3. The Ulysses' boat

Authors

Combining STEM with the promotion of fine motor skills and large-scale collaborative learning.

Introduction

The STEM micro-project "The Ulysses' boat" has been included within a wider didactic unit called "Ulysses and the storm".

The adventures of Ulysses can be very engaging and stimulating for young children. The didactic unit "Ulysses and the storm" seemed very apt to include the construction of the automata called "The Ulysses' boat challenging the waves".

For the Ulysses boat it was decided to use the "Crocodile" mechanism, with the aim to promote:

- Mathematical concepts: quantity, numbering, length, width, size, shapes.
- Familiarity with mechanisms: in particular connections between objects.
- Science concepts: the atmosphere

The workshop involved all the 3 to 5 year old children of the school that are a heterogeneous mix.

The activities took place in each of the school classes of 23/24 children, in February 2020 over the course of about 2/3 weeks. The group of pupils included 6 children with special needs, 5 of them with different types of disabilities.

Context, approach, and implementation

All the children of the school participated to the different phases of the workshop. The workshop used different pedagogic strategies that were tailored to each child, respecting their individual learning rhythms and characteristics. The main learning objectives were:

- Development of fine motor skills
- Encouraging participation within the group
- Stimulating curiosity, attention and interest.

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The teachers prepared an automata model beforehand to enable the children's to see and build their curiosity. From the presentation of the automata to the final dramatisation, the steps were:

STEP 1; Presentation of the automata,
Presentation of the automata by the teacher, the children could explore the toy and share their reflections on the functioning of the mechanism, materials needed, and build hypothesis of its construction.
They were also allowed to observe the materials, previously prepared by the teacher, who also stimulated questions and encouraged an exploration of shapes, quantities, sizes, types of connections.

STEP 2: Making the automata
Each child individually coloured and cut out some elements of the automata (boat and sail); they worked as a small group for assembling the various elements under the verbal and/or physical guidance of the teacher.

STEP 3: Preparation of the setting
To create the drama 'The Ulysses' ships in the storm, on the journey back to Ithaca a physical scenario was constructed. This included a blue cloth for the sea, that is held up by the children; balloons for the sound of the sea and rain; bottles, tubes, salad spinner for the sound of the wind. Before making the drama, the children were asked to recognise the sounds produced.

STEP 4: -Dramatisation:
In this workshop, the STEM activities were about the weather. The dramatisation was carried out by groups: one group performed the soundtrack and the other group performed the

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dramatisation with the children behind the cloth, moving their automata, represented Ulysses' ships in the storm.

Challenges

The individual work phase took a long time, given the large number of children. This difficulty was overcome through the involvement of both teaching and non-teaching staff across the school classes.

Results

Figure 1. The scenario of the representation

Discussion

The workshop was held through the support and the enthusiasm of the entire teaching staff of the school, who invested time and resources in the various stages of implementation. This deep involvement was the factor, which ensured the success of the project together with the enthusiasm, the participation, interest and curiosity of the children. The complexity of the activity

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required the child to apply many different skills. These innovative activities in STEM education were also positively evaluated by some parents.

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