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3rd STE(A)M IT / Scientix co-creation workshop where we will have a "First look at an integrated STEM teaching framework

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Increasing young people’s motivation to choose STEM careers through an Innovative Cross-disciplinary STE(A)M approach to education

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Co-financed by Erasmus+ KA3: European Forward Looking Cooperation Projects in the fields of Education and Training
CHOICE Partnership

- 9 organisations across 5 European countries
CHOICE objectives

➢ Promoting innovative pedagogies based on the interaction between STEM and non-STEM subjects.

➢ Promoting collaboration among students, teachers, education institutions, business, and local authorities to support the reform of STEM curricula at school.

➢ Increasing young people’s motivation to choose STE(A)M careers through a practice-oriented approach, thus contributing to produce a workforce capable of tackling complex societal challenges.
CHOICE Phases

3 main phases:

1. *State of the Art Analysis* of existing initiatives, best practices, attitudes and approaches towards STE(A)M in educational contexts

2. *Development and testing of innovative OERs and MOOC* through collaborative practices of students, teachers as well as business/university representatives for the promotion of a STE(A)M approach to teaching STEM subjects

3. *Mainstreaming*
The CHOICE MOOC will include 20 STE(A)M OERs offering flexible modes of teaching and open learning, covering 5 macro-areas:

1. Connecting STEM and arts
2. Experiential projects
3. Using languages in STEM lessons
4. Using technology in social sciences
5. Turning sports and physical activity into a STEM learning

The MOOC is planned to be launched in September 2021.
Co-creation

➢ CHOICE project adopt the methodology of co-creation - meaningful collaboration between students and staff on creating STE(A)M Open Educational Resources (OERs).

➢ Students become active participants in the learning process, constructing understanding and resources with the teachers and external experts (role models).
An example of the CHOICE OERs:
Connecting STEM and arts: The Starry Night

Developed by:
Roberta Ducata, Maria Concetta Di Prima, Paola Campanella (teacher at Liceo Statale Benedetto Croce, Palermo)
Maria Luisa Spreatfico (professor at Politecnic University in Torino – PoliTo) et al.

Coordinated by CESIE, Palermo
The Methodology

Using origami to bring Mathematics to life and to link it with art and creative activity, while getting students involved (learning by doing)

**Method**: reproducing some elements and shapes of the famous Van Gogh’s painting with origami forms, applying mathematical and geometrical principles

**Materials**: paper, scissors, rules, GeoGebra software
Art

*The Starry Night, Vincent Van Gogh, 1889*
The art of origami

Cai Lun
China 50 a.C – 121 a. C.

Origami butterflies
Euclidean Geometry and Origami Geometry

Euclidean Geometry

Straightedge and compass constructions

Origami Geometry

Constructions through paper folding
The polycentric curves and the Starry Night clouds

The polycentric curves are plane curves made of circumference arcs which are tangent to each other in their intersection points.
The Origami Starry Night
Why origami?

Some strengths in using origami:
✓ Developing manual skills
✓ Enhancing memory
✓ Learning patience
✓ Reducing anxiety
✓ It is an inclusive tool (suited to all different learning approaches as well as those with special needs)
✓ Improves creative and critical thinking
✓ Visualizes and makes mathematics tangible
✓ Enhances spatial imagination and abilities
CHOICE Results

Concluded:
✓ National reports on local and regional initiatives, best practices, students’ attitudes and teachers’ approaches to STEM education
✓ State of the arts study comparing all partner countries’ results
✓ Reflective practice case-study compendium
✓ Framework for reforming STEM curricula
✓ Working guidelines “Non-formal education for promoting co-production of educational resources

Coming next:
✓ OERs based on a STE(A)M approach to STEM education
✓ CHOICE MOOC
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