STE(A)M IT STORIES OF IMPLEMENTATION

Title of your Story

A drop of water makes a difference

Name of the Author(s)

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The Learning Scenario Implemented

Add below the link to the learning scenario you implemented in your class. The link must directly point to the resources on Scientix Repository and STE(A)M IT Website.

Our team chose this project, the STEAM Portuguese project:

http://steamit.eun.org/a-drop-of-water-makes-a-difference-environment/

http://www.scientix.eu/resources/details?resourceId=28397

We immediately liked the topic related to water and the proposed activities.

The Implementation Context

*Briefly describe the context of your implementation, specifying what subject(s) you chose to implement the learning scenario in, how those subjects relate to STEM careers, what was the students' age(s), the size of the group, previous familiarity with real life scenarios, what real-life questions did you choose to address, etc. We aim to gather stories of **classroom implementation**, so the context must appropriately reflect this. (maximum 300 words).*

The context of our implementation was a primary class made by 19 students aged ten years old. The subject of the Portuguese LS is the importance of the water for the life and the need to save it; the LS was aimed at students of 10 years, and our students have the same age, there was therefore no need to heavily adapt it.

We chose to start the implementation phase in March because the 22 March is World Water Day. Our school is a Green school, very sensitive to issues related to the environment, energy saving and water saving. We are the leading school within a network of schools working on these topics. This project fits perfectly into our design giving an added value to our work. The real-life questions that we have treated most have been:

- o What behavior should be implemented to save water at home and at school;
- o How much water do we waste at home;
- o What work towards possible ways of solving it within the school community.

In March however the school was closed for the entire month due to emergency of Covid-19 pandemic; all the first part of brainstorming, video viewing and discussion was done remotely. The class already used Google Classroom for the online teaching from the previous year, and this has been a good starting point to implement the first part of LS: Google Classroom to recover the materials (videos, learning productions etc) and Google Meet to old the online meeting.

We decided to implement Citizenship (with brainstorming, discussion, research for materials) and Mathematics (with the construction of graphs) during the online teaching, involving in this way also families. At this stage it was not possible to make children work in groups. When we went back to school in April we did the Natural Science lesson, where we built a water filter working in small groups (only 2 students) discovering also what PH is. Unfortunately, because of the pandemic, working into groups was not easy: the materials should always be sanitized before being used by a classmate. Finally, we concluded the project with Art and Music working in small groups, this was the part of the project that students liked very much. The connection with the STEM careers was the one indicated in the LS.

The Narrative

What did you do? Describe how you used the selected learning scenario in your teaching. For example, what was the structure of the lesson activities; did you make any adaptations to the resources? Did you include any online activities in the implementation? (maximum 200 words).

Given the age of our children (same of the students of the Portuguese LS) we implemented the LS, only changing the order of the lessons to adapt them to the online teaching. For the Natural's Science lesson we did not follow the instructions indicated in the LS because they were unclear to us. We preferred to follow the guidelines given by the following link: https://www.stem.org.uk/resources/elibrary/resource/315596/how-can-we-clean-our-dirty-water

In the Portughese LS there were many references to online tools (Mentimer and Mindmap) that some teachers and children did not know, so, to collect the impressions and comments of the children we preferred to create a Padlet. In this Padlet the children answered the stimulus questions, identified proper behavior to save water at home and represented it with a drawing. This whole implementation part was done in Google Meet and the Padlet was published in Google Classroom.

The Collaboration Process

How did the collaboration with other teachers go? Please, describe how was working together with the other teachers and what was the approach to carry out the lesson(s). (maximum 150 words).

Our team worked very well. Every Monday in our School all the teachers met to schedule the weekly activities, and these consolidate meetings became very useful for the LS implementation. Furthermore, having developed part of the LS remotely, we not only were able to plan the activities together, but to be also present together during the lessons in Google Meet. This has allowed a more active participation by the teaching team and has allowed the colleague teaching Italian (Amanda) to connect the project to her subject by writing a text on water saving.

Learning Outcomes

What did you achieve? Describe the main learning outcomes you achieved with the implementation of the Learning Scenario. Tell your reader about anything that supports your case for achieving these learning outcomes. For example, students' view, or any other evidence[1] that illustrates the benefits and impact of using this Learning Scenario? (maximum 300 words)

In this implementation the main students' learning outcomes were:

→ In the first part of LS implementation the Padlet published in the Google Classroom. Our students liked so much this online tool that has always allowed us to work in a shared document remotely. In this document the students could insert their ideas and impressions but also read those of their classmates. This activity allowed them to reflect on the proper use of water and the importance of not wasting it;

→ Thanks to the statistical activity it was possible to create a survey among families, this survey talked about the average household water consumption. With the results children have built simple statistical graphs. When we returned to school in the presence we collected the graphics in a poster. This activity was important to create a survey extended to the community;

→ A water filter device. This activity fascinated students who, thanks to experimental activities, discovered the importance of PH for the clean water;

→ The rainbow drawing: this activity has enabled pupils to discover primary and secondary colours and to give space to their creativity;

→ The music water glasses: this activity was very fun for the kids, thanks to this simple activity they played with the sounds.

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[1] Remember to refer to the point 6 of the guidelines.

Teaching Outcomes

> ***What did you, as a teacher, get out of teaching with a STE(A)M IT Learning Scenario and resources?*** *How did the usage of the STE(A)M IT Learning Scenario go? What should teachers and students watch out for to make effective use of a Learning Scenario created to support the integrated STEM approach? Please also describe your experience in collaborating with teachers of other subjects. What was different from traditional teaching? What advice would you give to another teacher planning to implement the same Learning Scenario about the achievement of the desired learning outcomes? (maximum 300 words).*

In our opinion the LS that we have implemented in class has been designed very well. The lessons have been properly explained. There were a lot of inputs, ideas, online resources and online tools that are very useful to transform ones teaching style. This is very important in the construction of an LS that support the integrated STEM approach. The topic of water is part of the primary school science programming but in this LS students have the possibility to approach the topic in a different way: one topic, many different activities, many different subjects. This different approach involves students and allows them to develop more skills. Team working is very important because all the work plan must be designed and coordinated together. Our collaboration with teachers of other subjects was important because they were introduced to integrated STEM teaching activities. They were very interested in it and they offered their support. We suggested to them to try to and do STEM projects in their classes and to follow step by step the STEM template.

Challenges

> ***Did you face many challenges?*** *If yes, how did you address them? Tell us more about your implementation issues, obstacles (practical or in relation to your school's organization/resources/environment), communication and planning issues, lack of knowledge, attitude towards STEM, etc. What did you do to overcome these challenges? (max. 200 words)*

The most important challenge was surely to make/manage these projects remotely, while preserving a strong laboratory footprint. It was not possible to work in groups and there was a need for strong cooperation from families as our pupils are young and sometimes they needed the help of families to connect their device for the meeting and to complete online tasks (such as Padlet). Fortunately, families have always been very collaborative and supportive, and they participated with enthusiasm in these STEM projects, both in this one and our own project that was implemented during September 2020 based on the learning scenario that we developed on Earth pollution. Another challenge was definitely having to work in a team with other teachers; for example, in this LS implementation, the

music teacher colleague did not wish to be involved in the project, and therefore this part of the LS was taken care of one by of us, even though not we are not music teachers.

Thank you!