

Deliverable 3.2

STEAM Innovation Best Practices Guide



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Abstract	Deliverable 3.2 presents the Mentorship Programme Best Practices Guide developed within the framework of the STEAM Innovation project (funded by the Creative Europe programme). The document establishes an operational framework for connecting formal STEAM education with the Cultural and Creative Industries (CCIs), applying Inquiry-Based Learning (IBL) and Design Thinking methodologies (Feel, Imagine, Create, Share cycle). Based on practical implementation across four countries, Greece (Science Theatre), Cyprus and Italy (Music and Audiovisual), and Portugal (Making & Tinkering), the guide documents the impact of holistic mentorship on empowering teachers and students, synthesizing common findings and a structured roadmap for the sustainable replication of these practices in the educational ecosystem
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Executive summary

Deliverable 3.2 serves as a practical Best Practice Guide for the STEAM Mentorship Programme implemented within the STEAM Innovation project, establishing an operational framework to strengthen formal STEAM education with the Cultural and Creative Industries (CCIs) and technical domains. Grounded in a holistic approach that offers not only professional development opportunities for educators but tailored mentoring and support sessions, the selected best practices promote innovation towards meaningful student-centered STEAM approaches. Guided by foundational principles, Inquiry-Based Learning, Design Thinking, interdisciplinarity, inclusion, and community engagement, these practices portrait the successful implementation of the STEAM Innovation project across Greece (STEAM Through Theatre), Italy and Cyprus (STEAM Through Music and Audiovisual Media), and Portugal (STEAM Through Making and Tinkering).

To serve as an accessible and coherent reference, this document unfolds in a logical narrative across five main sections:

- Section 1 presents an introduction to the mentorship programme and the best practices;
- Section 2 describes the core principles of the STEAM Innovation Mentorship programme
- Section 3 describes the methodology and outcomes achieved in each country and describes each country's best practices: Greece, Italy, Cyprus, and Portugal.
- Section 4 reflects on common findings and describes the roadmap for replication.
- Finally, Section 5 summarizes the overall conclusions of the program.

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1 Introduction

The interdisciplinary integration of Science, Technology, Engineering, Arts, and Mathematics (STEAM), promoted by the STEAM INNOVATION project, adopts an educational approach that encompasses experimentation, creativity, innovation, and collaboration. Within this structure, Task 3.4 (STEAM Mentorship Programme) was designed to offer tailored support to educators and students and, ultimately, to build meaningful connections between formal education and the Cultural and Creative Industries (CCI).

The STEAM Innovation mentorship programme consisted of several online and onsite sessions, complemented by regular communication with educators. It was implemented in the four consortium countries over a period of five months, with the main objective of supporting educators and students to translate their innovative ideas into real-world applicable projects, while developing scientific thinking, creativity, artistic expression, maker and digital competencies, and entrepreneurial awareness. These sessions encouraged participants to explore contemporary social challenges, sustainability, inclusion, and emotional well-being through direct involvement with the mentors' professional practices, taking advantage of their advice and expertise.

During the mentorship programme, students, teachers, and a diverse range of creative industry professionals (theatre professionals, musicians, creators, designers, digital creators, specialists in maker workshops, and audiovisual specialists) developed a student-centred co-creation approach for active, dynamic learning, which is the core of Task 3.4. In this approach, students moved from passive recipients of knowledge to active learners engaged in collaborative and mixed teams with mentors and their teachers to co-create and execute their projects. This collaborative approach ensured that the co-created outputs included distinct cultural, social, educational, and entrepreneurial value, materialising as theatrical performances, artistic artefacts, multimedia productions, digital content, innovative products, and functional STEAM prototypes. The best practices also emphasized the active and continuous involvement of educators along with their students throughout the entire mentorship process.

The direct participation in workshops, rehearsals, and production sessions allowed teachers to receive methodological guidance and practical tools from the mentors. This co-facilitation model allowed educators to progressively acquire the necessary confidence and competencies to autonomously implement innovative STEAM methodologies with future students, which ensured the long-term sustainability and transferability of the project for the educational community in general.

Considering the successful results, this document is structured specifically as a Best Practice Guide focused on the success of the mentorship programme among the four countries. Deliverable 4.2 contains the underlying empirical evidence, detailed field evaluation, and complete data report supporting these practices.

2 The STEAM Innovation mentorship programme

2.1 The holistic approach and the promotion of innovative practices.

The mentorship program within the STEAM Innovation project consisted of a holistic approach that combined professional development opportunities for educators, complemented by tailored support in the format of on-site and online sessions as well as regular communication and support. The sessions targeted not only educators but the students, offering support and recommendations for the students' projects. It allowed student teams to go from their initial encounter with a scientific theme to a publicly presented, community-embedded artistic product.

The Mentorship sessions promoted the implementation of the three STEAM Innovation modules (Learning STEM through Theatre, Music and Making&Tinkering), framed in the integration of Inquiry Based Learning and Design Thinking:

- **Inquiry-Based Learning (IBL):** Students become active investigators, asking in-depth questions, gathering evidence, and arriving at evidence-based conclusions, rather than passively receiving information.
- **Design Thinking (DT):** Structured through the four iterative phases of Feel, Imagine, Create, and Share (adapted from the OSOS Open Schools for Open Societies project).

2.2 The Core Principles of the STEAM Innovation mentorship approach

To ensure the necessary support and successful promotion of innovation in STEAM education through the participating schools, the following principles were followed:

- **Empowering teachers:** The main goal of the mentorship process was to support teachers in the innovation process. While moving beyond the comfort zone can be scary, receiving the necessary support makes it possible and rewarding.
- **Student Agency:** Mentoring sessions encourage student agency. Themes of the projects are chosen by the students rather than assigned by educators. Mentors support, challenge, and refine student ideas without imposing solutions.
- **Interdisciplinarity:** Mentoring sessions gather educators from different domains. STEAM subjects are structural partners. Every artistic decision requires a STEM rationale, and every STEM concept must find an expressive form of art.
- **Cultural Heritage and Sustainability as Content:** Local CCI partners are invited to support the mentorship programme. Local cultural heritage and environmental sustainability are not mandatory themes but genuine content dimensions. Students connect their STEAM inquiry to their cultural context and to the sustainability challenges of their communities.
- **Inclusion:** Mentorship strategies are flexible and adaptable, allowing an approach tailored to teacher and student needs.
- **Diversified mentoring approach:** Integrating training with mentoring and on-line and on-site support, according to the needs of the target audience.
- **Real Audiences and Public Sharing:** Mentorship includes support on the sharing phase. Projects conclude with public performances or community exhibitions. Presenting to authentic audiences transforms student learning into a meaningful process with active citizenship and community contribution.

While following these principles, each partner tailored the approach to their contexts, resulting in slightly different approaches. In the following sections the implementation in each country is described as well as the identified best practices.

3 The STEAM Innovation best practices

The practical implementation of the mentorship programme across different countries showed how successful such programmes can be. This approach unfolded with three different focus areas: science theatre in Greece, musical and audiovisual expression in Italy and Cyprus, and tinkering and maker education in Portugal.

The following sections describe the best practices achieved in each country.

3.1 Learning STEM Through Theatre: Best-practices from Greece

3.1.1 Methodology

The Greek implementation of STEAM Innovation was organised as a structured mentorship and support programme accompanying teachers and school teams throughout the development of their Learning Science Through Theater / STEAM Innovation performances. The methodology combined collective professional development with personalised school-level guidance, so that each team could adapt the approach to its educational level, scientific topic, artistic direction, available resources and local school context.

The programme was aligned with the wider STEAM Innovation methodological framework, which combines Inquiry-Based Learning with the four-phase Design Thinking cycle Feel - Imagine - Create - Share. In this framework, students are not treated as passive recipients of scientific knowledge. They are supported to ask questions, explore evidence, interpret scientific concepts, make creative decisions, test ideas, produce artistic outputs and communicate their work to real audiences.

