

Learning Scenario title

“Place your Token!”

Educational level/ Age group	Elementary school pupils aged 8 to 11 years
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Learning objectives / aspirations

- To reinvest one's knowledge in programming
- To anticipate movements to construct a code
- To cooperate to achieve a common goal



Narrative overview

After discovering in groups the activity booklet from the Matatalab kit, the pupils in the class take part in a cooperative challenge to reinvest what they have discovered.

This challenge allows all pupils to be active and to anticipate the movements of the robot. The coloured tokens are shared between two teams who have to place them one after the other. The teacher will keep an eye on the students' activities, but will mainly be an observer and will intervene only if necessary. The first objective for all is that the robot does not leave the board. Once the code is complete, the two teams and the group of observers must place their flag on the square where they think the robot will stop without leaving the board.



Approach to teaching and learning

Approach to teaching and learning	NCRC: collaborate - program - solve technical problems - operate in a digital environment Scientific domain: understand the functioning of a robot - learn to code - program algorithms Living language: participate in exchanges in various situations: - practise the expected forms of discourse (in particular describe, explain) - participate with relevance in an exchange.
Approach to assessment	The following learning outputs will be evaluated: <ul style="list-style-type: none">• The booklet of the kit completed by the group in a workshop with the creation of a route using the learnings from the booklet.• The ability to anticipate the path of the robot according to the code that has been constructed



Roles

Teachers	<i>The teacher as playmaker who designs the games</i>
Learners	<i>The students as players</i>
Others	X



Learning environment

<ul style="list-style-type: none">• In groups, during a workshop, the pupils follow the activities in the first booklet of the kit independently. They work in autonomy• When all the groups have completed one booklet (the first one on the green tokens), the cooperative challenge is launched.• Two teams of 3 students compete in front of the whole class. The spirit is collaborative without competition with active spectators.

- The game then becomes an important learning phase of the sequence. It enables students to reinvest and reinforce the skills they have collectively developed as a group.
- All the pupils participate and try to achieve the same objective.
- The following sessions work in the same way with the discovery of new tokens thanks to the notebooks and the organisation of a challenge by team (alternating teams).



Learning activities

Rules of the game:

The aim is to build a code for the robot without it leaving the board.

- At the beginning of the game, the mobile robot is randomly placed on the board by a student from the class.
- Each team receives half of the tokens, with a maximum of 12 tokens per team. At first, we play with the green tokens, later we will add the other colours as we get to know the material and the different tokens. The tokens are visible to all.
- Each team takes turns placing a token on the track. Each group is obliged to place a token.
- The game ends when there are no more tokens or when the whole track is filled.
- When the mobile robot is launched, if the coding makes it leave the board, the challenge is lost.
- Each team is responsible for choosing a token so that the robot does not leave the board. Students must also anticipate the moves that the other team will make. When choosing their token, they must take into account the other team's tokens so that the other team does not risk making the robot leave the board.
- The teams can discuss within their team but never exchange with the other team.
- Each time a token is placed, a pupil from the class who is not in a team and who is observing can intervene to make the teams aware of a possible risk of the robot leaving.
- When an observer intervenes, there is collective negotiation but only the observers can discuss and not the teams. During the negotiation, the observers discuss the pupil's proposal, but the teams cannot talk or explain their strategy.
- Following the exchange between the observers, the teams can then either decide to change their strategy or to maintain it.
- The game finishes when all the tokens are placed, even if the teams know they are going to lose.
- Each team has a flag that they can place on the square where they think the vehicle robot will stop. They can even point the flag in the direction they think the vehicle robot will look.



The observers can discuss placing the third flag together. The robot is launched, and it is checked whether the cooperation has worked.



Possible challenges

Variations:

- Add more tokens.
- Have the children choose 12 tokens.
- Do not allow one chip to be placed after another.
- Limit the time for reflection with a stopwatch.
- Impose a blank on the empty square and a pupil chosen at the start places a token chosen from the remaining tokens or randomly picks a token before the game and places it in the blank at the end.



Resources

Matatalab kits



Literature to support

Playing to Learn, How a pedagogy of play can enliven the classroom, for students of all ages
<https://www.gse.harvard.edu/news/uk/19/03/playing-learn>



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