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Erasmus+
Programme Your Future

COMPUTATIONAL THINKING - LESSON SCRIPT

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Lesson information:	Subject:	Mathematics
	Duration:	45 min
	Grade/level:	$7^{th}/3^{rd}$
	Age:	13
	Topic:	Power with exponent of integer

The curriculum specifications and requirements:

The core curriculum requirement of teaching Mathematics for the 3^{nd} educational stage. 7^{th} grade
Pupil:

- explain the meaning of the square of a number;
- find the square mentally for 2^4, 2^5, 2^6, 3^4, 10^4, 10^5, 10^6;
- rise to a power of rational numbers with exponent of natural number mentally, in writing and by using the calculator.

The aims of the lesson:

Pupil:

- can rise to power;
- find the square mentally for integers between -20 up to 20;
- find the cube mentally for integers between -10 up to 10;
- code a program(test) at least with 10 tasks for finding the square and cube of integers.

Previous knowledge:

The core curriculum of teaching Mathematics for the 2^{nd} educational stage.
Pupil:

- can explain the meaning of the square of a natural number and can calculate it;
- can calculate mentally the square of 0 - 10;
- can explain the meaning of the cube of a

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	natural number and can calculate it; ● can write an algorithm for the finding the square and the cube of integers; ● can use Scratch for simply coding.
The forms of work:	● working in pairs ● individual work
The methods of work:	● brainstorm ● exercise method - preparation of tasks ● classroom discussion
Teaching aids:	● computer with access to the Internet, projector for teacher ● computers with access to the Internet for pupils ● Scratch
The range of using ICT:	● formation of pairs (TeamUp) ● preparation of tasks, coding ● presentation of programs
The course of lesson: ● **Teacher activities** ● **Pupil activities** ● **The schedule**	1. Introduction - organisational activities. Greeting the pupils, checking the register, giving the topic of the lesson and introducing the aims of the lesson. **Up to 3 min** 2. Recalling information about power with exponent using the brainstorm. Pupils discuss about rule for finding exponent $a \, x \, ...x \, a = a^n$. Pupils find mentally the square and cube of numbers 0 - 5. **Up to 5 min** 3. Coding. Preparation of tests. Making pairs using the TeamUp. Pupils make a program at least with 10 tasks using the coding tool Scratch. Pupils can use video guides on the Internet. Teacher guides if some of pairs need a help. There are extra tasks for faster pairs (test with random numbers, giving feedback: how many points, what mark). **Up to 30 min** 4. Evaluation. Pupils solve the tests prepared by classmates, give the feedback, fix the mistakes if necessary. **7 min**
Specific information: ● **Programs** ● **Links**	● Pupils must have an account on the Scratchs' web platform or the coding tool Scratch must be installed in PC-s.

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• **Etc**	• The coded program must give a feedback for each task: correct or wrong answer. • TeamUp is available at the webpage http://teamup.aalto.fi/ . • Manual for the TeamUp http://teamup.aalto.fi/TeamUp-Manual.pdf
Attachments: • **Worksheets** • **Programs** • **files necessary** • **Etc**	• Video guide for creating the test(in Estonian): https://www.youtube.com/watch?v=ePtb1QeKz_Y • Video guide for calculating with random numbers (in Estonian): https://www.youtube.com/watch?v=XeDLxyMt1Ck