

Co-funded by the Erasmus+ Programme of the European Union

## IMPROVING STEM EDUCATION ACROSS EUROPEAN SCHOOLS **SUSTAINABILITY PLAN**





# PROJECT PARTNERS



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# SUSTAINABILITY PLAN

The sustainability strategy shows a long term perspective for the project outputs, how they are going to be exploited and how they will create long term impact on the target groups defined. The sustainability strategy analyses the different possibilities to maintain and update results and gives a clear picture of necessary activities to ensure that the main project outputs are used in a long term perspective and the long term impact targets and indicators are met. In summary, exploitation and sustainability aim to achieve the following objectives:

- To promote and raise awareness with regards to the project contents and developments
- To provide information on the quality, relevance and effectiveness of the results
- To successfully transfer the results to appropriate decision-makers in order to achieve their sustainable promotion and support
- To convince individual end-users to adopt and/or apply the results, also after the end of the project

The project partners have the potential to multiply, disseminate and exploit the results of the project, additionally, policy and decision makers, whom the outputs were disseminated, also have the potential to liaise with the project partners and/or exploit the results and tangible outcomes of this project.

AISR will develop a strategy for transferability to other schools and teacher CPDs. All project activities were designed with transferability in mind, as we wanted to understand the common underlying issues regarding teacher CPD and teaching STEM in post-primary schools to establish how they can be used to enhance competence and skill transferability. Therefore, we managed to extend the uses of the materials beyond the four partners, which we hope will lead to a much wider expanded use.



## **1.1 EXPLOITATION OF PROJECT'S RESULTS AFTER THE END OF THE PROJECT**



The reason to exploit the project's results after the end of the projects are as follows:

- To ensure the sustainability of the project and its results after the end of the funding period
- To provide recommendations and guidelines for the continuous use of the project's results also after the end of the project
- To promote the outputs to a large public
- To increase the impact of the project
- To support and enhance the image of the partner organisations

The partners are committed to ensure the sustainability of the project and its results after the end of the funding period

#### IO1:

- STEM Strategy Action plan
- State of the Art Report (SoAR)
- Lesson Plans

The overarching goal of the State of the Art Report (SoAR) was to map the situation regarding:

- Challenges of teaching during COVID19,
- Current teaching methods, skills, competencies and best practices in STEM education.

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Based on the results, the partners developed STEM educational materials (Lesson plans and ecourses) for STEM teachers to improve their digital skills, competencies and to help them with professional development. **The SoAR** is based on a survey completed by 198 STEM teachers across Europe. The partners collected information about:

- Challenges of teaching,
- Current teaching and CLIL (Content and Language Integrated Learning )methods,
- Skills and competencies of teachers including digital skills, best practices in STEM education, and professional development opportunities.
- STEM teaching resources available

This thorough needs analysis of STEM teachers enabled the partners to develop **10 ready to use lesson plans** based on the 5E model for a wide range of STEM topics at both primary and secondary school level. Additionally, the results also enabled the partners to develop a STEM Strategy Action Plan, which identifies priorities arising from the State of the Art Report (SoAR).

The **STEM Strategy Action Plan** describes 5 major key drivers that were identified based on the results of SoAR. The most significant challenge survey participants identified was student engagement and motivation, hence it is the major key driver of this Action Plan. It was determined by the partners that a lot of work needs to be done on the training of teachers regarding this key driver. The other 4 key drivers were identified based on the responses for the teaching methodologies and professional development opportunities sections of the survey, namely:

- Better teaching methods,
- Teacher Training,
- Education technology and
- STEM Careers Advice.

A focus on these key drivers with the collaboration of education influencers and policy makers will allow the partners to work towards the goals of EU regarding reducing STEM skills gap and achieve real improvements.

The SoAR is available in English and in all partners' languages (Romanian, Italian, Greek, Dutch, and Turkish) and can be downloaded from the website, along with the STEM Strategy Action Plan:

#### https://improving-stem-education.eu/



All aspects and items of IO1 is significantly contributing not only to the:

- Goals of the report from the Expert Group on Science Education published by the European
   Commission in 2018
- Goals of the EU's Skills Agenda for Sustainable Competitiveness, Social Fairness and Resilience,

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but also the innovation of STEM teacher continuous professional development (CPD) as highquality, innovative and relevant CPD is an essential ingredient in making sure that teachers do the best for the learners who depend on their expertise to equip them with the knowledge and skills they need for the next stage of their learning and their lives.

Educators must be continually learning and building their expertise, without this, high-quality educational outcomes cannot realistically be realised. Thus, IO1 is innovative as the focus is on relevance, regarding innovation in CPD. The partners reflect on the needs, challenges and content of current materials delivered by undertaking extensive research and created a high-quality educational materials for all.

Relevance is a powerful driver for innovation in CPD, plus IO1 is sustainable and cost-effective as it is freely available on the website either in digital format or for download in six languages. The latter ensures transferability of IO1.



#### IO2: e-learning/e-courses

The project website includes an elearning area, where target users can register and complete 25 ecourses, which serve as continuing professional development (CPD).

Additionally, teachers can implement the newly learned activities into their lessons. These CPD teacher training courses along with the online e-learning platform have significantly contributed to online learning innovation and impact as they contribute to strengthen teachers' role and the role of others in the pursuance of excellence and achievement across schools. The in-depth and well-researched suite of materials, and activities:

- Replace time- and place-based teacher training;
- Create low-cost CPD opportunities;
- Adopt competency-based education;
- Emphasise digital technologies;
- Offer pioneering subject matter based on STEM teachers' needs

Online learning innovations used in the e-course CPDs include case studies, problem-based learning, inquiry-based learning, and project-based learning, videos, quizzes, classroom activities and other learning resources. Furthermore, the innovativeness of the e-courses include the fact that they do not follow the traditional school curricula rules and layout, the courses are highly interactive as opposed to using just text and theoretical descriptions.