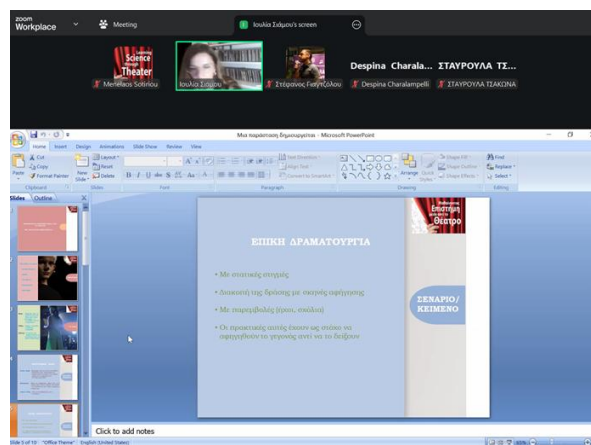
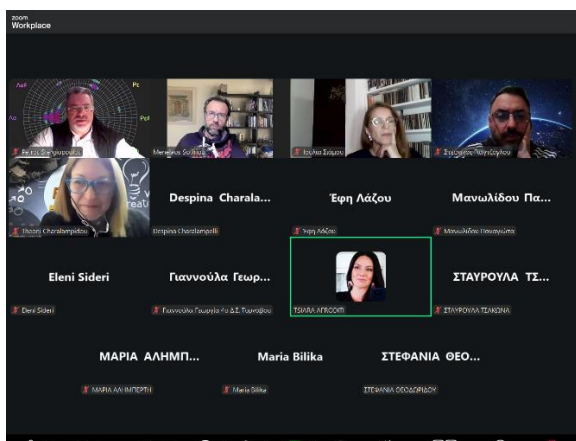
Progressive mentorship pathway

1. Teacher preparation through three interactive training workshops during the 2025-2026 school year: 10 December 2025, 28 January 2026 and 25 February 2026.
2. Selection and development of scientific themes by school teams, linked to curriculum areas such as biology, physics, chemistry, astronomy, mathematics, energy, health, artificial intelligence, robotics, technological evolution and environmental sustainability.
3. Targeted support through 15 one-to-one mentoring meetings with school units, mainly online via Zoom, involving responsible teachers and, in several cases, students.
4. Creative development of scripts, movement, music, visual material, costumes, stage ideas, dissemination resources and final performances.
5. Public presentation through the Learning Science Through Theater Festival 2026 and documentation in the Greek Student Project Report and STEAM Innovation Anthology.
6. Repackaging of selected outputs as reusable educational resources that can support wider uptake, teacher training, school festivals, exhibitions and future classroom implementation.

Teacher training as capacity building

The three teacher workshops were interactive training spaces rather than simple information sessions. Each workshop involved more than 30 teachers (available also here: <https://lstt.eu/epimorfotika->

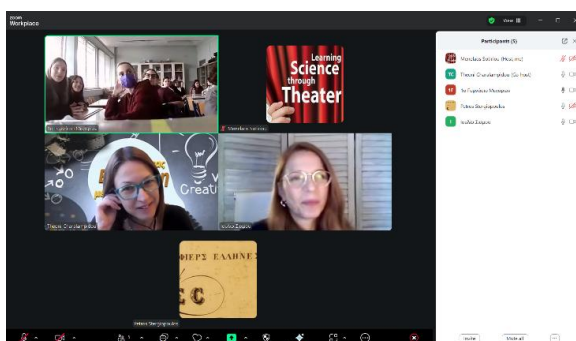
[ergastiria/](#)) and introduced educators to the pedagogical, scientific, artistic and organisational dimensions of the methodology. Teachers were supported to understand how theatrical play can become a meaningful educational tool for science learning and how science can become a starting point for creative exploration.



The training addressed the selection of scientific concepts suitable for theatrical transformation; the connection of curriculum-based science with storytelling, humour, movement, music and performance; student script development; student roles beyond acting; scientific accuracy; and preparation for public presentation. Teachers were encouraged to organise student participation across writing, acting, direction, choreography, music, scenography, costume design, sound, lighting, video, communication and dissemination.

One-to-one mentoring as implementation support

The one-to-one mentoring meetings were essential because they transformed the general methodology into specific school-level practice. The meetings supported script writing, clarification of the scientific message, character development, humour and dialogue, music and sound, direction, staging, rhythm, audience engagement and the integration of scientific meaning into the artistic form. This prevented theatre from becoming decoration around science; instead, scientific concepts shaped the action, conflict, characters and messages of the performances.





A central feature of the methodology was embodied and multimodal learning. Scientific knowledge was experienced through voice, movement, rhythm, space, image, music, interaction and performance. This was particularly useful for abstract or invisible concepts such as Coulomb's Law, mitosis, energy transformation, mathematical functions, atomic theory or artificial intelligence.

Connection with Creative Industry professionals

The updated mentorship programme adds an important connection between students and professionals from the Cultural and Creative Industries. These professionals may include artists, theatre practitioners, musicians, directors, writers, designers, communication specialists and other creative experts able to help students transform initial ideas into tangible STEAM outputs. Their role is educational and creative, not narrowly commercial. They help students think about audience, narrative, staging, visual identity, sound, rhythm, documentation, communication, testing, feedback, revision, ethical use of materials and dissemination.

In this context, the term product is understood broadly as an educational and creative output: a script, performance, learning scenario, video, musical piece, set of instructions, poster, workshop format, exhibition element or public-engagement activity. What makes such an output valuable is its pedagogical relevance, usability, accessibility, transferability and capacity to support learning in another context.

3.1.2 The STEAM Innovation modules as relevant support in the mentorship programme

The Greek mentorship programme focused on Learning STEAM Through Theatre, but it was supported conceptually by the broader STEAM Innovation modular curriculum. The project as a whole was structured around three complementary pathways: Learning STEAM Through Theatre, Learning STEAM Through Music, and Learning STEAM Through Making and Tinkering. Together, these modules demonstrate that arts, culture, technology and scientific inquiry can become mutually reinforcing forms of learning.

Module	Lead implementation	Contribution to mentorship
Learning STEAM Through Theatre	Greece - Science View	Provided the main pedagogical and artistic framework for the Greek programme. Mentoring focused on transforming scientific concepts into scripts, characters, embodied actions, music, movement, stage design and public performance.
Learning STEAM Through Music	Cyprus - Inquiry-Fuse; Italy - MateraHub	Offered a parallel model for translating scientific, mathematical or environmental ideas into rhythm, sound, composition, performance and audience communication. It reinforced the idea that artistic production can be a mode of inquiry.
Learning STEAM Through Making and Tinkering	Portugal - NUCLIO	Provided a practical model especially the lesson plans of video and sound editing and use of web studio as well as the Vector graphics design. It strengthened the understanding of tangible outputs as learning resources rather than only finished products.

The cross-module perspective is important because it prevents the Greek theatre work from being interpreted as an isolated arts activity. The theatrical performances are part of a larger STEAM Innovation ecosystem in which student-created outputs become tangible, shareable and reusable learning resources. Theatre, music and making all follow the same educational logic: students inquire, imagine, create and share outputs that connect scientific understanding with creativity, communication, collaboration and public engagement.

Educational reuse of student-created outputs

The reuse guidance developed for STEAM Innovation reframes market-oriented language into educational exploitation, reuse, adaptation, transferability and wider uptake. For the Greek theatre projects, this means that a performance can also become a reusable package: a teacher guide, scientific explanation, script excerpts, role cards, staging notes, music or sound suggestions, discussion questions, reflection prompts, assessment rubrics and licensing or consent information.

Examples from the Greek performances illustrate this reuse potential. Human biology performances such as *The Organs You Carry* can become embodied-learning scripts for body systems. Space-science performances such as *Mission to Mars* or *Uranographic Stories* can become storytelling modules for astronomy. Mathematical and physics performances can become movement-based learning activities for abstract concepts. AI and technology-themed performances can become discussion resources on ethics, innovation and society.

3.1.3 The partnerships

The programme operated through layered partnerships that connected the STEAM Innovation consortium with schools, teachers, students, creative professionals, cultural actors, families and public audiences. These partnerships are central to the programme because the methodology depends on both educational and artistic guidance as well as authentic opportunities for public sharing.

Partner / actor	Role in the programme	Added value
Science View	Coordinated the Greek implementation and supported the Learning Science Through Theater methodology, teacher workshops, school mentoring and festival presentation.	Provided methodological continuity, practical coordination and connection with the long-standing LSTT ecosystem.
Schools, teachers and students	Selected scientific themes, developed scripts and performances, organised student roles and presented final works.	Ensured student agency, curriculum relevance and authentic school-level implementation.
Creative Industry professionals	Supported narrative, artistic quality, staging, music, communication, visual identity, audience awareness, documentation and dissemination.	Helped transform student ideas into tangible outputs with educational, cultural and creative value.
Ellinogermaniki Agogi festival/community spaces and	Hosted and supported the live festival phase, giving students a real public audience.	Strengthened motivation, visibility and the public dimension of learning.
STEAM Innovation partners	Contributed the wider modular curriculum, comparative practices from music and making/tinkering, and transnational dissemination.	Connected the Greek practice to a European framework and wider uptake across countries.
Families, local communities and online audiences	Participated as audiences and stakeholders during live and online presentation moments. In one case, High School of Argroupolis, parents also took the stage after the Greek Festival and presented the same performance themselves to local audience.	Extended learning beyond the classroom and positioned students as public communicators of science.

