IT will be releasing soon, with the support of Scientix, via the [European Schoolnet Academy](#), was presented by **Eleni Myrtsioti from European Schoolnet**. Two MOOCs, Integrated STEM Teaching for Primary School Teachers and Integrated STEM Teaching for Secondary School Teachers, will start on October 26th 2020, aiming support teachers who are interested in learning how to go from teaching isolated Physics, Chemistry, Biology, Science, Technology, Engineering and Mathematics classes, to a real integrated STEM teaching of these topics, not only among themselves but with all other disciplines.

Finally, **Elena Vender** from the International STEM Awards mentioned that "[the teachers] are facing a great challenge [and] it is going to be difficult [to implement integrated STEM teaching] because [many] teachers are not ready and in many countries they do not speak English and do not have technologies awareness. But the network [that STE(A)M IT is working with] is fundamental to be finally successful".

More information

- The presentations shared during the workshop can be found at:

http://steamit.eun.org/2nd-co-creation-workshop/

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