Climbing robot	
AGE RANGE	5
Activity for...	Groups of children with educational robotics
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DURATION / TIMING:	We propose not to measure the timing in hours and minutes but according to the different stages based on the scientific method, that is, you can decide, basing on your pupils needs, how long to dedicate to each of the following stages. However, we will make a proposal in case you feel more comfortable to start with: • Time for playing and exploring (15 minutes). • Time for observing (teacher can support and guide this stage by making questions) (10 minutes). • Time for discovering (15 minutes). • Time for explaining and sharing observation and discoveries made (30 minutes). • Time for experimenting (20 minutes). • Time for designing and building (40 minutes)
REQUIRED MATERIALS:	• wooden boards • surfaces of different textures: sandpaper, acetate, cardboard, cardboard boxes • bodybuilding or scotch tape • scissors • toy cars • toy dolls • toys with building material • robots
PREPARATION OF THE ENVIRONMENT:	-The classroom is the reference space for the group; the aesthetic, order and cleaning component is essential to build a suitable environment. -Some space organization schemas allow children to work more autonomously, reducing the need of the teacher's constant intervention. -Well organized and displayed materials allow easier and more independent transitions from one to another activity and can arouse interest and promote children self-confidence.

	-Clear and shared rules facilitate positive behavioral references and a sense of safety.
	-Supportive atmosphere on the relational dimension fosters positive self-esteem and enhances intercommunication process among individuals.
DETAILED DESCRIPTION: How the activity is implemented?	-Start the activity describing a motivational situation, such as: *In a small village in the province of Valladolid (you can change this with the place you want), the City Council will mend a beautiful viewpoint at the top of the mountain. From the viewpoint you can see the whole landscape, with rivers, forests ... it is so beautiful! and is quite close to the village. It happens that in our village there are many older people who find very hard to climb because the road is in very bad conditions. In order to facilitate an easy road for everybody to reach the viewpoint, the Mayor has asked children for help. You will have to find what features should be included in the design of the road so that all the grandparents can go for a walk and enjoy the landscape there.* -Put the material in an accessible place where it will be possible for children to play, touch, explore and to get familiar with it. -Once pupils have explored and discovered the material characteristics, possible uses, etc, the teacher can ask some questions to guide the observation, such as: "what happens when we try to climb an icy ramp? When you walk along a ramp, is it easier when the ramp is long and not too steep or is it easier to climb a short ramp highly steep?". The teacher can accompany questions with different images. -At this stage, the teacher can also remind children that they have to build a road to the viewpoint of the village, with the materials they have in the classroom. That way children can start to inquire and think of possible ways. -After the common sharing of ideas in the assembly, pupils individually start to design how they want to build the road (they can draw on a paper, make a prototype) experiment and try different roads (longer or shorter, more or less inclined…) -Once the activity is finished, dedicate some moment to analyze, together with the pupils, so they can explain the work done, how much they enjoyed themselves, if they learnt, what they liked the most, what was the hardest…
ROLES of the CHILDREN	Organize groups with 4-5 members each and follow the detailed description of the activity, considering they will 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: decides 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 • Spokesperson: the pupil that relates/reports/talks/ explains all the process to the plenary group.
ROLE of the TEACHER:	• He/she has all the necessary materials prepared and accessible for pupils. • Introduces the initial motivated situation to children and allows them to play and explore. • Supports the observation and encourages children to take the challenge, either by introducing questions or by offering them materials or other.
EXTRA RESOURCES	
Other remarks / Hints for the implementation	**ASSESSMENT** • For teachers- answer the following questions: Previously to the activity: What you initially plan pupils to learn. What you think pupils will learn. Afterwards: What pupils have really learnt • For pupils: Self evaluation (children can express if they liked it, how much they enjoyed the activity, maybe through some emoticon or stickers, or colors or by talking in the Assembly they use to having within their routines)
References, if any	Adapted from *Divulgación científica-UCCi-UBU Sábados de ciencia 2018-2019* (Universidad de Burgos)