The partnerships also reflect an Open Schooling logic. Students did not produce work only for the classroom or the teacher. They developed performances for peers, families, educators, cultural audiences and online viewers. This external audience strengthened the need for clarity, quality, scientific accuracy, communication and reflection.

3.1.4 The main outcomes of the programme

The outcomes of the Greek mentorship programme can be understood at several levels: teacher capacity, student learning, creative production, public engagement and educational reuse. The programme generated immediate outputs, such as performances and dissemination materials, but also longer-term legacy outputs, such as reusable scripts, learning scenarios and teacher-training examples.

3	15	27	100	600+
teacher training workshops	one-to-one mentoring meetings	Greek school teams	Teachers engaged as facilitators of their students	students in Greek performances



Teacher and school outcomes

- Teachers gained practical experience in applying inquiry-based and theatre-based STEAM learning, moving from the presentation of science toward student-centred science creation, interpretation and communication.
- Schools received tailored support to adapt the methodology to different ages, curricular topics, timetables, resources and artistic capacities.
- Teachers developed strategies for supporting student roles beyond acting, including writing, music, stage design, costumes, direction, technical support, video, lighting, sound and dissemination.
- The programme created examples that can be reused in future teacher training as case studies of interdisciplinary STEAM implementation.

Student learning and competence outcomes

- Students engaged with complex scientific ideas through creative, embodied and multimodal learning.
- Students developed scientific understanding together with creativity, communication, collaboration, problem solving, critical thinking, self-expression and audience awareness.
- Students experienced different forms of agency by contributing to scripts, characters, performance ideas, music, movement, visual design, technical roles and dissemination.
- Students connected science with ethical, emotional, cultural, historical and civic dimensions, demonstrating the holistic potential of STEAM education.

Creative and dissemination outcomes

- The Greek implementation produced a broad set of theatrical performances addressing biology, physics, chemistry, astronomy, mathematics, energy, health education, climate change, artificial intelligence, robotics, technological evolution and the history of science.
- The Learning Science Through Theater Festival 2026 gave students a real audience through a dual format: live performances in Athens and online video presentations.
- The festival and supporting materials increased visibility for the methodology and enabled schools from across Greece to share work with a broader educational community.
- The final outputs can become part of the STEAM Innovation legacy through resource packages, teacher guides, scripts, videos, discussion prompts and assessment/reflection tools.

Educational reuse outcomes

A central outcome of the updated programme is the move from one-time performances to reusable educational outputs. Selected projects can be documented using a common package structure: project identity, educational rationale, curriculum links, implementation guide, resource files, assessment tools, adaptation notes, licensing and dissemination ideas. This makes each output easier to understand, compare, adapt and implement in new contexts.

3.1.5 What makes this a best practice

The Greek mentorship programme can be considered a best practice because it shows how a structured support model can help schools transform scientific learning into creative, public and reusable STEAM outputs. It is not only a festival model and not only a teacher-training model. It combines methodology, mentoring, artistic support, student agency, public sharing and educational reuse into one coherent pathway.

Best-practice dimension	How it appears in the Greek mentorship programme
Impact	The programme supported 27 Greek school teams across 13 regions, involving more than 600 students and 100 teachers. It produced performances that made complex scientific ideas visible, engaging and emotionally meaningful.
Feasibility and applicability	The methodology can be adapted to different ages, school types, topics and resource levels because it uses flexible roles, teacher workshops, online mentoring and modular creative outputs.
Shared experience	Teachers and students were supported through collective training, personalised mentoring, creative development and public sharing, creating a strong sense of ownership and participation.
Student agency	Students contributed as writers, performers, directors, designers, musicians, technical assistants, communicators and creative decision-makers.
Authentic STEAM integration	Science shaped the narrative, characters, movement, music and staging; the arts were used as a mode of inquiry and communication, not as decoration.
Partnership and Open Schooling	The programme connected schools with Science View, CCI professionals, festival spaces, families, communities and online audiences.
Transferability and legacy	The outputs can be repackaged as reusable scripts, learning scenarios, role cards, guides, videos, rubrics and teacher-training examples.
Inclusion and multiple roles	The theatre-based format allowed students with different strengths to participate through performance and non-performance roles, supporting inclusive engagement.

Replicability conditions

For another school, region or country to replicate this best practice, the following conditions are important: a clear STEAM methodology, at least one initial teacher training phase, continued mentoring after training, student choice and agency, multiple student roles, support from artistic or creative professionals, structured preparation for public presentation, and a plan for documenting outputs for reuse. The practice does not require every school to reproduce the same theatrical format; it requires the preservation of the underlying logic: inquiry, creativity, mentoring, making, sharing and reflection.

3.2 Learning STEAM Through Music: Best practices from Cyprus

3.2.1 Methodology

The Cyprus implementation was led by Inquiry Fuse and followed the STEAM Innovation pedagogical framework as established in D2.2 and D2.3, to support the implementation of the Learning STEAM through Music. The implementation targeted two distinct school profiles simultaneously.

The implementation engaged two schools representing different educational levels, contexts, and geographic locations: Pascal International School in Nicosia and the Secondary School of Panagia Theoskepasti in Paphos (a state secondary school located in an isolated area where the majority of students come from migrant backgrounds). In



total, the Cyprus implementation engaged 36 students and 7 teachers.

Both schools were identified and approached directly by Inquiry Fuse on the basis of their suitability for the module, their interest in interdisciplinary and creative approaches to science education, and the project's inclusion targets. The Secondary School of Panagia Theoskepasti was specifically selected because of its student profile, a majority of students from migrant backgrounds with fewer opportunities to participate in projects of this nature, in alignment with the project's commitment to reaching underrepresented groups.



Three full-day on-site workshops were delivered at the participating schools at the start of the implementation period, introducing teachers to the Learning STEAM Through Music module, the pedagogical framework, the digital tools, and the mentorship process. Teachers experienced the methodology as learners themselves, composing with Chrome Music Lab, experimenting with BeepBox, generating AI-assisted music through Suno, before guiding their students through the same process. Following the workshops, students were introduced to the module and began their own inquiry journeys. At secondary level, students engaged in data sonification: collecting, organising, and analysing real-world datasets and translating them into original MIDI compositions. At primary level, students explored natural phenomena through original music composition, movement, sign language, and live visual art, each team choosing a different natural phenomenon as their subject. Both schools culminated in public showcase events: "The

Sound of Science, Students Transform Data into Music" at Paphos Municipality Hall (11 May 2026) for the secondary school, and "Show Must STEAM On" at Pascal International School in Nicosia for the primary school.

To ensure a holistic support approach, Inquiry Fuse provided sustained, structured support from January to May 2026 through weekly online meetings with the teaching teams, a minimum of five on-

site school visits and five individual one-to-one sessions per school. Regular email communication complemented this support throughout the period. This continuous accompaniment ensured that teachers were supported through the pedagogical shift from instructor to facilitator, that student projects were monitored and refined across multiple revision cycles, and that the showcase events were adequately prepared and professionally delivered.

3.2.2 The STEAM Innovation modules as relevant support in the mentorship programme

The Cyprus implementation used the Learning STEAM Through Music module to support the mentorship program and the development of the student projects. Teachers did not follow the lesson plans sequentially as a fixed curriculum. Instead, they used them as a framework and reference point, selecting and adapting specific activities according to their students' age group, curriculum context, and available digital infrastructure.

At secondary level, teachers combined elements from the data analysis and sound mapping activities with the AI music generation tools, developing a coherent data sonification pathway that emerged from the teachers' own synthesis of the module's components under Inquiry Fuse's guidance. The use of Python programming to generate MIDI files was an extension developed by one student team that went beyond the lesson plans. This demonstrated how the module's framework can inspire student-led innovation that exceeds the planned scope.

At primary level, teachers drew hands-on sound experiments, embodied listening, and original composition, extending them into performance, movement, sign language, and live visual art, combining the Music module's creative framework with theatrical and physical elements. This cross-disciplinary extension was supported and encouraged by Inquiry Fuse and produced outcomes that reflected both the STEM and Artistic dimensions of the STEAM Innovation approach.

3.2.3 The partnerships

During the mentorship programme, Inquiry Fuse promoted several collaborations with local partners.

