

## STE(A)M “*ahead*” policy plan

by *Eirini Tsara*

### *Section 1 - Summary*

#### **1.1 Author(s)**

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#### **1.2 Background**

As the representative of Teachers’ and Parents’ Association, IT Coordinator and STE(A)M project manager of the 4<sup>th</sup> kindergarten of Messene I am here to explain our school’s proposal to a more concrete STE(A)M-based education approach.

#### **1.3 Descriptive title**

STE(A)M “*ahead*” policy plan of the 4<sup>th</sup> kindergarten of Messene aims to transform the school’s teaching and learning approach and thus benefit students from low-income family backgrounds from an early age.

#### **1.4 Abstract**

STE(A)M “*ahead*” is the result of the vision of the staff and parents’ association of the 4<sup>th</sup> kindergarten of Messene. In this the main objective is to turn the school into a STE(A)M hub for our young students who mostly come from underprivileged socioeconomic backgrounds. Low-income students are substantially underrepresented in STE(A)M education, and we firmly believe that with STE(A)M “*ahead*” we can change that and that we can work as an example for other schools locally and nationally. We propose to turn the teaching and learning approach of our school following a solid STE(A)M-based background.

### *Section 2 – Goals*

#### **2.1 General goal**

Students from low socioeconomic backgrounds have limited access to STE(A)M innovative resources, classes, and experiences. We intend to increase the access of our students to STE(A)M resources, classes, and experiences. Appropriate teachers’ training will be sought, as well as upgrading of the school’s technological apparatus. Furthermore, through participation from parents we aim to strengthen the impact of our action-plan.

#### **2.2 General goal description**

We are at the beginning of a 4<sup>th</sup> industrial revolution and educators are faced with preparing a generation of students for many jobs that don’t even exist yet. Today’s Greek education system or teaching and learning approach does not focus enough on teaching children to solve real world problems and it is not substantially interdisciplinary, nor collaborative enough. In Greek education there is no solid official state policy to promote the implementation of STE(A)M Education ([https://steamonedu.eu/wp-content/uploads/2021/01/WP3\\_D6\\_Guide-on-STEAM-education-policies-and-educators-needs\\_FINAL.pdf](https://steamonedu.eu/wp-content/uploads/2021/01/WP3_D6_Guide-on-STEAM-education-policies-and-educators-needs_FINAL.pdf)). Although young students in Greek kindergarten schools use STEAM skills daily i.e., through building blocks or play collaboration, only a small percentage of students are being exposed to an effective STE(A)M education at this age. Up to date our school was not an exception to the above-mentioned rule. Through **STE(A)M *ahead*** we plan to take a step forward and change that. European education policy recognizes “*the importance of an*

*integrated and multidisciplinary education, creating new skills and competences in the labour market. 21st century skills encompass creative and critical thinking, problem-solving, and a technical and scientific approach among the most relevant and transversally envisaged competences. Expertise and knowledge of STEM disciplines has thus become determinant to achieve an overarching education able to contribute to the education of a new category of professionals. The attention is high on STEM Education as a means to foster scientifically oriented careers, initiating from a very early age”* [https://steamonedu.eu/wp-content/uploads/2021/01/WP3\\_D6\\_Guide-on-STEAM-education-policies-and-educators-needs\\_FINAL.pdf](https://steamonedu.eu/wp-content/uploads/2021/01/WP3_D6_Guide-on-STEAM-education-policies-and-educators-needs_FINAL.pdf) .

### **2.3 Strategic goals**

- Teachers’ support through appropriate STE(A)M consultation and training.
- Parents’ support to **STE(A)M ahead** at home through appropriate STEAM consultation and collaboration among teachers and parents.
- Upgrade school’s technological and STE(A)M infrastructure classes’ conformation.
- Design effective STE(A)M learning experiences to take effect throughout the whole school year that can be transformed and adapted to serve future needs and goals.
- Assure teachers’ commitment to the school’s new STE(A)M policy and approach.

## **Section 3 – Targets**

### **3.1 Beneficiaries**

1. On average 80 students, aged 4 to 6 years old, from underprivileged socioeconomic backgrounds per annus:

**STE(A)M “ahead”** will empower students to become curious learners who seek creative solutions to real-world problems. The project will help them develop the soft and hard skills necessary to succeed in later education and in the long run their careers or wherever else life entails. A report from the U.S. Bureau of Labor Statistics projects growth in STEM and STEAM related occupations of 8.8% between now and 2028, compared to 5.0% for non-STEM occupations. It also lists median annual wages of \$84,880 for STEM/STEAM jobs, compared to \$37,020 for all occupations (<https://www.bls.gov/emp/tables/stem-employment.htm>).

