



Funded by the
European Union



FUTURE CLASSROOMS' LEADERSHIP SCENARIO

Topography

AUTHOR: Dr. Sc. Ljupcho Shosholovski

TOPIC: Topography (calculation of distance and azimuth)

GRADE: Third-year students-branch artillery

APPROACH: Transdisciplinary, collaborative, project-based learning, technology-based learning, multiply intelligence approach

DURATION: 90 min

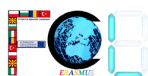
Summary: Summary where you briefly mention the trend used for this learning scenario (project-based learning, flipped classroom, etc), the related subjects if it's a transdisciplinary approach, etc.

In this lesson, project-based learning, a transdisciplinary approach, and the use of technology are the primary trends. The training includes instructions and demonstration of how to solve tasks for converting degrees to thousandths and vice versa, calculating distance when the coordinates of the starting point and the endpoint are given, as well as the azimuth between the given points. Students develop their IT skills in class using a smart board, interactive whiteboards, and computers (by downloading it with a QR code using a presentation of the work done for further development and learning). The class is structured around an explanation of the topic, practical demonstration, and practice in solving tasks such as group projects where students compete in the fastest time to solve the given task. The class helps the students to be able to independently solve tasks from the topic and to be able to pass them on and present them to others. Photographs will be taken of students working.





Funded by the
European Union



FUTURE CLASSROOMS' LEADERSHIP SCENARIO

Learning Objectives, Skills, and Competencies:

What are the main objectives? What skills will the learner develop and demonstrate within the scenario?

- By using modern technologies, students will be able to independently solve tasks using the graphic displays taken from the class and develop their critical thinking skills (authentic materials);
- To graphically represent the problem in a simpler way and in the shortest time to reach a solution;
- Using previously acquired knowledge and skills from many disciplines to successfully solve the task (from mathematics, from topography);
- Gaining expertise in the field and transferring knowledge using modern technologies;
- Students' project work will include classroom activities (competition in pairs in problem-solving);

Learners' role:

What sort of activities will the learner be involved in?

- Information search;
- Setting the task (determining the known things in the task and what they need to find);
- Graphic representation of the task;
- Problem-solving (critical thinking in the group);
- Presentation of the work of the pairs: presentations of the solutions and comparison between the solutions of the pairs;





Funded by the
European Union



FUTURE CLASSROOMS' LEADERSHIP SCENARIO

Tools and Resources

What resources, particularly technologies, will be required?

10 computers, an interactive smart board, projector.

Learning space

Where will the learning take place e.g. school classroom, local library, museum, outdoors, or in an online space?

Classroom with the necessary IT equipment (smartboard, computers)

Future Classroom Scenario Narrative

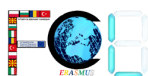
Describe in max 10 sentences the main ideas of the scenario

At the beginning of the lesson, students will be divided into pairs and will be provided with instructions and a demonstration of how to solve problems for converting degrees to thousandths and vice versa, calculating the distance when the coordinates of the starting and ending points are given, as well as the azimuth between the given points using an interactive whiteboard. After the explanation, each pair will receive tasks and a computer on which they will have to graphically represent the task and get a solution. They will also be given a limited amount of time to complete the tasks. The pair that will offer the fastest and most accurate solution will present it to the other participants on the interactive smart board and their work will be photographed.





Funded by the
European Union



FUTURE CLASSROOMS' LEADERSHIP SCENARIO

Learning Activities

Warm-up activity	Students are led in the context of the lesson and are asked to complete questions about their knowledge of topography and maths.
Collaborative work	Students will work in pairs to gather the necessary information and complete the tasks. At the end, the results of their work will be compared to choose the best pair of students.
Investigation work	They are supposed to find appropriate information to complete the given tasks. Found information will be useful for their presentations.
Practice work:	<p>They are going to solve given tasks and present it in the classroom.</p> <ul style="list-style-type: none"> - Calculating the degrees from mils; - Calculating the mils from degrees; - Calculating the distance between 2 points which are given; - Calculating the azimuth between 2 points which are given;





Funded by the
European Union



FUTURE CLASSROOMS' LEADERSHIP SCENARIO	
Producing work	The leader of each group will present their work in front of the class using the interactive smart board.
Discussion	The teacher discusses each exercise with the students making sure they know how to perform a certain exercise
Presentations	The students will present their pair works;
Assessment and feedback	Each student will have their starting level of individual competencies - the goal of the project - and their level of expectations determined before the start of the course. After the completion of the project, the newly discovered knowledge and abilities of the students will be evaluated in terms of the accuracy of their solutions and the way of solving the assigned tasks.

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



This work is licensed under CC BY-NC-SA 4.0. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-sa/4.0/>

