



TanglIn

Tangible Programming & Inclusion

TanglIn Toolbox Words + subject



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Summary

In a grid with letters find the answers of the subject(s) questions pulled.

Keywords: Geography (national, world depending on the grade), periodic table of chemical elements

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:

- Find in the letter grid as much as possible answers to questions from one or different subjects from the curriculum in a competitive mode.
- Program the robot adequately;
- Develop transversal competencies such as problem-solving, communication and reasoning;
- Develop communication and team working 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	Not applicable
	Science	Geography: <ul style="list-style-type: none"> • National or world geography (depending on the questions used)
	Technology	Programming <ul style="list-style-type: none"> • Fundamental principles and concepts of programming • Programs – Results, errors, and troubleshooting Robotics <ul style="list-style-type: none"> • Programming objects to solve challenges



Notes for Teachers

The teacher should discuss with the students, in a previous class the topics that are included in the selected questions, and 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.

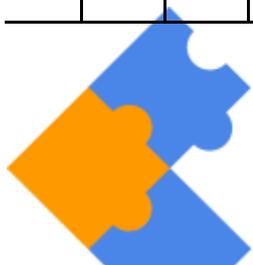
The teacher must circulate through the various groups to support the activities and the dynamics of each one. In the end, it should promote a collective discussion of the main issues focused and the constraints and difficulties experienced.

Lesson Plan

				
Intro	10'	Class	The mission today is to use the robot and the Geographical map (Country, Europe, World) or Periodic Table of chemical elements and a grid of letters and in competitive mode to win the game.	
Prep	10'	Group	<p>Divide the class into groups and in each group create two teams that will compete in the exercise, trying to identify the higher number of words.</p> <p>Present the teams which are the subjects of the game (geography, chemistry, history, other).</p> <p>There are several approached to use this activity:</p> <ol style="list-style-type: none"> All the class works on one subject and on the same topic but with different letters prewritten on the grids given to each group. 	



				
Prep	10'	Group	<p>Examples can be: i) Geography (World, European, National), ii) names of countries; iii) names of rivers; iv) names of elements of the periodic table; .v) Names of personalities of national history, etc...</p> <p>2. All the class works on one subject but each group on different topics and with different letters prewritten on the grids given to each group.</p> <p>Examples can be: i) Geography – group A does names of rivers, group B does names of counties; group C does names of cities; II) History – group A does names of past kings, group B does names of famous battles; group C does names of significant events</p>	
Challenge	30'	Groups	<p>On the grids given to each student, the teacher will have prewritten letters (cross, diagonal, at the borders, etc).</p> <p>The first task for students is to use those letters and wrote down (for example) names of rivers as long as you can find. In each group, each team plays alternatively and uses markers of different colours.</p> <p>When they have found all the rivers names, they must program the robot to follow each of the river name in the grid.</p> <p>Teams will get points per letter (1 letter; 1 point). However extra 1 point is given every time a team finds a word crossing existing written letters on the grid. Be creative in movements (don't forget the 45-degree angle moves).</p>	



				
Reflection	10'	,	<p>Present the results of the groups and the winners.</p> <p>Comment the way different teams have reached their score.</p>	

Resources List & Support Material

Per each group:

- A robot kit with drawing capabilities;
- Transparent scenario with a 6x6 grid (for a better result, use bigger grid 10x10)
- Markers – black and red (easy to erase/clean);
- Alcohol for cleaning the scenarios (for teacher use only).

