CLIL MultiKey lesson plan

Lesson plan MULTIKEY

LESSON PLAN

Subject: Science/Physics

Topic: Magnetic field of a straight current-carrying wire

Age of students: 17

Language level: **B1**

Time: 45 minutes

Content aims:

After completing the lesson, the student will be able to: Explain how electric current creates a magnetic field. Determine the intensity of magnetic field. Determine direction of magnetic field. Solve physical problems related to magnetic field of a straight current-carrying wire.

Language aims:

After completing the lesson, the student will be able to: Use new vocabulary within the topics.

Pre-requisites:

- Pupils have learned about the basics of magnetism

Materials:

- A straight current-carrying wire
- Battery
- Compas

Procedure steps:

1. **Experimental part:** Oersteds experiment is performent in front of the class (if possible). (*10 minutes*)

If it is not possible to perform the experiment play a short video

2. Theoretical part: Through a short presentation Oersteds law is constructed. (20 minutes)



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3. **Excercise:** Students are using new knowledge to solve some physical problems. (*15 minutes*) Give the tasks to the students.

Experimental part:

A conductor that is disconnected from the source is placed in front of the students, and they are asked if it is producing any magnetic field. A compas proves that no magnetic field is produces around the wire.

Then the conducter is connected to the battery and a compas is places near it. Compas needle deflects from its previous position, and it proves that a magnetic field is created around the wire.

Theoretical part:

Using the position of the compas students are guessing the connection between its distance and the intensity of the magnetic field. Changing the battery students are guessing the relation between the current in the conductor and the magnetic field.

A presentation is shown to the class with Oersteds law and with an explanation how to determine the direction of the magnetic field using the right-hand rule.

Excercise:

Students are individualy solving two physical problems.

Task 1:

Current with the magnitude of 2 A is measured in a straight wire. What is the magnitude of magnetic field in a point that is 2 cm far from the wire?

Task 2:

How far from a straight conductor is the magnitude of magnetic field 2 μ T? Current is 0.5 A.

