TangIn

Tangible Programming & Inclusion

TangIn Toolbox
Maps and Traffic Signs

8-10 years old	
Scales	Coordinates System
Traffic Signs	Itineraries
Probotic	

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Summary

Understand maps and scales, coordinates systems and traffic signs.

Expected duration: **50 min** (the lesson plan duration is flexible, and teachers can adapt them accordingly to their needs and class duration).

Learning Outcomes

At the end of the session, students are expected to:

- Apply the concept of scale to reproduce a map;

- Identify the location of an object by its coordinates;

- Identify some relevant traffic signs and their purpose;

- Understand the importance of respecting traffic rules and signs;

- Program the robot adequately;

- Value STEM areas;

- Develop transversal competencies such as problem-solving, communication and reasoning;

- Develop group work skills, namely, to respect and favor the inclusion of all elements, regardless of gender, culture, etc.

Links With Curriculum Topics

Covered Curriculum Topics		
Subject		**Topics**
Engineering	**Mathematics**	Numbers and operations • Scale • x-y coordinate system Geometry Location and orientation – itineraries
	Science	Living in society • Traffic signs
	Technology	Programming • Concepts of programming • Programs – Results, errors, and troubleshooting Robotics • Programming objects to solve challenges

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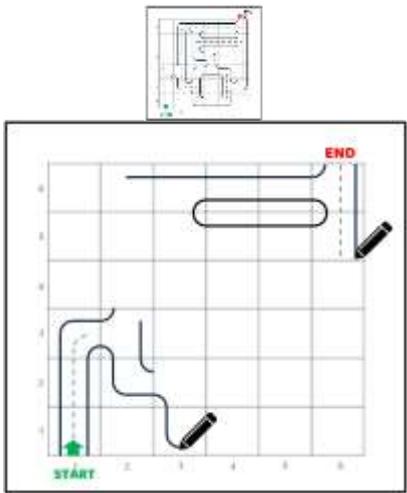
Notes for Teachers

The teacher should prepare, in advance, all the materials needed and the classroom according to the activities to be developed.

The teams should be as heterogeneous as possible to foster the integration of all students.
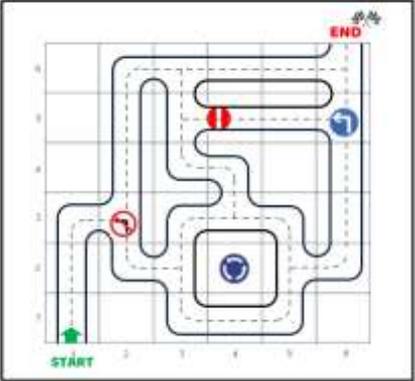
It's important that clear rules are established in terms of group work. This way it avoids the most active children assuming the lead and the quitter ones only observing.

The teacher must circulate through the various groups to support the activities and the dynamics of each one. In the end, it should promote a collective discussion of the main issues focused and the constraints and difficulties experienced.

Lesson Plan

🎬	🕐	👥	📄	🖼️
Intro	10'	Class	"Today's mission is to teach MI-GO how to read a map and some traffic signs." Briefly address the class and discuss what a map is: a representation on a smaller scale of some reality.	
Prep	10'	Group	Divide the class into groups and each group into two teams. Give each team a permanent marker (two markers per group). Distribute a small map to each team and ask them to draw the road that they have on the map in the full-scale scenario (grid). One of the team initiates from the "start" and another from the "end". Number the Columns and Lines on the scenario and discuss/remember the concept of coordinates.	

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Play	20'	Group	The objective of one team is to program MI-GO to go from Start to End following the road and respecting the traffic signs. The other team puts the traffic signs under the transparent scenario so that it complicates their task. However, the traffic signs cannot be displayed in such a way that makes it impossible to reach the end. Then, the teams switch roles.	
Discussion	10'	class	The teacher encourages a collective discussion about the main signs of traffic used and the importance of complying with traffic rules for the safety of users. It refers to each of them identifying their location in one of the scenarios used through their coordinates.	

Resources List & Support Material

Per each group:

- A robot Kit with drawing capabilities;

- Cards with traffic signals (Annex);

- Card with map of road (Annex. Note: a clear grid is also given to allow the teacher or students to draw their own maps);

- Two markers for each group (easy to erase/clean);

- Alcohol for cleaning the scenarios (for teacher use only);

- Scissors (to cut the cards);

- Transparent scenario with a 6x6 grid.

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END

START
1 2 3 4 5 6

END

START
1 2 3 4 5 6

END

START
1 2 3 4 5 6

END

START
1 2 3 4 5 6

END

START
1 2 3 4 5 6

END

START
1 2 3 4 5 6