ROBOTIC ACADEMY
ASHOKA EDUCATION

ASHOKA

THE PROJECT IN A NUTSHELL

«*MAKE SENSE OF MATH LEARNING WHILE DEVELOPING CHILDREN'S CROSS-CURRICULAR SKILLS THROUGH ROBOTICS*»

CHALLENGE

The Robotic Academy project is based on the observation that 85% of the jobs that will exist in 2030 do not exist today. In addition, we now know that these trades will all be closely or remotely related to the digital world. It is therefore urgent to move from a logic of teaching pure knowledge to also teaching the skills necessary to evolve in the world of tomorrow. From primary school, it becomes essential to work with children on their digital skills but also on their cross-curricular skills and especially the «4C» - creativity, collaboration, communication and critical thinking.

PROJECT

The Robotic Academy project offers children ages 9 to 16 to create robots as part of a robotics competition. In collaboration with experts, children learn to design a robotic solution around a theme and a problem defined upstream. This project has the dual objective of giving meaning and bringing concrete to the learning of mathematics but also to develop critical thinking and problem solving in children via programming a robot.

STAKEHOLDERS

The teacher: the project coordinator must have a strong appetite for science and computer development. For the novices, there are many online tutorials available and educational robots have accessible software. The experts: it is recommended to surround yourself with development experts to help with difficult questions!

WOKRLOAD

It is a project that can take place in class as well as out of the classroom. It requires at least 30 hours of classes, and potentially a lot more if students decide to participate in the contest!

RESOURCES

The project requires the purchase of a programmable basic robot (about 350 €) as well as the cost of participation in the contest if necessary. It also requires a dedicated place that locks up to store equipment and work with children.

HOW TO IMPLEMENT THE PROJECT IN YOUR SCHOOL

1 - PREPARE THE PROJECT LAUNCH

### GET TRAINED IN ADVANCE

Before embarking on this project, it is recommended to take the time to learn the basics of computer development. There are many free or accessible online and face-to-face training courses. Forums dedicated to robotics are also an essential passage to inspire and draw information.
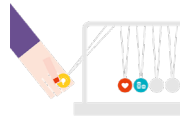
BECOME FAMILIAR WITH THE ROBOT

You then have to buy the basic robot and download the adapted software that comes with it. Take the time to familiarize yourself with this one before starting with the kids! These softwares are relatively accessible but still require a preliminary grip.
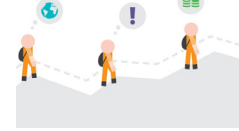
PREPARE YOUR SESSIONS

The ideal is to plan at least 30 sessions of one hour and a half to arrive at a functional robot. Starting from a theme (that of the contest where applicable), the objective here is to cut the 30 sessions into small learning modules. Many online resources offer this kind of cut-outs.

2 - START THE PROJECT

INSPIRE THE STUDENTS

Start by presenting the project to students and stimulate them by showing them examples from previous years or robotics competitions. Based on the chosen theme, do online research to find robot ideas that appeal to them with the associated features.

CARRY OUT THE FIRST MISSIONS

At each session, ask the children to choose a goal / mission for their robot. (example: to code the robot to make a trip). Let the children work independently in small groups of 3-4 while accompanying them with a progressive supply of tools.

CELEBRATE EACH MISSION

At the end of each session, think about filming the demonstrations of each group. Each mission can be posted on a Youtube channel of the class and thus attest to the students' progress. It's usually a source of pride that helps build their self-confidence!