The mentorship involved all seven participating teachers from both schools, the Inquiry Fuse project team (Vasilia Philippou and Olia Tsivitanidou), and an external expert: Professor Savvas Chatzichristofis, Professor of Artificial Intelligence and Vice-Rector for Research and Innovation at Neapolis University Paphos, Professor Costas Constantinou, Professor of Science Education at the University of Cyprus, Mr. Iacovos Louca, secondary school music teacher and Ms Eleni Demetriou, Director of Paphos Music school, who participated as judges at the Paphos showcase event and provided expert recognition of the quality of the students' work. The different organisations were involved in the following way:

- Pascal International School, Nicosia: Partnership with the school's leadership and teaching team, involving the class teacher, STEAM teacher, and music teacher in a sustained collaborative relationship throughout the implementation. The school provided its premises for the "Show Must STEAM On" showcase event.
- Secondary School of Panagia Theoskepasti, Paphos: Partnership with the school's teaching team across four disciplinary areas. The music teacher served as artistic consultant across all four student groups, providing a cross-disciplinary bridge between the scientific and artistic dimensions of the projects.

- Paphos Municipality Hall: Partnership for the hosting of "The Sound of Science" showcase event, providing a professional public venue that gave the students' work civic significance and community visibility.
- Neapolis University Paphos: Partnership with Professor Savvas Chatzichristofis, Professor of Artificial Intelligence and Vice-Rector for Research and Innovation, who participated as a member of the evaluation committee at the Paphos showcase event. His involvement connected the school implementation to the university research and innovation community in Cyprus.
- University of Cyprus: Partnership with Professor Constantinos Constantinou, Professor of Science Education, who participated as a member of evaluation committee at the Pascal showcase event. His involvement connected the school implementation to the university research and innovation community in Cyprus.

3.2.4 The main outcomes of the programme

The mentorship programme in Cyprus was integrated into the full five-month implementation period rather than operating as a separate phase. Inquiry Fuse played a dual role, as both the implementing partner and the primary mentor, providing sustained professional support to the teaching teams while also facilitating connections between student teams and the broader evaluation and expert community.



The programme occurred from January to May 2026 resulting in five months of continuous support.



Teacher mentoring focused on:

Understanding and applying the Feel, Imagine, Create, Share cycle; facilitating open-ended inquiry rather than directing student work; using digital music and AI tools confidently; supporting student teams through the data sonification process (secondary) and the embodied performance development process (primary); managing multi-group creative production across different student roles; and preparing students for public performance. Student-facing mentoring focused on: deepening the scientific and mathematical rigour of the mapping decisions (secondary); strengthening the coherence between scientific understanding and artistic form (both schools); building confidence for public performance; and preparing festival-ready presentation materials.

The success of the programme culminated in nine performances produced and publicly presented by the students.

Two projects were selected to represent Cyprus at the transnational festival in Matera, Italy, in September 2026.

Teacher feedback indicated significant professional development in confidence with interdisciplinary methodologies and digital tools. Students demonstrated scientific reasoning, creative confidence, and genuine artistic maturity that went beyond what their teachers had anticipated at the start of the process.

3.2.5 What makes this a best practice

The most important best practice from the Cyprus mentorship programme is the principle of sustained weekly contact rather than periodic intensive sessions. The commitment to weekly online meetings,

maintained consistently from January to May regardless of how much or how little had changed in any given week, created a rhythm of accountability and support that kept both teachers and students moving forward across a five-month period that could easily have lost momentum. Teachers knew that at the end of each week they would have the opportunity to share what had happened, ask questions, and receive specific feedback. This regularity was more valuable than any single intensive session could have been, and it produced a quality of trust and professional relationship between Inquiry Fuse and the teaching teams that made honest conversation, including about what was not working, possible and productive.

In post-implementation discussions, teachers from both schools expressed genuine enthusiasm about the pace and depth of student learning. Several noted with surprise how quickly students who had previously shown limited engagement with STEM subjects began to connect scientific concepts to their own creative choices, making decisions about data mapping, composition, and performance that demonstrated understanding the teachers had not expected to see in a conventional classroom context. The Feel → Imagine → Create → Share methodology was consistently highlighted as a key factor in this shift. Teachers described it as giving students a clear and meaningful journey rather than a disconnected set of tasks, and reported that students' motivation and ownership of their work visibly increased at each phase transition. One teacher remarked that what struck them most was not what the students produced, but how confidently they could explain why they had made each creative and scientific decision, a quality of metacognitive awareness that the methodology had developed without making it an explicit learning objective.

A second point that makes this a best practice worth sharing is the discipline of supporting without substituting. In several sessions, particularly with the secondary school's data sonification team, the natural impulse was to suggest solutions to the technical and creative challenges the students were facing. Resisting this impulse, asking questions rather than providing answers, and trusting students to work through difficulties with guidance rather than intervention, was the condition under which the most significant learning happened. The Python programme that the Music Pythons team built would not have been as meaningful to them if Inquiry Fuse had simply told them how to do it. Teachers observed the same dynamic in their own facilitation: those who resisted the urge to correct and redirect, and instead asked students to explain their thinking, consistently reported stronger student outcomes and greater student confidence by the end of the process.

The most transferable lesson from the Cyprus implementation, from the perspective of Inquiry Fuse as an implementing partner, concerns the design decision to develop two distinct methodological pathways within a single module framework. Rather than applying the Learning STEAM Through Music module uniformly across both schools, Inquiry Fuse worked with the teaching teams to identify the approach that best suited each school's age group, curriculum context, and teacher expertise, data sonification at secondary level, and embodied performance and original composition at primary level. This deliberate contextualisation of the module, rather than a one-size-fits-all delivery, was a key condition of the quality of outcomes in both schools. Implementing partners working in contexts with diverse school profiles should invest time at the outset of implementation in understanding each school's specific strengths and constraints, and in adapting the module framework accordingly rather than applying it uniformly.

At primary level, the decision to frame the five individual team performances within a single scripted theatrical event, "Show Must STEAM On", rather than presenting them as separate standalone pieces was an organisational and pedagogical choice made by Inquiry Fuse in collaboration with the teaching team. This format gave the collective work a narrative coherence and public impact that individual performances would not have achieved, and it significantly raised the ambition and sense of shared purpose among the student teams in the final weeks of preparation. This is a replicable dissemination

strategy that other implementing partners should consider when working with primary-age student groups producing multiple short performances within the same school.

3.3 Learning STEAM Through Music: Best practices from Italy

3.3.1 Methodology

The Italian implementation was coordinated by Materahub and involved students and teachers from 3 secondary schools, with a particular focus on artistic education. The main activities took place at Liceo Artistico Carlo Levi in Matera, where 50 students and 10 teachers from Visual Arts, Architecture and Interior Design, Graphic Design, and Audiovisual and Multimedia took part. The project also reached a wider group of participants through dissemination and mentoring activities in Gravina di Puglia, involving a further 255 students and more than 20 teachers.

Participants were reached through Materahub's existing network of schools and local educational contacts. Materahub worked directly with the schools to organise workshops, presentations, mentoring sessions and opportunities for exchange between teachers and students. These activities took place between January and April 2026. The implementation combined hands-on workshops, interdisciplinary project work, mentoring and public dissemination. Students explored current social and environmental issues through music, sound design, visual storytelling, digital creativity and audiovisual production. They were first introduced to topics such as the physics of sound, artificial intelligence and machine learning, and then used this knowledge in their own creative work. Working in groups, the students developed immersive audiovisual projects linked to the UN 2030 Agenda. The themes included climate change, environmental sustainability, inequality, mental well-being, overconsumption, gender equality and so on. The aim was to help them connect scientific concepts with artistic expression and turn complex social issues into clear and engaging audiovisual narratives.

Workshops, presentations and peer-learning initiatives gave teachers and students the opportunity to share experiences, exchange ideas and become familiar with the STEAM Innovation methodology, helping to build interest in interdisciplinary learning across the local educational community.

The final projects were presented during the Italian STEAM Innovation Festival on the 12th of May, giving students the opportunity to share both their work and the ideas behind it. Mentoring was provided throughout the whole process. Materahub mentors supported the participants from the first brainstorming sessions through to the production of the final audiovisual works. In total 8 mentorship sessions were delivered, complemented by 6 visits to schools, a part from calls and whatsapp support between the sessions whenever the group needed feedback or assistance. This ongoing guidance helped the groups deal with technical and creative challenges, work more effectively together and strengthen their artistic, digital, communication and collaboration skills. The programme involved teachers and students between January and April. Teachers took part in the activities alongside their students, working closely with the mentors and experiencing the methodology first-hand. This collaborative approach allowed them not only to support the classroom activities, but also to become more familiar with interdisciplinary and project-based learning practices that could later be transferred to their own teaching.