The e-courses are based on the results of SoAR (IO1). To ensure transferability, the e-courses are available in English and in each of the partner languages. The number and content of courses were based solely on the results of SoAR:

- Innovative Practices for engaging STEM teaching
- Inspiring young people in STEM
- Differentiating for learning in STEM teaching
- How to teach coding in your classroom Introduction to engineering mathematics with applications
- Opening minds to STEM Careers Technology enhanced learning
- Gaming Literacy and Learning
- Introduction to Biochemistry.

The e-courses are available on the website: https://e-learning.improving-stem-education.eu/

#### **IO3: STEM Mentoring Scheme**

Objectives of the virtual STEM mentoring scheme:

- Raise students' awareness of the wide range of STEM jobs
- Help students develop a sense of belonging in the new social world of STEM
- Raise students' awareness of the importance of STEM jobs
- Increase diversity in STEM



### **Mentoring Scheme**

The virtual STEM mentoring scheme will:

Raise students' awareness of STEM jobs
 Help students develop a sense of belonging in the new social world of STEM

Students will get the apportunity to learn about the STEM mentors' profession, day to day activities, responsibilities, qualifications and/or experience required to secure that particular job Therefore, students will gain a deeper understanding of the type of work involved, what skills are required and an insider's view of what real success means within the industry. Mentors are also likely to have useful tips on how to break into and succeed into a specific career.

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Students had the opportunity to learn about our STEM mentors' professions, their day to day activities and responsibilities; and the qualifications and/or experience required to secure that particular job. Students gained a deeper understanding of the type of work involved, skills required and an insider's view of what real success means within the industry. Mentors also provided useful tips on how to succeed in a specific career.

As innovation is critical to economic growth and STEM education encourages a generation of innovators who have the potential to change the world. This output greatly contributes to closing the STEM skills gap that exist not only in Europe but worldwide.

By 2029, the STEM workforce is projected to grow by 8%, compared with 3.7% for all occupations. This high demand over the next decade is due to continued growth in the digital economy. As the scheme promotes a wide range of STEM jobs and 52% of the mentors were female, the output also contributes to increasing diversity in STEM. These empowering women shared with students how they started their career, what a typical day in their life looks like, which was highly motivating and increased interest in pursuing a career in STEM.

Overall the output greatly contributes to innovative careers advice as STEM is necessary for growing the economy and staying globally competitive.

The database of the virtual Mentoring Scheme, including the mentor profile cards and the recordings can be found on the website: https://improving-stem-education.eu/mentoring-scheme/

### **1.3 TARGET GROUPS WHO WILL BENEFIT FROM** THE PROJECT'S OUTPUTS IN THE FUTURE



STEM providers, teachers and trainers

Learners

Schools



Career Advisors



**Educational Policy Makers** 



Organizations that can enhance the impact of the project in other ways



## **1.4 RESPONSIBLE PARTIES FOR THE DISSEMINATION ACTIVITIES AFTER THE PROJECT HAS FINISHED**

Each project partner is responsible for their national sustainability plans including the involvement of stakeholders. AISR is responsible for the overall sustainability of the project results and will guide the sustainability activities and will provide recommendations and guidelines for the continuous use of the project's results. The partner organisations have at their disposal excellent networks and contacts and have rich experiences in the field of STEM education and training. As the partners will use the project outputs for exploitation activities after the end of the project, dissemination of results via such networks is easily sustainable as it can be incorporated in regular network correspondence.

## **1.5 EVALUATION OF THE SUSTAINABILITY**

Continue the documentation of the dissemination activities the same way i.e. type of activity, lists of participants, presentations, agendas, meeting minutes, pictures, copies of documents such as emails, articles or newsletters. The documentation should be based on the use of quantitative and qualitative indicators. Documentation for dissemination can be used also to report exploitation activities. In case there are exploitation activities other than dissemination, the partners can report directly to AISR by email.

### **1.6 PLANS FOR THE FUTURE**

The STEM project produced extremely useful outputs and outcomes, which can be and will be further developed by AISR. The CPD materials will be further developed to enhance the educational impact of it.

The materials produced have been implemented in AISR's STEM teacher training, and in workshops for students, additionally, they are being used for other projects that are related to STEM and career guidance. The opportunity also presents itself in the forms of:

- Further developing new STEM curricula
- Further developing CPD materials for STEM teachers
- Further research based on feedback of stakeholders

## **1.6 PLANS FOR THE FUTURE**

The project partners discussed and agreed on the following ideas for a sustainable use of the project outputs after the end of the funding period on European and national level:

- Link to European STEM networks
- The project's results will continue to be disseminated via ERASMUS+ Outcomes portal
- All partners have excellent contacts and links to other European projects and institutions which will be used for continuous dissemination amongst European projects and networks.
- Participation in conferences
- Presentation of the project outcomes in the conferences and workshops of relevant European networks and platforms
- Active promotion of the outputs amongst the partnership and its existing and future stakeholders
- Continuous marketing actions for the further dissemination of the project results
- Further development of the teacher CPDs and Lesson Plans

#### Topics for a future co-operation amongst the project partnership

The partners discussed about the following topics for a future cooperation:

- Continuation of testing and improvement of the project's results
- Dissemination of existing results to other developing countries
- Influence on European policy makers

#### Information on networks

The partners identified National and European Networks that might have potential to multiply, disseminate or exploit the results of the project. The full list of these partners can be fund <u>here.</u>

# CONTACT



## Contact

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"This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for anyuse which may be made of the information contained therein."



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