3 - FINALISE AND CELEBRATE

INVITE EXPERTS

During the 30 sessions, try to bring an expert to facilitate an ephemeral workshop around a specific technology (drones, Adruino, Virtual Reality ...) to open the students to a maximum of possible applications of robotics .
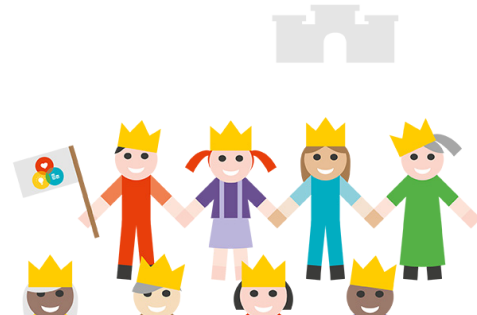
TEST AND VALIDATE

Test the features of the final robot and validate the scientific aspects of the solution with other teachers at the school. Invite an expert to come test the solution or go to forums and robotics festivals to test the robot outside the walls of the school and improve it further.
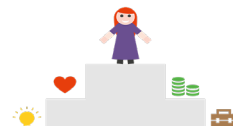
PRESENT THE FINAL SOLUTION

Participation in a competition is generally very motivating and rewarding for students. Otherwise, do not forget to organize a festive event of presentation of the final project with the other students of the school to promote the work and celebrate the results!

PREREQUISITES FOR THE PROJECT

It can be useful to make a statement of skills in the official program that the project allows to develop. Indeed, it can give confidence to the school management on the one hand and to parents on the other hand in supporting the project.

Becoming familiar with the «21st century skills» that the project develops is a significant asset in working these cross-curricular competencies in each session and ensuring that students become aware of them as well.

BEST PRACTICES AND LESSONS LEARNT

SHOW PERSEVERANCE

This type of very stimulating project can also become very energy intensive, especially if you register your group for a competition. You risk being often put in check because things do not always work as one wants! With computer development you have to persevere first and foremost to understand the origin of the problem and solve it. Do not forget to surround yourself so as not to be discouraged.

AN EDUCATIONAL TOOL FIRST AND FOREMOST

It is therefore essential to keep in mind the real objectives of the project, namely the development of transversal and digital skills of children. One of the main pitfalls would be to get lost in the robotic content - as exciting as it is - and forget that it is primarily a teaching tool.

GET OUT OF YOUR COMFORT ZONE

Finally, the role of the teacher is here to guide children in their learning and not to design in their place the best robot possible! It requires being humble to be at the same level as they are, but also sometimes to accept being completely overwhelmed by them. The ability of the teacher to question herself, to dare to test things outside her comfort zone and to get out of the posture of «knowing» is therefore essential.
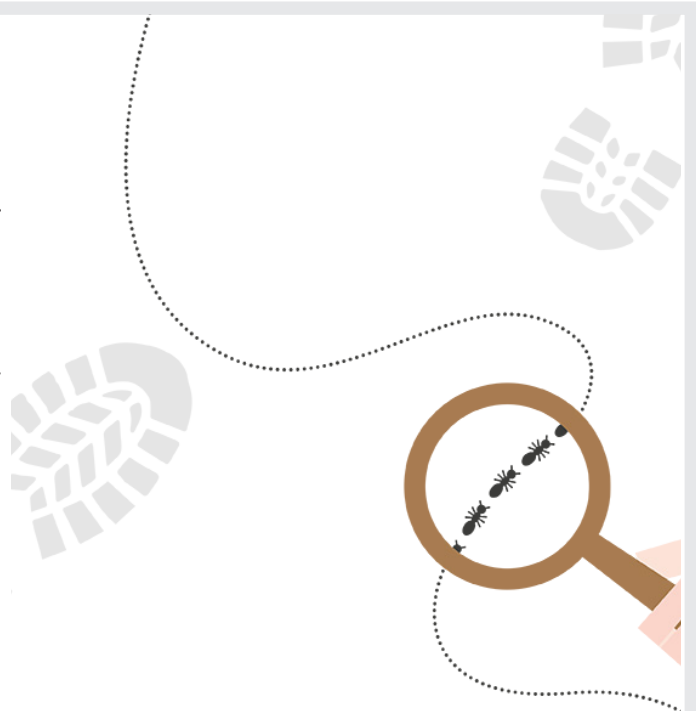
MORE INFORMATION TO GO FURTHER

CONTACT
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VIDEO
Discover the story, the participants and the backstage of the project on video:
www.ashoka.org/en-be/eduinnovation