Съфинансиран от програма „Еразъм+“ на Европейския съюз

HUMAN RESOURCE DEVELOPMENT CENTRE

Erasmus+ Programme – Strategic Partnership Project - STEM Education - 2018-1-IT02-KA229-048507

СУ "Летец Христо Топракчиев"

PROJECT BASED LEARNING in STEM

Virtual Short-Term Exchange of the “STEM Education”

11th May 2021

Online platform – Microsoft Teams

Stem Subject: Physics

Topic: Sound

Duration: 90 minutes

Students’ class: 8th – 11th grade

Number of students: Students - 10 Bulgarian, 11 Italian, 10 Cypriots

Teacher Name: Teodora Taneva and Tatyana Dimitrova – English teachers in Letets Hristo Toprakchiev Secondary School

DESCRIPTION

Type of the activity – An Interactive Project Based Lesson

Resources: teacher presentation, videos, lesson worksheets of the tasks, google forms, Kahoot + teamwork, theoretical handouts

Online platform – Microsoft Teams

Materials – IT electronic devices with internet connection, suitable for synchronous learning/computer, laptop/, headphones, cameras

Pedagogical approaches of the lesson

- Project based learning
- Exploitation of visual teaching methods for enriched teaching
- Interactive methods - use of information and computer technologies (ICT) and online educational games - Google forms, kahoot.com
- Combining teacher’s instruction with project based learning

Role of the teachers

- Plan the activities
- Manage learning
- Provide learning tools
- Support learning experience
- Motivate students
- Engage student and set personal and team goals
- Facilitate learning
- Give feedback

Role of the students

- Choose how to present the activities
- Use personal strategies
- Develop personal researches
- Use various learning tools
- Use ICT
- Asks questions

Aims and objectives of the lesson

- To increase motivation of learning physics, science, technology and computers;
- To show the connection of Physics, and Sound in particular, with the situations in daily life;
- To participate in online extracurricular activities;
- To solve tests and quizzes in an interactive way;
- To practice English language;
- To deepen knowledge about physics;
- To learn, understand and relate the sound definitions and characteristics;
- To improve the students’ ability to search and choose relevant information for the completion of the tasks and to create their glossaries
- To create a digital glossary

PROCEDURE

I. Teacher’s presentation and demonstrations

1. Presentation of the Lesson STEM Physics – Sound

At the beginning the lesson, the teacher started with the presentation on the Sound. The basic definitions and characteristics of the sound were presented to the students for 15 minutes. Images, diagrams and examples of the implementation of the sound in different situations were shown in the presentation.

2. Different types of resources and sources concerning Sound topic were provided

3. Instructions and links for the activities (google forms and Kahoot)

4. Instructions for the follow - up activity (glossary)

II. Student’s activities

1. Video 1 and 2- Students watch videos and answers the questions in Google Form

2. Kahoot – Students play Kahoot and answer a physics sound quiz

Following the teacher’s short presentation and the instructions, the students were engaged in problem-solving quizzes and tests, with strong emphasis on using information and computer technologies (ICT) tools such as a Google form quiz and a test, which was done on the game-based learning platform Kahoot.

At the end of the lesson, students submitted Google forms and the Kahoot game.

3. Using personal researches and approaches as well as various tools students create a Glossary with the sound characteristics

ASSESSMENT

The students` assessment includes the usage of the interactive tests as well as interactive activities as a main tool for evaluation and receiving a feedback. It assessed the process of students’ development, connected to their understanding about Sound. It also showed how they improved during the learning and teaching, and how they referred as results of their project based learning on the topic Sound.

1. STEM Education project "Science - Transmission of sound" https://docs.google.com/forms/d/e/1FAIpQLSct5xV7Ut-tA-Q2Fuz70oU0U7ZowDT7_Z8Rn3J7-UY1jQqr5Q/viewform

2. STEM Education project "What is sound" and “Can you shatter glass with your voice?” https://docs.google.com/forms/d/e/1FAIpQLSdTRfzpRJVFi_mjT67CYgPauEdf2yWqQAfCpGJqUrMRz3lYng/viewform

3. Kahoot link – https://kahoot.it/challenge/07110434?challenge-id=80fc13ba-c46e-44d5-a4ca-c8e7139cab79_1621093887739

4. **Follow up activity – The Glossary**

Students had to create a toolkit / handout / word document / presentation etc. to present the main sound characteristics, using text / images / videos / charts / diagrams. Using this form of assessment gave the teachers a reflection what students found useful and what helped them to understand the physic questions about Sound. Having students understand and work with sound terms is a way to receive good educational results. Additionally, providing a glossary ensures that students have an accurate source for word definitions. By learning and understanding the words found in the glossary the student can become more adapt at properly using the discipline specific vocabulary and through practice acquire a better understanding of the related concepts. Glossaries can be used to provide students with not only the definitions, but examples of using the termss in context.

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