2. Girl kindergarten students especially: Through **STE(A)M “ahead”** girls will be encouraged to take active part in the STE(A)M learning experiences according to their interests. “Across 35 European countries<sup>1</sup>, fewer than 1 in 5 computer science graduates are women. Interest in science, technology, engineering and math (STEM subjects) drops off far too early. In fact, the OECD’s Programme for International Student Assessment (PISA) reveals that boys are far more likely than girls to imagine themselves as ICT professionals, scientists or engineers. ([https://news.microsoft.com/uploads/2017/03/ms\\_stem\\_whitepaper.pdf](https://news.microsoft.com/uploads/2017/03/ms_stem_whitepaper.pdf)).

### **3.2 Recipients**

- primary schools that will absorb the above beneficiaries as their students, and in the long run the relevant high schools and further on the local future job market.
- in the long run the whole local community.
- other kindergarten schools locally and nationwide.

### **3.3 Special needs**

Our school has already a concrete inclusion policy for students with special needs and thus no further action needs to be taken. Every student, no matter what, can take part and benefit from the STE(A)M *ahead* project.

## ***Section 4 – Value Proposal***

### **4.1 Value proposal**

STE(A)M “*ahead*” empowers students to become curious learners who seek creative solutions to real-world problems.

### **4.2 Results**

- 6 teachers at our school are introduced to the STE(A)M teaching approach and are taught on how to efficiently implement it.
- 80 students at our school are introduced to STE(A)M educational approach, through efficient STE(A)M learning experiences.
- 80 families will be encouraged to integrate STE(A)M education practices at home.

### **4.3 Impact**

STE(A)M “*ahead*” aims to have a long-term impact in the local education implementation and further on to provide students with all the 21<sup>st</sup> soft and hard skills necessary to succeed in later education, their future careers and in life in general, as we are heading towards a 4<sup>th</sup> industrial revolution.

## ***Section 5 – Costs***

### **5.1 Cost structure**

Total cost: 5000 euros

- External consultants
- Administrative costs
- Furnishing
- Hardware
- Software
- Miscellaneous services

### **5.2 Funding opportunities**

- Messinian schools’ economic committee.
- Ktiriakes Ypodomes S.A.
- George & Victoria Karelia Foundation
- Municipality of Messene.

## ***Section 6 – Action Plan***

### **6.1 Activities**

- Initial consultation for teachers and parents.
- Teachers’ training on how to apply STE(A)M learning experiences.
- Upgrade of the technological equipment (computers, tablets, interactive whiteboards, BeeBots etc.).
- Furnishing and class conformation.

- School outreach via web (school's blog, webpage etc.), open days, local media.
- Collaboration with families on how to implement STE(A)M at home.

## Section 7 - Risks

### 7.1 – Risks/Competition

a. Risk description

**Funding the policy.** Competition from other schools of the district to access the same funding resources for other projects might affect my policy's implementation timeframe.

b. Probability: 3

c. Severity: 4

d. Mitigation strategy: through effective outreach actions i.e., meetings with the funders and presentation of the policy's strong impact for the community, organization of open days to communicate the school's **STE(A)M ahead** policy vision to large audiences, talks to the local media, posts in the school's blog or in other relevant websites.

### 7.2 – Risks/Opposition

a. Risk description

**Teachers' commitment.** Teachers during the organization and implementation of the policy might lose their initial excitement and thus might affect the project's success probability.

b. Probability:3

c. Severity: 4

d. Mitigation strategy: Through consultation, encouragement and positive feedback strategies, relevant informal and fun meetings of the staff members, set of a prize if goals are met (i.e. 2 extra days off).

### 7.3 – Risks/External Menace

a. Risk description

**Greek Bureaucracy.** Bureaucratic issues might affect the on-time liquidation of funds.

b. Probability: 4

c. Severity: 4

d. Mitigation strategy: A lot of planning ahead and implementation of all the necessary procedures from previous school years, so as to meet the designed timeframe of the policy.