



Erasmus+

Report of educational activity

Title of activity	Ice Balloons
School and level	Primary school – 5 th class - Age 10-11
Date	January 2019
Country	Italy
Teaching subject	Maths, Science, Technology, Music
Number and age-range of students	23 pupils, age 10-11
Working language	Italian
Type of activity	In-school classroom activity
Level of difficulty	Low
Learning objectives	Learn to observe and ask questions. Use a scientific method procedure. Classify questions and discern questions that can be "investigated" or not. Review your path of research, report it, reflect on it.
General description of activity	Students work in groups to investigate physical phenomena related to ice. They develop their own questions and try to find answers, defining which kind of questions are "investigable" or "non-investigable"
Learning outcomes	<ul style="list-style-type: none">• Classifying questions• Preparing an investigation based on research question.• Express the findings of a investigation

	<ul style="list-style-type: none">• Presenting the findings of an investigation• Critically reflecting on a research process• Analysing Questions• Performing a Variable Scan
Materials or equipment that are required	<ul style="list-style-type: none">• Ice Balloons (min 2 for each group)• Investigation material: flashlights, scissors (for cutting balloons), magnifying glasses, Salt, Sugar, Food colouring (one color), nail and hammer• Writing material and post-its
Photos or other relevant material	<p>A video clip of the activity is available at https://drive.google.com/open?id=1GdulcYs2xHg0v3FIZNs2Jsbcx137dln8</p> 

Questions about the classroom application

What workshop was your application based on?
ICE BALLOONS

Number of pupils and their level?
23 (primary 5th grade)

Where did you execute the workshop and what was the timing?
ART CLASSROOM
4 hours (2 + 2)

How did it go?

The activity was greeted with great curiosity and enthusiasm. I divided the boys into 6 groups of 4. I had no particular expectations, as despite having already had experience of group work, I did not know how students would approach this type of proposal. It was an activity in which they worked well together, where everyone could make their own observations but also share them.

What went well, what was difficult?

Having experienced the workshop firsthand before proposing it was certainly fundamental. Also the written guidelines was useful to me as a teacher. I had carefully prepared the proposed materials, even with some variations. I tried to respect the times, but it was not possible.

Phase 1: They have been able to ask themselves many questions and have been able to observe without interpreting - more than us adults, in my opinion -, thus reaching also the goal to highlight Importance of asking questions in STEM classes.

Step 2: goals (classifying questions, preparing an investigation based on research question, express the findings of a investigation) reached with reasonable ease, while turning non-investigable questions into investigable ones needed the mediation of the teacher.

Step 3: express the findings of a investigation, presenting the findings of an investigation and critically reflecting on a research process were completely new goals for the class, but stimulating. Students got involved and were able to tell their experience and in some cases even to make a critical reflection on it.

Step 4: It was the most complex phase. They needed the teacher's mediation, perhaps even for the age of the boys. It would have required more time and in-depth analysis, perhaps the possibility of giving another field to explore would certainly have helped them to focus more on the "Variable Scan".

Did you make changes to the material used in the workshop?

Yes, I brought a Coke balloons among the many, and one with food coloring, which aroused further curiosity.

I froze the balloons in two different times and in two different ways, with somewhat different results. This is to take into account.

I created observation sheets to gather information on the achievement of the objectives that I considered useful for my teaching.

Were there any challenges in making certain material available?

No, absolutely

If you look back to the goals of your workshops/lesson, what was the most important part? The knowledge, the attitudes or the competences?

Definitely competences.

Questions about student/pupil skills

What is your expectation of the students after the class

What are you hoping that they for sure will remember from the session?

- Willingness to learn
- Problem solving skills
- Being able to work in group

Which level (STEM-ladder) would you say your students have? And how have you tried to improve their level.

In my opinion, our school is not given much space to STEM. However, the educational path of this year has allowed me to develop some themes in science and technology, involving children in these disciplines with various workshops.

Personally I think of implementing in the various school cycles experiences of this kind of workshop, because they are captivating for the students, they set in motion their intrinsic ability to learn, they are stimulated to work in a team, they can therefore be better prepared to face the future.

Questions about teacher's own skills

What was the biggest challenge /difficulty when you look back at the class you gave?

1. Problem with time. I followed the steps provided but then realized that we would not have made it in one lesson so I postpone part of the activity to the next day, preparing other balloons in extremis.

2. Engage them on the communication and linguistic level, a less "attractive" field and difficult for some students of these age. These were something less explored also during the training on the workshop so I felt a bit insecure. I sought great help in the suggestions of the workshop guidelines.

*If you were allowed to choose a seminar to further develop your professional competences for these kind of applications, which course would you choose?
e.g. technically oriented (how to use equipment, tools etc)
or theoretically oriented (pedagogical methodologies)
or assessment focused (how to assess progress and skills acquired by students)*

Maybe all three of them ☺ But I think that having more technical knowledge would help to approach hands-on activities in lab.

Questions about the past workshop

Which two talents or skills do you pre-possess that were useful in these workshops?
Willingness to collaborate, to listen others' opinions.
Elasticity.

If you were allowed to choose a teaching assistant for this workshop, what qualities would he or she ideally have?
Stimulating self-discovery, stimulating creativity and the opportunity to implement "a diversion".

*According to you, what things should students definitely acquire from this workshop?
Describe also, how did you try to reach this goal?*

Understand that observation allow to rise more questions, then experimentable and verifiable. Discernment of questions. Availability for comparison, from which new ideas can be born.
The workshop is already well structured to achieve this goal

*Optional: In which way differs teaching in a Fablab from teaching in a traditional classroom?
If possible, mention one or two main advantages and disadvantages in each case.*

School: close-knit environment "aseptic", structured. Lack of space and laboratories with the possibility of having multiple materials freely accessible by the boys.
Fablab: we are less taken by the anxiety of dirtying, ruining, and this leads us to experiment more.

School: large class.
Fablab: the number of participants varies.

School: free and compulsory for pupils.
Fablab: individual choice, not indifferent aspect on the motivational level.

School: I can teach multiple disciplines, such as music, mathematics ...
Fablab: I don't know.

Overall, if you could change, add or improve one thing in the workshop you attended what would it be?

It might be interesting to have students prepare balloons by themselves.