Storytelling with Ozobots / A public research lesson about young learners' programming with Ozobots

Research question:*What initial insights into programming c*an a cross-curricular approach through storytelling achieve?

Sub-questions:
Can students use simple programming commands correctly?
Based on the plot of a fairy tale, can students use simple programming commands in a meaningful way?
Can gender differences in the approach, design and selection of codes be identified in the implementation of the task?
What creative solutions do pupils find in programming the story?

RL author: Karin Tengler	Knowledgeable others: Claudia Mewald, Sabine Apfler, Iris Giefing
Instructor: Karin Tengler Class teacher: Franziska Ruttmann	Reflection: Karin Tengler, Regina Müller, Claudia Mewald through MS Teams

Version: *3*	*Date: 23.10.2020*	*Place: Practice Primary School of the University college of Teacher Education Lower Austria*	*Context: year 4, primary school, 9-10 year-old pupils*
Starting competence			
General	Learner A	Learner B	Learner C

At primary level, digital literacy is integrated into the pupils' course work, i.e. there are no scheduled lessons for IT education. The pupils have already gained some experience in the field of digital competences: They know that robots are machines which are controlled by programming. They have never programmed Ozobots before. They are familiar with the plot of the fairy tale "Little Red Riding Hood". They have sufficient fine motor skills to draw continuous lines and curves with felt pens.	Knows robots and knows that they are programmed Knows the fairy tale Possesses good fine motor skills for drawing lines Can recognise connections Can reproduce action sequences	Knows robots and knows that they are programmed Knows the fairy tale	Knows robots and knows that they are programmed Knows the fairy tale
Target competence (anticipated)			
General	Learner A	Learner B	Learner C

Pupils (ps) get to know the Ozobot robot

Ps know where to find programming commands

Ps can use programming commands correctly, i.e. they link the command and the action correctly

Ps can retell the fairy tale

Ps can draw the fairy tale sequence and programme the robot Ozobots according to the storyline (stop, look around, fast, slow…) | Understands how the robot works and can explain it

Knows where to find which programming commands

Remembers programming commands and uses them correctly

Knows the plot of the fairytale

Is able to draw the story sequence and to program the Ozobot robot to follow the sequence aligned with the continent (e.g. the robot moves slowly, fast …) | Knows that the robots can be programmed and that they move on lines

Can use the commands if provided with help

Knows the fairy tale and the plot

Can complete the task with the help of classmates | Knows robots

Needs support by the teacher or classmates to find or implement commands

Knows the fairy tale

Can implement the task with the help of classmates and teachers |
| **Target performance (anticipated)** | | | |
| General | Learner A | Learner B | Learner C |

Ps draw lines to direct the Ozobot Ps use points for the corresponding programming commands Ps discuss the reactions of the robot Ps discuss the plot of the fairytale Ps display the sequence graphically Ps draw in important details Ps stick on codes Ps observe whether the robot reacts accordingly Ps tell the fairy tale using the graphic representation	Draws lines and curves continuously Assigns all programming commands correctly Names the title of the fairy tale Tells the plot of the fairy tale Reads the text and converts the sequence graphically correctly Finds all commands in the programming table Sets the appropriate programming commands Retells the sequence in a comprehensible way	Draws lines is successfully Sets programming commands correctly Listens while peers discuss the fairy tale Draws the sequence Gets distracted by detail Sets commands with the help of peers Retells the sequence reasonably comprehensibly	Cannot drawing continuous lines Gets help with the programming Listens only partially and gets distracted Does not finis due to distraction

Observed performance			
General	Learner A	Learner B	Learner C
The majority of the learners were able to solve all the tasks set without any problems. They actively participated in the introduction of the Ozobots. The students put forward hypotheses about how the Ozobot might react. The coding and decoding of the fairy tale was well implemented. Good teamwork was evident.	was able to solve all tasks without any problems Worked actively on the introduction of the Ozobot Can help solve the fairy tale riddle Able to draw lines and insert appropriate codes	The drawing of lines is successful, as is the assignment of programming commands. listens when discussing the fairy tale The graphic implementation is thus reasonably successful, sometimes gets bogged down in the unessential,	Drawing the lines works well, but requires help from classmates or the teacher in assigning the programming commands. listens when discussing the fairytale The graphic implementation is thus successful to a certain

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	Could describe the plot of the fairy tale and tell a story about it	Implementation of the commands succeeds with the help of the classmates can retell the story together with other pupils	extent, but sometimes needs help Would rather just program and not implement any plot of the story

Necessary changes in the RL or teaching and learning material:

Only the material was adapted, the concept of the research lesson already worked out well from the first time. The use of additional material (such as the code file) also depends on the time available.

Remarks: The teacher had never taught the class before.