Between March and April, the mentoring activities were extended through dissemination initiatives involving schools in Gravina di Puglia, creating further opportunities for exchange between students and teachers while strengthening collaboration within the local educational community.

The mentoring focused on helping students transform their ideas into interdisciplinary projects that



combined scientific concepts with artistic expression. Mentors worked alongside teachers throughout the different stages of the process, supporting students as they defined their project ideas, carried out research and experimented with music, audiovisual language and digital technologies. Students were encouraged to work collaboratively, explore different solutions and improve their projects through an ongoing process of experimentation, discussion and revision. They also became familiar with AI applications, sound design and

multimedia production tools, always using technology to support a clear creative idea rather than as an end in itself. Working alongside external experts also gave students the opportunity to experience creative working methods similar to those used in the cultural and creative sectors.

3.3.2 The STEAM Innovation modules as relevant support in the mentorship programme

The Italian implementation followed the structure of the Learning STEAM through Music curriculum, with the activities designed to build naturally on one another. The programme started by introducing students to the scientific principles behind music and sound, including acoustics, sound waves, artificial intelligence and machine learning. These initial lessons gave students the knowledge they needed before moving on to the creative phase of the project.

From there, students worked in groups to explore real-world challenges connected to the UN SDG. Through research, discussion and experimentation, they combined music, sound design, visual arts and digital media to develop original audiovisual projects on topics such as climate change, inequality etc. As the work progressed, students started from the scientific concepts they had explored and used them as inspiration for their creative projects. Music and audiovisual storytelling became the tools they used to share their ideas and reflect on real-world challenges.

Although the implementation focused mostly on the Learning STEAM through Music module, many of the wider principles of the STEAM Innovation methodology emerged during the whole process. Students used storytelling and audiovisual language to communicate scientific ideas, while experimenting with digital tools, AI applications, sound design and multimedia production. The creative process encouraged them to test different solutions, refine their ideas and improve their projects step by step before presenting the final results. The activities were organised around the Design Thinking process (Feel, Imagine, Create, Share) and an inquiry-based approach to learning. Students were encouraged to investigate a problem, develop their own ideas and work collaboratively to find creative ways of communicating them. By the end of the programme, they had not only gained a better understanding of STEAM-related topics but had also strengthened important transversal skills such as teamwork, communication, creativity and the confident use of digital technologies.

3.3.3 The partnerships

The Italian implementation was developed through a close collaboration between schools, cultural organisations and professionals from the cultural and creative sectors. Materahub worked with Liceo Artistico Carlo Levi in Matera, the pilot school for the project, involving teachers and students from different artistic pathways. This mix of backgrounds encouraged students to work across disciplines and explore how art, science and digital technologies could come together in a single creative process. As the activities progressed, the collaboration expanded to schools in Gravina di Puglia, making it possible to extend the mentoring and dissemination activities beyond the pilot school.

A particularly significant collaboration was established with Fondazione Matera Basilicata 2019, which granted its official patronage to the project. This recognition strengthened the connection between STEAM Innovation and Matera's cultural identity, linking the initiative not only to the legacy of the European Capital of Culture 2019, but also to the city's current role as Mediterranean Capital of Culture and Dialogue 2026.

The project also benefited from the involvement of experts from the University of Basilicata and the Conservatorio "E.R. Duni" of Matera, who contributed to the final evaluation of the students' work and engaged directly with them during the Local STEAM Festival. Their participation created a valuable link between secondary education, higher education and the cultural sector, giving students the opportunity to present and discuss their projects with academics and creative professionals.

Through these collaborations, the project contributed to the local debate on education, culture and innovation by showing how artistic practices can support the teaching of STEM subjects while encouraging active citizenship and social awareness.

3.3.4 The main outcomes of the programme

The mentoring programme in Italy was designed to accompany both teachers and students throughout the implementation phase. Rather than being organised as a series of stand-alone sessions, mentoring was integrated into the entire creative process, from the first brainstorming activities to the presentation of the final projects. This continuous support provided participants with methodological, technical and creative guidance whenever it was needed, creating an open learning environment where ideas could be discussed, tested and gradually refined.

A central part of the mentoring was helping students connect their work to themes inspired by the UN SDG. Each group selected a topic, carried out background research and developed an original audiovisual narrative that combined scientific knowledge with music and visual storytelling. The mentors encouraged students to reflect on their creative choices, overcome technical challenges and strengthen both the content and the artistic quality of their projects before presenting them to other students.



One of the main outcomes of the mentoring programme was the creation of ten interdisciplinary audiovisual projects, but its impact went well beyond the final outputs. Students developed stronger collaboration, communication and problem-solving skills while gaining confidence in combining artistic expression with scientific and technological concepts. The project demonstrated the students' ability to transform interdisciplinary ideas into concrete creative outputs. Of the ten projects produced, 3 were selected to represent Italy at the International Festival giving the students the opportunity to present their ideas to an international audience. For teachers, the mentoring provided a practical opportunity to experiment with interdisciplinary, project-based learning alongside their students. Working closely with mentors and creative professionals helped them become more confident in facilitating collaborative learning, integrating digital tools into classroom activities and adopting the STEAM methodology in future educational contexts. The experience also strengthened the collaboration between Materahub, schools, the University of Basilicata, the Conservatory of Matera and local cultural organisations, creating a network that can continue to support interdisciplinary STEAM initiatives beyond the lifetime of the project.

3.3.5 What makes this a best practice

One aspect that turned this process into a best practice was giving students the freedom to develop projects around topics they genuinely cared about. The main strengths of the experience was the continuous, flexible and tailored nature of the mentorship programme. Rather than relying on isolated workshops, Materahub supported teachers and students throughout the entire process, from developing initial ideas to producing and presenting the final audiovisual projects.

The programme combined professional development with practical on-site and online support, enabling teachers to apply STEAM and project-based learning approaches directly with their students. Face-to-face activities were complemented by remote exchanges and ongoing communication, allowing mentors to provide timely feedback and respond to technical, creative or organisational challenges as they emerged. Support was also adapted to the needs of individual projects. Mentors helped students transform their ideas into feasible interdisciplinary works while maintaining a balance between guidance and autonomy. Students remained responsible for creative decisions, teamwork and problem-solving, contributing to the successful development of ten audiovisual projects, three of which were selected to represent Italy at the Festival. A further strength was the diversity of expertise and collaboration involved. Materahub worked alongside schools, the University of Basilicata, the Conservatory of Matera and local cultural and creative organisations, bringing together educational, artistic, scientific and technical perspectives. Overall, the hybrid model of professional development, continuous mentoring and project-specific support proved to be an effective approach to interdisciplinary STEAM education. It provided teachers and students with the confidence and expertise to experiment with new methods while creating a model that can be adapted and replicated in other educational contexts.

Teachers highlighted:

"The practical approach gave us more confidence to use digital tools and interdisciplinary activities in our future teaching."

"The mentors gave us guidance without taking control of the projects, allowing the students to make their own creative decisions."

"The mentoring was particularly useful because the support was adapted to the needs of our students and their projects."

3.4 Learning STEAM Through "Making" and "Tinkering" (Portugal)

3.4.1 Methodology

The Learning STEAM Through Making & Tinkering module was implemented in Portugal by NUCLIO. The organisation offered a professional development course blended with a mentorship programme targeting educators and their students during the implementation phase. This methodology was developed to empower educators with the technical and pedagogical tools necessary to lead student-centered and community-oriented STEAM projects, while offering the necessary support and self-confidence to innovate.



The target audience consisted of K-12 school teachers across all subject areas as well as educational institutions seeking to integrate STEAM methodologies and Maker education into their classes. Recruitment of participants was done through an open call for teachers through NUCLIO's newsletter. This call provided information regarding the STEAM INNOVATION project's

objectives, the implementation roadmap, and the tangible benefits for teachers and students, with accredited professional development opportunities and continuous expert support. Furthermore, local partners were contacted to offer additional support to participating schools, enriching the mentoring experience.

The mentorship lasted from October 2026 to June 2026 and included a dedicated 50-hour professional development course titled which comprised 25 hours of face-to-face sessions blending theory and hands-on practice and 25 hours of practical project development with students. During these 25 face-to-face



sessions teachers received hands-on STEAM training using their schools' Digital Education Laboratories and Makerspace environments, as well as personalised support. In between these sessions, NUCLIO and local partners offered regular support through on-site visits, e-mail exchange and zoom calls. The holistic approach empowered educators to maximize the use of the digital labs to innovate in their practice. They followed the STEAM Innovation framework by integrating Inquiry-Based Learning and Design Thinking in their lessons, while fostering inclusive pedagogical practices with Universal Design for Learning (UDL) and interdisciplinary collaboration. The mentorship programme focused on themes like the need to innovate in education, the importance of student-centered approaches and new

assessment mindsets and provided practical instruction in technical areas such as programming, electronics, 3D modelling and printing, audiovisual production and video editing.



