Project title:

STEAME : Guidelines for Developing and Implementing STEAME Schools

Reference number: 2019-1-CY01-KA201-058240

Implementation period: November 2019 – October 2021

QUALITY ASSURANCE STRATEGY & STATEMENT

AIMS AND OBJECTIVES OF THE PROJECT

The project aims at the development of the Framework in the Intellectual Outputs that will reflect the positive effects of the STEAM approach in the context of the preparation for the real world
The design of a prototype school structure encompassing a dynamic curriculum, activities, learning plans and methods, supported by a training course for teachers on how they can work effectively and productively under a STEAME school.
The last letter E {for Entrepreneurship) added to STEAM suggests the development of competencies in a changing world and hence a close relation of the school to the Industry.
The Intellectual outputs of the project are expected to provide the stage for creativity innovation and problem solving in the forthcoming era.
In this context the project will develop Outputs that support the following:

- Teaching and learning based on research
- Promote learner-centered strategy: students to co-ordinate questions and solve problems, and then to reflect on their experiences
- Activities scaled by confirmatory, structured, guided, and ultimately open-research
- Digital curriculum incorporating teaching digital technologies, mainly Cloud Computing
- Use of formative and cumulative assessment
- Incorporate into the modules of the teaching, learning and assessment cycle what leads to increased knowledge of the subjects and the development of scientific thinking
- Focus on the most important issues from each field of science shaped so that they can form an interrelated logical sequence of application
- STEAM is combined with Entrepreneurship to form a comprehensive learning environment STEAME.

THE MAIN TARGET GROUPS OF THIS PROJECT

These are

- Educational Leaders,
- Educational Researchers and university professors
- Policy makers at National and European level as well as some national Ministry connections
- Educational Journalists
- Teachers at all levels of education, Career Advisers
- Students at school level in the age groups of grades 7 to 9 (usually 12 to 15 years old) and grades 10 to 12 (usually 16 to 18 years old)
- Industrialists and Employers through Industrial and Entrepreneurship Chambers and Federations

THE MAIN OUTPUTS OF THIS PROJECT

Intellectual OUTPUTS

O1. Guidelines for dynamic and adaptive STEAME curricula
O1-A1: Analysis of European and Global characteristics in terms of activities, curricula, and organizational structure
O1-A2: Analysis of results of at least 50 EU funded projects on STEM or STEAM O1-A3: Use A1 and A2 to develop the guidelines
O2. Guidelines for STEAME Activities in Schools for two age groups
O2-A1: Sample Inquiry based Learning Plans and Creativity Plans: Grades 7-9
O2-A2: Sample Inquiry based Learning Plans and Creativity Plans: Grades 10-12
O2-A3: Sample activity plan for cooperation between schools and research institutes
O2-A4: Pilot testing and compilation of Guidelines
O3. Guidelines for STEAME School Organizational Structure
O3-A1: TYPE A Schools (how to modify structures in existing schools)
O3-A2: TYPE B Schools (how new schools should be structured)
O3-A3: Discussions with school authorities to determine the level of possible adaptability under current structures or flexibility to change
O3-A4: Design a training course for Teachers, School Heads and Authority representatives to enable them to implement such structures

MULTIPLIER EVENTS
Events E1 to E5 in the form of Conferences in the participating countries

Training Activities (C1) in the form of providing training courses for teachers and certifying them

FOLLOW UP
Impact Activities such as informing and involving local or national Authorities
Dissemination Activities including
the use of the networks of the partners
newsletter by each partner
a website
presentations in conferences, symposia etc. (including competitions, EUROMATH

and EUROSCIENCE)
papers in academic magazines
presentations and letters in the local, national and other media/ press
Sustainability activities including the STEAME Observatory

QUALITY ASSURANCE STRATEGY

METHODOLOGY

The methodology to be followed for ensuring quality is the following:

Step 1 - General Plan Design Quality: Achieving quality requires careful planning. Therefore, the first step is designed to achieve the objectives of quality. The objective of this step is to ensure that all Standards and Guidelines required for the design, administration, resources and project control, are sufficiently determined and understood by all partners.

Step 2 - Define Quality Assurance Framework: The objective of this step is to ensure that the Standards and Guidelines, which were determined in the Design Quality Management, are realistic and correspond to the specific conditions of the project; the activities of the quality control are performed normally and without irregularities and that the analysis of errors and defects will provide the basis for improving the quality of the projects' deliverables.

Step 3 - Perform Quality Control Activities: The purpose of this step is to identify defects so as to be able to correct them. This control is under the collective responsibility of the consortium partners and shall be performed during the whole project, not solely on the completion of a deliverable, so as to check the completeness, consistency and the fulfilment of the objectives.

Step 4 - Perform corrective/preventive actions: The defects and discrepancies identified by quality control must be corrected. For this purpose and to maximize the relevance of the proposed plan on the standards set in place, the Coordinator will proceed with a detailed analysis of the critical points of the proposed methodological approach as regards to the overall Management and Quality Assurance of the project.

