



COMPUTATIONAL THINKING - LESSON SCRIPT

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Lesson information:	Subject:	Geography
	Duration:	2x45 min
	Grade/level:	3 rd grade of middle school/3 rd educational stage
	Age:	15-16
	Topic:	The picture of the Earth on the map.

The curriculum specifications and requirements:	The core curriculum of teaching Geography for the 3 rd educational stage. Point 2. The map - skills of reading, interpretation, and using the map.
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The aims of the lesson:	Pupil:
	<ul style="list-style-type: none"> • shows the meaning of scale while presenting different geographical information, • uses scale to calculate territory distances

Previous knowledge:	2. Territory orientation. Pupil: 5) uses linear scale to define distances, compares distance on the map to real territory distance.
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The forms of work:	<ul style="list-style-type: none"> • working in pairs • individual work
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The methods of work:	<ul style="list-style-type: none"> • practical method
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Teaching aids:	<ul style="list-style-type: none"> • the ICT classroom with the access to the Internet (one computer for two students) • the teacher's computer with projector and interactive board • DevC++ application on students' computers
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The range of using ICT:	<ul style="list-style-type: none"> • practising the skill of mathematical calculations, • presenting data in a graphic way, • presenting information.
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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.

2 min

2. Reminding information about the structure of map (meridian, parallel, key, scale, signatures) – 10 minutes. The teacher displays a drawing https://www.epodreczniki.pl/reader/c/148602/v/52/t/student-canon/m/iE9YyPXxkK#iE9YyPXxkK_D5E357

10 min

3. The teacher tells to enter the site www.google.com/maps. Next the teacher gives some basic information about Google maps for example kinds of maps (car map, satellite map). Students check how a car or satellite map look like. The teacher gives information about the location of scale (linear scale) on Google map.

5 min

4. Exercises with the use of Google maps and qualities of mathematical proportions:

- calculating real distance between two points in straight line (for example Sieradz-Warszawa) – students measure with the use of a ruler the length of linear scale on Google map and distance between two given points in straight line on the map. Next they calculate real distance in straight line between these two points with the use of proportions;
- calculating distances on the map with real distance between two points and linear scale given – students calculate distance on the map using given real distance and qualities of proportions. Next they manipulate with scale on Google map and find indicated graduation and check conformity of their calculations with the distance on the map.

Students can use programs created in C++ language for checking their calculations. The teacher show the links to application <https://onlinegdb.com/ByQ4NHEPQ> <https://onlinegdb.com/BJkfHBEvQ>

Students input their data (they must click Run for starting the program).

15 min

5. Stating the problem.

Creating application – multiple choice test on the platform www.learning.com 10 questions+3 answers concerning working with the map and calculating distances on the map. Students who work in the groups of 4 formulate the set of concepts which they associate with map (concepts of: globe, grid system, graticule, relative altitude, altitude, isohypse/contour line) and tasks to calculate scale (the phase of collecting information). Next students log on the platform learningapps.org and create a test.

Examples of the applications:

<https://learningapps.org/display?v=pb3f9q1ij17>

<https://learningapps.org/display?v=pqao798xn17>

<https://learningapps.org/display?v=p56c7ug4j17>

<https://learningapps.org/display?v=pssn5b5r317>

45 min

6. Evaluation
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When the given time is finished, the teacher activates applications prepared by each of the group and displays them on the screen. Students give answers to test questions. They also check the correctness of questions and answers.

15 min

Specific information:

- Programs
- Links
- Etc

The teacher and students must have accounts on learningapps.org The teacher creates his/her own account and he/she registers the class and students. He/She gives them logins and passwords to the platform. It makes the management of applications created by students easier.

Google maps: www.google.com/maps

Learningapps platform: <https://www.learningapps.org>

All materials on e-podreczniki.pl are available under CC-BY 3.0 licence.

Attachments:

- Worksheets
- Programs
- files necessary
- Etc

Drawing of the map at:

https://www.epodreczniki.pl/reader/c/148602/v/52/t/student-canon/m/iE9YyPXxkK#iE9YyPXxkK_d5e357

Applications in C++:

<https://onlinegdb.com/ByQ4NHEPQ>

<https://onlinegdb.com/BJkfHBEvQ>

or files

distance1.pdf, distance2.pdf