Throughout both the training course and the practical implementation, the mentors provided continuous support, offered ongoing troubleshooting and advice on project feasibility, technical setup, and community outreach. In addition to guiding the educators, mentors offered specialized hands-on workshops directly with students to assist them with the technical, creative, and problem-solving aspects of their projects.

3.4.2 The STEAM Innovation modules as relevant support in the mentorship programme

Through the professional development course, teachers were introduced to the lesson plans included in the Making & Tinkering modules (3D Modelling and Printing, Electronics, Physical Computing/Robotics, Block Coding and Audiovisual Production), so as to decide which one(s) they would like to implement with their students. This preparation empowered educators to confidently initiate the STEAM projects with their students.

Teachers implemented several lesson plans with their students, who together transformed that knowledge into STEAM projects resulting in functional prototypes representing potential real world solutions to local and global challenges. Students combined the maker skills (3D printing, Laser cutting and engraving, Electronics and programming, etc.) to create projects related to community needs and local heritage. These included the use of 3D design software (e.g., Tinkercad) and 3D printing to fabricate physical components, custom enclosures, or structural supports, which were then integrated with microcontrollers (such as micro:bit), sensors (moisture, light, sound), using block coding, simple electronics such as relays, motors, and solar panels to build automated physical prototypes (e.g., smart irrigation systems, sustainable home models, modular wearables). Students used video recording, editing software, graphic design, and audio tools to document their research, create promotional materials, edit video logs, and stream live presentations or fashion shows to the community. Each student group used other creative ideas and tools according to what was available in their school and the needs of their project.

The implementation module interacted directly and dynamically with the mentorship module, where training and mentorship functioned in parallel with mentors remaining available on demand to address

emerging technical and pedagogical challenges, support with real-time troubleshooting issues, and provide specialised training sessions according to the specific needs of individual student projects.

3.4.3 The partnerships

In the mentorship program, partnerships were formed, with local organisations such as the Open Science Platform (Plataforma de Ciência Aberta) in the North of Portugal, which supported one of the participating schools. They participated in all the professional development and mentoring sessions and offered continuous support to the development of the projects.

NUCLIO also collaborated with several organisations in Oeiras:

- **Oeiras Municipality:** A municipality that supports science clubs in all the schools and organises every year a gathering for such clubs. Their STEAM team supported the project, disseminated it through the schools and engaged the science clubs in the national implementation and international festival, funding the participation of 10 students and 5 teachers.
- **Instituto Superior Técnico (in Taguspark):** A higher education institute in Oeiras. Their “engineering for all” team supported the development of a STEAM Innovation project in several schools developing smart cities. NUCLIO exchanged mentors with them, offering support to their schools while they offered mentoring and support to STEAM Innovation participants.
- **ITQB NOVA:** A research institute in Oeiras. They collaborated in the dissemination and organisation of the national STEAM Innovation festival, mobilising schools and supporting their participation.
- **INOVLABS:** A STEM education company that supports science clubs in Oeiras schools. They supported the development of several STEAM Innovation projects and the organisation of the national festival in Portugal.

All these organisations engaged one of their technicians in the cocreation of the evaluation rubrics, in the composition of the local STEAM Innovation Jury and will participate in the STEAM Innovation international festival in Matera.

The multidisciplinary jury collaborated in the evaluation of the final student projects and the selection of those participating in the international festival. This process was the basis for selecting the winning projects, but, more importantly, it enabled the creation of constructive feedback for all student projects based on the STEAM Innovation rubrics.

3.4.4 The main outcomes of the programme

Through the mentorship programme in Portugal 56 teachers from 11 schools were involved and engaged over 580 students in the development of STEAM Innovation projects.

Through the mentorship teachers co-created 20 STEAM projects directly with their students using the Learning STEAM through Making&Tinkering module. The teams worked on themes that were specific to the needs of their schools and/or communities, through a Design Thinking approach, following the STEAM Innovation framework. The technical and creative areas were enhanced through emerging digital and technological techniques. These included electronics and robotics, microcontrollers, sensors, DC motors, servo motors, soldering, etc. It also included digital fabrication techniques and programming featuring creative coding, laser cutting and engraving, 3D modelling, and 3D printing,

most of them using recycled material and eco-friendly concepts. Many projects incorporated audiovisual production and communication techniques, including video recording, video editing, and social media live-streaming strategies.

This process resulted in over 20 STEAM Innovation projects where students developed functional solution ideas for existing problems and disseminated them in local and national events such as conferences, school exhibitions and the national STEAM innovation festival.



However, the most relevant outcome was the empowerment of the educators who stepped away from their comfort zones to introduce STEAM Innovation in their practice and the opportunity that was given to students to learn in a more meaningful way.

As one teacher mentioned “all students overcame a fear. Showing up in public, leading a team, performing, talking to a camera, writing a script, etc..)”, another said “for students this translated in more engagement, motivation and the ability to apply knowledge in real situations, understanding the practical value of their learning”, and another said “this allowed different students to find a space of significant participation in the project”.

Students and teachers developed competences and engaged with real-world challenges where they needed to use their creativity and problem-solving skills to develop meaningful solutions. In sum, it resulted in students becoming change makers in their communities.

3.4.5 What makes this a best practice

The mentorship programme followed a holistic approach integrating professional development sessions, with tailored support through school visits, Zoom calls, e-mail exchange and phone calls. The mentorship also included workshops targeted to students and tailored to support their projects.

In this sense, given the number of successfully developed projects, and the received feedback, NUCLIO considers that a best practice was the holistic approach which addressed the teachers’ and students’ needs in a tailored and flexible way.

This process was also complemented by collaboration with local partners who already regularly support the participating schools, enriching the process through diversity of expertise and perceptions.

Mentors were available to teachers online rapid support, and for more complex issues, mentors helped teachers with in-person sessions to help them resolve technical challenges and facilitate the understanding of specific project issues. This approach ensured that teachers felt the necessary support to fully implement the project, introduce innovative teaching approaches and offer students a meaningful STEAM learning experience.

Feedback received from teachers supports the perception that this process constitutes a best practice. Their testimonies include quotes like:

- *"I always felt supported with my questions and needs. (...) I found the trainers friendly and available."*
- *"The most innovative aspect was the motivational environment."*
- *"It was good to be put outside our comfort zone dealing with tools never worked with before."*
- *"It was great to learn how to work with materials that already equip schools and that are not used in many places."*
- *"It was very good to get to know the Change Maker Space and the dynamics of the trainers."*
- *"Good pair of trainers. They complement each other, motivate each other and are available."*
- *"I loved it and I think it had a great impact on the activities developed with students and on their learning."*
- *"I liked this practical approach combined with theory."*

4 The STEAM Innovation best practice guide

4.1 Common findings among the 4 countries

While all partners adapted their approach to their context, the identified best practices demonstrate a common perception. All partners identified the holistic approach, blending professional development with flexible and tailored support to teachers and students as the most valuable best practice in the project.

While professional development opportunities are key in ensuring innovation, they are not sufficient without the necessary complementary support. In this sense, a mentorship programme enables the necessary flexibility, regularity and personalization of support, offering each teacher and student group the specific resources, support and encouragement they need.

Although with small differences, all partners implemented such integrated approach, valuing diversified methods of support (on-site visits, online meetings, workshops, Q&A, etc.) and adjusting their support as the needs of their target audience emerged.

Furthermore, partners identified the Design Thinking approach as key in the success of the process, allowing for a structured and meaningful way of identifying relevant themes (Feel), thinking of solutions for local challenges (Imagine), Creating an output blending the STEAM subjects while presenting solutions for the identified challenges (Create) and sharing with a wide audience (Share).

The promotion of student agency was identified as a best practice, namely through the Inquiry-Based Learning approach. This approach ensured that teachers adopted a facilitator role while students felt engaged in leading in their own projects while developing several key competences for their futures.

Finally, the collaboration with local partners was identified as an enriching aspect of the mentorship programme, allowing for more diversity of perspectives, a multidisciplinary perspective and a more regular support to students and teachers.

This resulted in all partners identifying the same best practices:

- Holistic approach blending professional development with tailored regular support
- The Design Thinking approach following the Feel, Imagine, Create and Share steps
- Inquiry-Based Learning
- Collaborations with local partners

While these represent the aspects that were commonly considered best-practices within the project, each partner identified others more specific to their contexts. These can be read in chapters 3.1.5 for Greece, 3.2.5 for Cyprus, 3.3.5 for Italy and 3.4.5 for Portugal.

