BotSTEM – Erasms+ KA2 Project

2017-1-ES01-KA201-038204

Good practice template

1.	**Title of the activity / practice**	**Adaptable Learning Graph for Maths for children aged 6**
2.	**Origin of the activity**	Mathisis - Managing Affective-learning Through Intelligent atoms and Smart Interactions Horizon 2020 Project (Contract No.: 687772) www.mathisis-project.eu
3.	**Age of the students**	6 y.o.
4.	**Target group (type of the learners, size of the group)**	Learners from mainstream education and with special needs.
5.	**School subjects + topics concerned**	Mathematics
a.	**Educational goals of the practice**	Develop the ability to: - identify number and quantity correspondence - discriminate greater than/less than
6.	**Duration**	Adaptable to the needs of the learners
7.	**Place**	Computer lab Class Home
8.	**Short description of the activity**	The system MaTHiSiS provide an online platform through which the registered teacher can create her/his lesson plans, individualised for each pupil according to his/her profile. The teacher can create learning graphs using learning atoms (simple piece of knowledge, competence or skill) to define the learning objectives. The learning activities can be implemented by different platform agents as: PCs, mobile devices, NAO robots, IWB. The system gathers information from sensors and adapts the learning material to the affective state of the learner.

Learning Atom: Number Quantity Correspondence
Learning Action: Associate a number with a quantity (using NAO Robot)

The Robot ask to the pupil to show him the card with a certain number of dots

- Key moments

Teacher initialises the system and begins the student's interaction

Nao asks "Show me the card with the number X"

The pupils pick a card and shows it to the robot

Response with the wrong number of dots, the system states the correct number. The system responds with confirmation, correction or prompting

Repeat for the predetermined number of times

Learning Action: Associate a number with a quantity (using mobile devices or desktops)

- Key moments

A random number of dots appear on screen, the system asks, "How many dots are there?"

Verbal response with the correct number of dots- If the answer is wrong the system states the correct number. The system responds with confirmation, correction or prompting

Repeat for the predetermined number of times

- Levels of difficulty:

Easy level: 2 numbers

Medium level: 3 numbers

Hard level: 4 numbers

- Range of numbers:

Easy and Medium: 1-10

Hard level: 1-20

Learning atom: Discrimination of greater than / less than
Learning action: Put numbers in order (using robot NAO)

- Key moments

  Teacher starts the system and the robot prompts for student's interactions.

  The robot says random numbers (non-repeating) and says : "order the numbers rising"

  Verbal answer with the correct order

  The system gives feedback

Learning action: Put numbers in order (using mobile devices or desktops)
- Key moments

On the screen there are numbers in a random order.
The pupil has to order these numbers correctly.

- Levels of difficulty:

Easy level: 3 consecutive numbers
Medium level: 3 numbers
Hard level: 4 numbers

- Range of numbers:

Easy: 1-10
Medium: 1-20
Hard level: 1-50

Learning Action: Identify the largest / smallest number between two numbers (using NAO robots)
- Key moments

The robot says: "Tell me which is the smallest (or largest) number, X or Y (or Z …)"
Verbal answer with the correct number
System gives confirmation, correction or prompting
Student achieves 3 correct answers in a row
Student achieves both smallest & largest number identification tasks

Learning Action: Identify the largest / smallest number between two numbers (using mobile devices or desktops)
- Key moments

Teacher starts the system and begins student's interactions.
The system shows notification: "Show me which is the smallest (or largest) number."
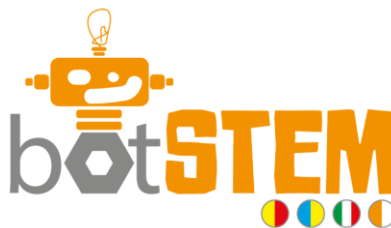Interaction (click/tap) on the correct number
System gives confirmation, correction or prompting

- Levels of difficulty and range of numbers:

Easy: 1-10
Medium: 1-20
Hard: 1-50

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9. Evaluation	The system automatically records the performance of the learner and his/her affective engagement in the activity, and analyse it in order to provide suitable learning material. The results of this analysis are visible in the learner profile on the platform so that the teacher can identify the area of strength and difficulties.
10. Materials / Resources / technical requirements	www.mathisis-project.eu http://prod.mathisis-project.eu/app At least one of the three: - Laptop and computer with win 7 or above - Mobile devices with Android 5.1 or above - Nao robot
11. Tips for educators / theoretical background (if applicable) or curriculum context	The Mathisis system is adaptable to each kind of learner, depending on the material the teacher wants to upload on the platform.