



Title of the activity: Write your name by using magnets	
AGE RANGE	3/4
Activity for...	Group of 5-6 children with educational robotics
Author	
DURATION / TIMING:	<p>Three weekly sessions along a month:</p> <ul style="list-style-type: none"> - Presentation of the concept of magnet and its properties. - Sharing previous knowledges (guided by teacher) - Creation of corners where children can experiment with the learned properties
REQUIRED MATERIALS:	<ul style="list-style-type: none"> • Magnets • cartons • clips • pencils • glue • scissors • paper folders • paintings • eraser • sharpener • Robot
PREPARATION OF THE ENVIRONMENT:	<p>Before starting the activity you can dedicate a few minutes either for improving conscious breathing with children or for watching short stories related to cooperation, and team working. Starting calmly favours a security classroom environment that facilitates active participation.</p> <p>https://www.youtube.com/watch?v=U2U6WfBovAE</p> <p>https://www.youtube.com/watch?v=gQiaAb6VGt8</p> <p>https://www.youtube.com/watch?v=lxHwyz3pmGI</p> <p>https://www.youtube.com/watch?v=hPOYE76e5Ks</p>
DETAILED	Start the activity describing a motivational situation, such as: Presentation



of

the concept of magnet and its properties. We will begin with the story of
The mystery of the Magnesians

English: <https://www.youtube.com/watch?v=CqIFvFNe1Nk>
<https://www.youtube.com/watch?v=yZrdkZVbzOk>

Spanish: <https://www.youtube.com/watch?v=8g718fepBIQ>

We can also represent the story with magnetized objects.

Other activities: paint the characters (shepherd Magnet...)

-Searching pupils previous knowledge (guided by the teacher)

Material organized on 4 corners where children can touch, observe and experiment:

Corner 1) Objects that can be attracted and that are not attracted to the magnet.

Provide some magnets and different metallic and non-metallic objects.

Corner 2) The force of the attraction of the magnet...

Provide for example some bottles or packaging (use recycled materials), some with a screw inside and some empty

Paper folder with clip underneath and without clip.

If needed, teacher can encourage the observing and discovering process asking some general questions: "What happens? Can you find some difference?"

Corner 3) Attraction distance of two magnets

Hang up two-three magnets at different distances but accessible to the children height.

Corner 4) Games with magnets

Car race with magnets: each car carries a magnet and with another magnet children will make them move (concept: force of repulsion).

DESCRIPTION:
How the activity is implemented?



	<p>Fishing game: the fish or sea stars carrying a piece of iron and the fishing rod carries a magnet. (force of attraction)</p> <p>Once all children have had the chance of getting familiar with the materials they will use, and their characteristics, they can share their observations.</p> <p>After having experience with the magnets and sharing ideas in the assembly, pupils <u>individually</u> start to design their name (they can draw on a paper, or make a prototype with clips).</p> <p>Then using a magnet each child will “write” his or her name moving the chosen material with a magnet.</p> <p>Once the activity is finished, dedicate some moment to analyze, together with the pupils so they can explain themselves about the work done, how much they enjoyed it, if they learnt, what they liked the most, what was the hardest...</p>
<p>ROLES of the CHILDREN</p>	<p>IF CHILDREN HAVE NEVER USED A ROBOT BEFORE, we recommend you to start with some unplugged practice, so they can start to understand either the robot mechanism and to assume an specific role within the group, for example:</p> <p>After presenting the initial motivating situation, in case pupils have never use a robot, teacher will introduce robots to the pupils: what is a robot? What a robot is for? Once the robot has been introduced, we can start to program it. For starting to learn how to program a robot, we, initially, do not need any device, nor even a robot; our own body is enough for the very first approach. So we organize a group of 4-5 pupils and give each of them a role:</p> <ul style="list-style-type: none">• Programmer: it is the person in charge of choosing the path and click on the bottoms to make the robot execute it by using the dif-



ferent commands:

- A touch on the back means one step forward
- A touch on the right shoulder means turn to the right side without scrolling.
- A touch on the left shoulder means turn to left side, without scrolling
- A touch on the head means start moving under the received commands
- Robot: the pupil that follows the programmer instructions
- Supervisors: they are in charge of representing with arrows each of the steps the robot make on the floor or pavement of the class-room.

Once pupils have got familiar to the commands, allow them to use the robot and to play with it, clicking different commands to understand the way it works.

IF PUPILS ALREADY KNOW HOW A ROBOT RUNS, organize groups with 4-5 members each and follow the detailed description of the activity, considering they will always work as a group and not individually.

Give each of them a role related to the use of the robot and establish clear and shared rules. Possible roles:

- Programmer: decide the sequence of commands and communicate with the one with Executer role.
- Controller: observes what the programmer says and writes/draws the sequence of commands. He/she can give some suggestions.
- Executer: clicks the button following the commands given by the programmer
- Coordinator: vigilant of the order and respect of the turns



	<ul style="list-style-type: none"> • Spokesperson: the pupil that relates/reports/talks/ explains all the process to the plenary group.
<p>ROLE of the TEACHER:</p>	<ul style="list-style-type: none"> • He/she has all the necessary materials prepared and accessible for pupils. • Introduces the initial motivated situation to children and allow them to play and explore. • Supports the observation and encourages children to solve the challenge, either by introducing questions or by offering them materials or other. • Observes the process and is available to support if the child needs • Shows an open and positive attitude towards the demands and needs of the children valuing what they are doing, showing interest in what they do • Presents and facilitates the development of activities in a joyful way • Facilitates the collection and cleaning of materials and spaces • Guide the discussion about experiences
<p>EXTRA RESOURCES</p>	
<p>Other remarks / Hints for the implementation</p>	<p>ASSESSMENT:</p> <ul style="list-style-type: none"> • For teachers <p>Answer the following questions:</p> <p>Previously to the activity: What you initially plan pupils to learn. What you think pupils will learn.</p> <p>Afterwards: What pupils have really learnt</p> <ul style="list-style-type: none"> • For pupils: <ul style="list-style-type: none"> - Self-assessment (pupils express whether they liked it or not, how much they enjoyed themselves, they can identify how they feel



	<p>with an emoticon)</p> <ul style="list-style-type: none">- Generalized evaluation: pupils are able to place the magnet in a metallic place either in the classroom or at home- Communicate what has been learned to another group of pupils in the school.
References, if any	Adapted from Erasmus+ Botstem project: <i>Robotics and STEM Education for children and primary schools toolkit</i> (www.botstem.eu)