4.2 Evaluation Framework

Partners implemented differentiated evaluation approaches, however all privileging a regular monitoring and feedback perspective. In this sense, all partners kept regular communication and informal evaluation mechanism active with their target audiences, collecting feedback in a timely manner, enabling the adaptation of the mentorship programme to the needs in a timely manner.

Furthermore, all partners used the STEAM Innovation rubrics to evaluate the projects of the students and offer them feedback.

Adding to this, each partner implemented additional evaluation mechanisms, tailored to their audiences, such as feedback forms in Portugal and Italy and pre-and-post questionnaires for teachers in Cyprus and Greece as well as pre and post questionnaires for students in Greece.

Through these blended approaches each partner was able to establish a meaningful flexible approach, adjusting their support mechanisms to any address emerging needs.

4.3 How to replicate the STEAM Innovation best practices

The STEAM Innovation mentorship approach constitutes a strong best-practice in STEAM education with visible success and tangible results. Therefore, it is a process that should be expanded and replicated in further projects and by others in the STEAM education and CCI ecosystem.

To enable the further implementation of the identified best practices, this document leaves here a roadmap for replication.

4.3.1 The blended professional development and tailored support approach

The most relevant aspect of the STEAM Innovation best practices is the strong support mechanism that can be achieved by blending professional development opportunities (training course, workshops, etc.) with tailored support mechanisms (on-site visits, online meetings, e-mail exchange, etc.).

This approach should be cocreated with the target audiences, ensuring that it is flexible, adaptable and adjusted to their needs. This includes:

- Engaging the target audience in the planning and selection of the themes to be worked on during the mentorship sessions. This can be done through a reflection workshop, an online questionnaire or a focus group, for example.
- Ensuring open communication and a safe environment where participants can share their needs and offer regular feedback. This can be done during the sessions or in follow-up phone calls and e-mail exchanges.
- Keep a flexible approach where themes, dates and approaches can be adjusted to address emerging needs.

It is important to remember that professional development sessions, although fundamental, are not enough to succeed in real meaningful change. Educators must feel supported and assisted to decide to move out of their comfort zones.

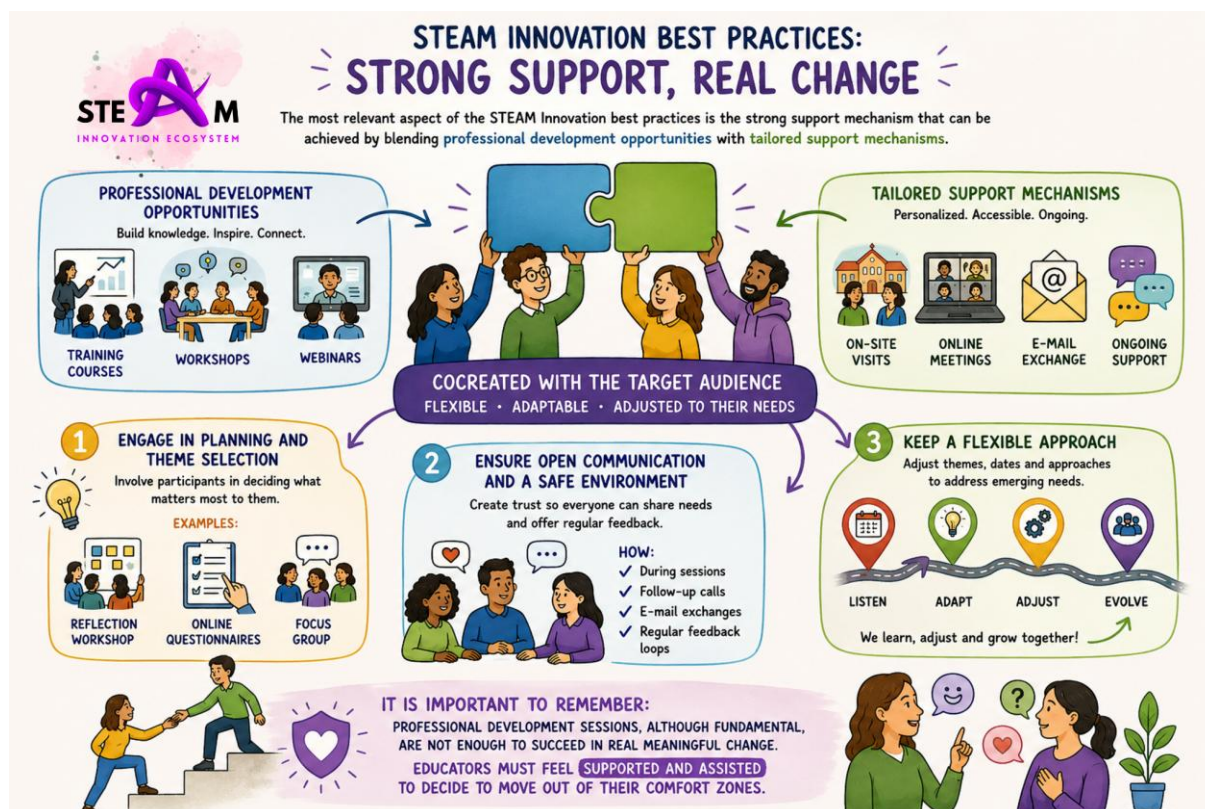


Figure 1: STEAM Innovation best practice guide 1 (created with the help of AI)

4.3.2 The perfect balance between theory and practice

As society evolves, so do the needs of educators and students. One thing that has become apparent is that both target audiences are increasing the value they give to practical instruction over theory. However, theory remains an important part of professional development and the most important aspect is ensuring the right ratio.

In STEAM Innovation a strong focus was given on the practical side of the implementation with a balanced blend between theoretical introductions with deeper exploration of the themes through hands-on practice. This was mentioned by educators as an important aspect of the projects' success. The balance between theory and practice is different according to the themes, the target audiences and the whole context around.

To ensure the best approach it is important to co-create the process, inquiring participants about their expectations and needs beforehand. It is, however, important to avoid full-theory sessions and to ensure a blend between both theory and practice throughout the whole mentorship programme.

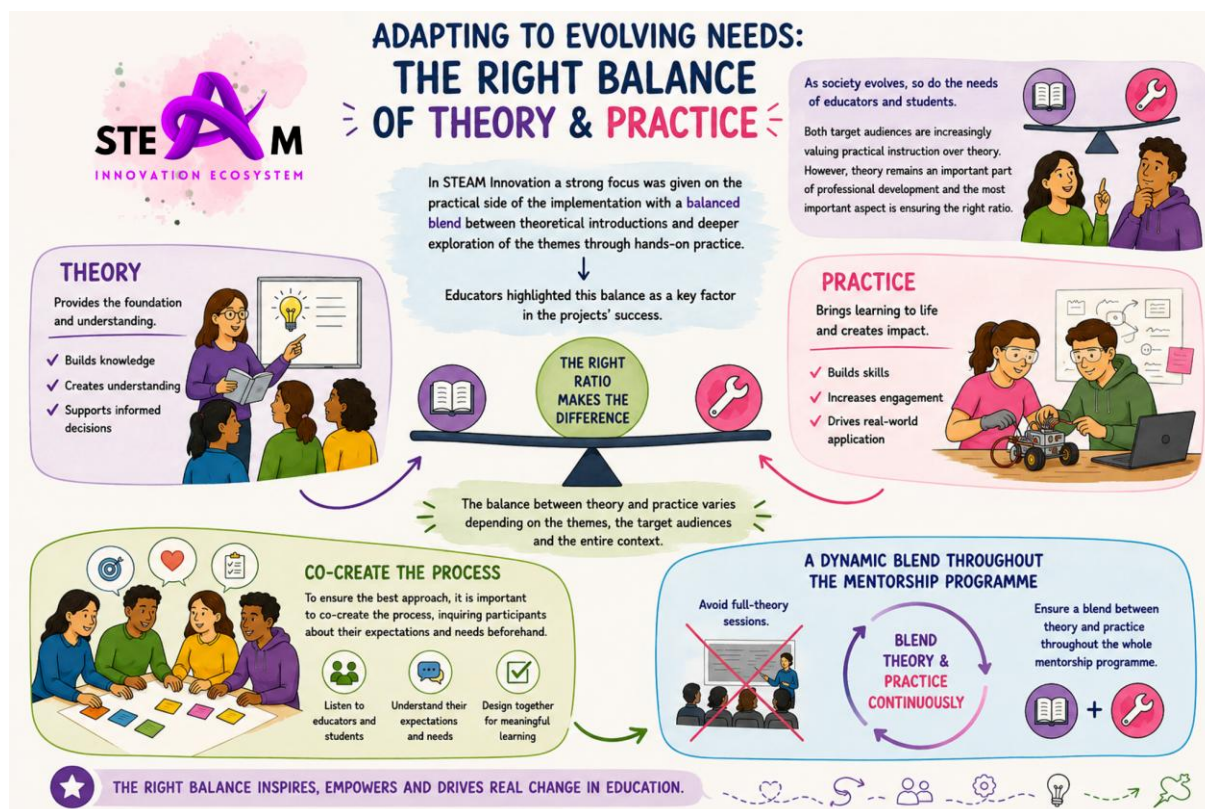


Figure 2: STEAM Innovation best practice guide 2 (created with the help of AI)

4.3.3 The Inquiry-Based Learning and Design Thinking approaches

STEAM Innovation promotes Inquiry-Based Learning and Design Thinking as pedagogical approaches to be implemented by the teachers when working with students.