QUALITY ASSURANCE COMMITTEE

In order to ensure the quality of the project the consortium will form a Quality Assurance Committee consisting of 3 participants from the consortium. The participants should not have the role of Output Leader and should have enough experience so as to be able to identify risks and decide upon the necessary corrective/preventive actions. Below is the synthesis:

Consortium partner	**Name of the representative**
One person from the Cyprus Mathematical Society	Andreas Skotinos

One person from Universities partners.	Evangelos Gazis
One person from the Schools partner	Milena Koleva

BASIC INDICATORS OF SUCCESS

A set of indicators will be used to measure the interest in the project, the degree of communication and collaboration of the partners, the extent of the material/ outputs produced and their quality and impact.

The Basic Indicators of progress and success are:

Quantitative:

- Measure the response to our invitations
- Monitor the increase in our indicators
- Expect a positive result in the training pilot testing
- Interest for subscription in the STEAME Observatory
- Interest in participating in the KA1 STEAME Course
- Finding out that many schools in Europe are using the STEAME guidelines to create STEAME activities and to change Organizational Structures.
- Number of pupils submitting articles to the STEAME electronic journal is increasing.

The Basic Indicators of measuring project results and objective are:

Project Management Level:

IM.1 Number of meetings carried out (target = 5 transnational meetings)
IM.2 Number of deliverables submitted on time (target 100%)
IM.3 Number of budget revisions (target 0)
IM.4 Number of reallocation of responsibilities (target < 10%)
IM.5, Interim Quality Assurance Report (end of the first year of the project)
IM.6, Final Quality Assurance Report (End of the project)

Project Quality and Impact Level:

FULFILMENT INDICATORS, RELATED TO A TASK CONCLUSION. They are related to ratios that indicate the achievement degree of task and/or duties, e.g. number and quality of duties fulfilled, minimum number of participants, etc.;

EVALUATION INDICATORS, related to the ratios and/or methods that help in performance identification and improvement opportunities for tasks, process or intellectual outputs activities. Some examples includes the qualitative and quantitative results obtained in the validation phase, or the internal communication indicators;

EFFICIENCY INDICATORS, related to the ratios that indicate the invested time for the fulfillment of tasks/duties and the costs of it. Some example: the use of resources in different work packages, the incurred costs in management, etc.;

EFFICACY INDICATORS: related to ratios that indicate the capacity or success in the fulfillment of task and duties, such as the percentage of task accomplished at any moment or evaluation of intellectual output activities quality.

Management indicators, related to management and/or establishment of concrete actions to realize the planned activities. They are related to the ratios that allow the real management of a project, like project management tools use, the quality of the communications between the general coordinator and other partners, accuracy of the procedures, etc.

Monitoring and Evaluation of performance Level:

QUALITATIVE AND QUANTITATIVE INDICATORS

Overall project management:
IQ-Quality of Project management arrangements – no more than 20% rate of delays in delivering results throughout the project
IC-Effectiveness of coordination by the project coordinator – no more than 20% rate of issues and problems detected in coordination
IE-Effectiveness of the monitoring and evaluation processes – 100% of partners and coordinator compliance with quality monitoring process tasks.
IF-Effectiveness of quality arrangements – 100% rate of compliance with recommendations and amendment according the problems detected.
Moreover it will be taken under strict control all Communication/exchange of information with the EC and NA, and those among the partners. Overall it will measure the commitment to the project among the partner by a qualitative evaluation of their involvement, proactive thinking and willingness to provide great results.

Measuring the impact

Indicators to be measured include:
IQ. Project Quality & Impact Level Indicators:
IQ.1 Number of events organized per partner:
a. 1 local multiplier event/partner country (target = 5)
b. 2 partners' meetings in the Applicant's partner country (target = 2)
IQ.2 Number of C1 trainings (target = 1)
IQ.3 Number of visits of the project website (target >60/ month)
IQ.4 Number of stakeholders reached (target >50000)

How we will know if our strategy is working (targets)?
A set of indicators will be used to measure the impact such as:
1. Interest of teachers to participate in the pilot course and their evaluation of the course.
2. Interest generated by the multiplier events.
3. Visits to the project's website.
4. Reaction to Social Media communication.
5. Interest and articles written by journalists about the project's results and course that will be developed.
6. Interest generated by educational policy makers and their comments on this project.

7. Interest in participation in the STEAME Symposium to be organized within the annual EUROMATH & EUROSCIENCE students' conference
8. Registration application to the STEAME Observatory
9. Number of pupils expressing interest in the electronic publication called: "Journal of STEAME Creations for School students"
10. European Ministries of Education or Municipalities reacting to the information and invitation to the project final conference.
11. Number of Ministries of Education of neighborhood countries reacting to the information and invitation to the project final conference.

Additional indicators may be set by the consortium during the first six months of the project life:

Criteria leading to the desired outcome that are measurable include:

- The quality of the proposed problems and the required level of mathematics needed to handle them. These aspects are evaluated beforehand by experts in the field of mathematics and mathematics education, as collaborative work.
- The structure of the teams. To create good teamwork, the team members are chosen based on their own application of interest where they present themselves and their skills.
- Involvement of a few participants with experience on working with mathematical tools on industrial problems. Those will be handpicked by consortium members where they will pilot the method.
- The satisfaction and joy of working in teams (together with other math-enthusiastic people) on hard problems. This is evaluated through a questionnaire after the implementation.