As there is no better way to learn new methods than to experience them first hand, a successful mentorship programme enables teachers to experience the methods as if they were the students themselves. In this sense, in STEAM Innovation, the mentorship follows the Design Thinking and Inquiry-Based Learning methods both with teachers and with students.

To replicate this approach, it is important to:

- Facilitate learning through challenges and questions instead of delivering the answers
- Allow participants to make mistakes and encourage them to repeat until they success
- Offer diversity of supporting resources (written guides, books, videos, audios, etc.) to allow self-paced learning beyond the sessions in an inclusive way.
- Start by allowing educators to Feel the need to change and get to know the innovations through theory and practice, Imagine what they want to implement with their students, (Co-)Create the project with their students and Share with wider audiences in the end.

During the mentoring it is important to promote several reflection moments where teachers can make questions and share any difficulties or thoughts they have. This allows them to understand the process deeper and to learn how to implement it better with their students.

It is also important to offer resources, such as the STEAM Innovation modular curriculum, to allow educators to find further guidance on how to implement such methods in their practice.



Figure 3: STEAM Innovation best practice guide 3 (created with the help of AI)

4.3.4 Fostering partnerships with local organisations

Schools are stronger if they have strong ties to their local partners. As such, a successful mentoring programme promotes the creation of strong collaborations that can last beyond the duration of the programme. These collaborations are more sustainable as they are usually of mutual benefit for the school and the local organisations and can be sustained regardless of funding and availability of the mentors.

This way, it is important to map the existing organisations around the participating schools, such as:

- Municipality and local parishes
- Science and research institutes
- Educational NGO's and companies
- Companies and commerce that can benefit from students' projects
- Other local schools
- Other.

This process should be co-created with the schools as they already have collaborations established with local partners and are more aware of their needs.

Local partners should be informed about the mentorship programme and be made aware of the benefit of involving school students in their challenges.

Opening the doors of the schools to the community brings gain to the students and to all those around the school as it allows students to act as change agents and promote real positive changes at local level.

As mentors, it is important to foster the sustainability of such partnerships, ensuring they last beyond the duration of the programme.

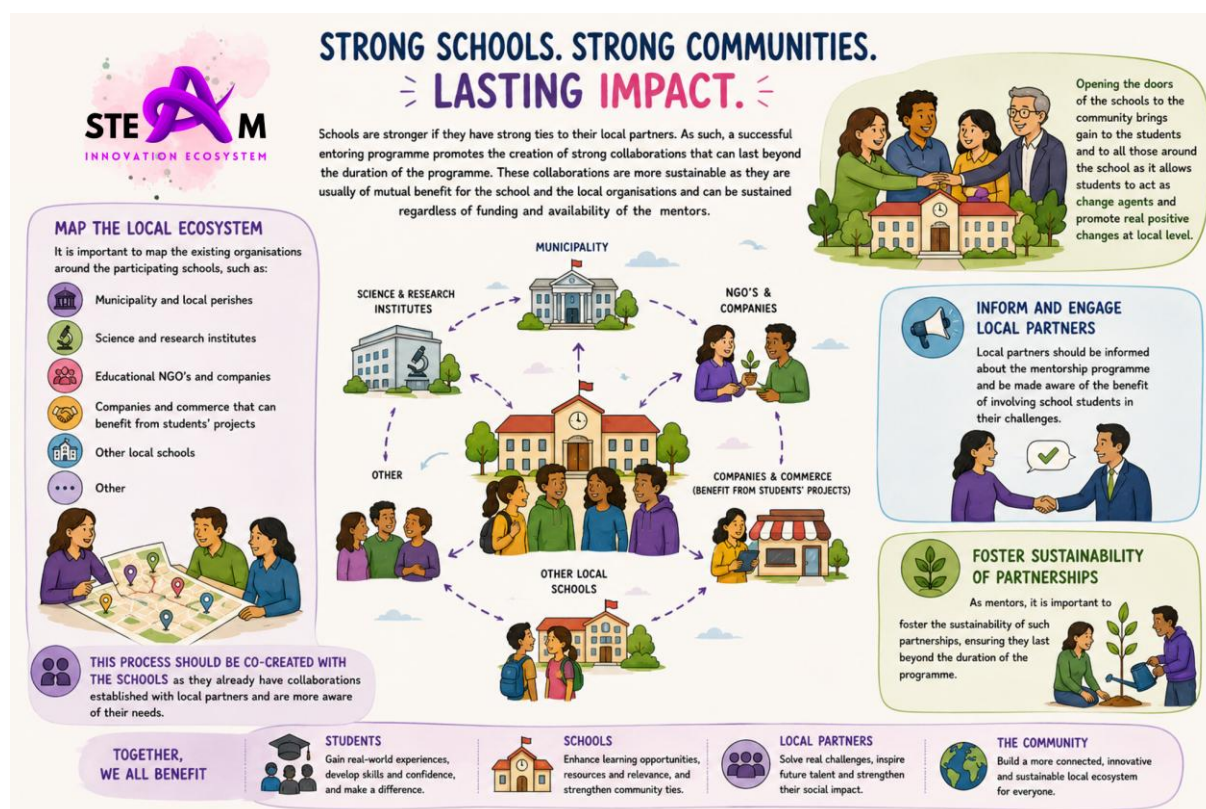


Figure 4: STEAM Innovation best practice guide 4 (created with the help of AI)

4.3.5 Embracing change, complexity and uncertainty

While STEAM Innovation demonstrates a successful approach to promote innovation in STEAM in the context of formal education, it is important to mention that no fixed approach stands the test of time. This means that it is important to be open to experimentation and constant improvement. This document aims to act as a guide for those wanting to replicate such a programme and it describes the base pillars of its success. However, it is important to remain open to any necessary changes and improvements that will become necessary according to the context and the natural and constant changes that affect our society, schools and communities.

5 Conclusion

The implementation of the STEAM Mentorship Programme demonstrates that the connection between formal educational environments and the professional expertise of the Cultural and Creative Industries can produce a good change in the way science, technology, engineering, arts, and mathematics are taught and experienced. The mentorship programme demonstrated that, by using a methodology to transform traditional, top-down instruction into an active, process-oriented co-creation model can promote meaningful change in education. It also showed that abstract scientific principles become far more accessible, meaningful, and enduring when embodied through artistic expression, digital fabrication, musical sonification, functional maker prototypes and theatrical performance. The project implementation successfully bridged the gap between formal primary and secondary education and real-world professional practices, using Inquiry-Based Science Education (IBSE), Mentoring, Design Thinking, and the Incubator Model as a foundation.

This was achieved through a successful mentorship programme which had a considerable impact on educators and their students. The blend between professional development sessions with tailored support, the balance between theory and practice, the bridges created with local partners and the innovative pedagogical methods resulted in positive impact and successful outcomes in the schools. It also equipped teachers with the technical proficiency, pedagogical confidence, and entrepreneurial mindset required to independently replicate project-based STEAM initiatives in future academic years, which ensures that the benefits of the project extend far beyond its formal funding cycle.

As demonstrated by national implementation models in Greece, Italy, Cyprus, and Portugal, a structured mentorship programme targeting teachers and students serves as the vital catalyst that transforms classroom instruction into active citizenship and socio-cultural learning.

Public dissemination events across all participating countries brought these achievements out of the classroom and into the public sphere, establishing schools as vital hubs of civic innovation and cultural contribution.

In conclusion, this Best Practice Guide demonstrates that integrating the arts, theatre, music, maker culture, and creative industry mentorship into science education can be a deeper, more inclusive, and deeply human form of learning.