Nauczyciele przedmiotów ścisłych ZSO nr 1 w Chorzowie realizując program Erasmus + "Angażowanie uczniów w proces uczenia się poprzez innowację " stworzyli scenariusze lekcji geografii, biologii i matematyki przygotowane przy pomocy programów i aplikacji oraz metod takich jak między innymi : WebQuest, Quiver, Quizzy, Kahoot, Power Point .

Na podstawie scenariuszy zostały przeprowadzone lekcje w ZSO Nr 1 w Chorzowie, a same opracowania są udostępnione innym nauczycielom w języku polskim oraz angielskim.

Geografia:

mgr Anna Gliga - Volcanism, Neighbours of Poland

 

“**“Engaging students in the learning process through innovation”**

**2017‐1‐ES01‐KA219‐037963**

Lesson plan / Activity description form

|  |  |
| --- | --- |
| Title | Volcanism |
| Proposing teacher(s) | Anna Gliga |
| Country | Poland |
| Language | Polish / English |
| Target Group | Students of second year of secondary school |
| Topic(s) addressed | Learning about volcanoes and phenomena related to them.  |
| Learning objectives / competences | 1. **Knowledge**

Learner: 1. knows what is volcanism and what are the essential conditions in which a volcano is created,2. knows terms such as: magma, lava, eruption, crater,3. knows kinds of lava,4. knows kinds of volcanoes,5. knows different kinds of products of volcanic eruption,6. knows the effects of volcanic eruption. **b) Skills**Learner:1. can draw conical section and cross-section of the volcano,2. can draw section of active volcano and describe its structure,3. can indicate the area where volcanoes are located so-called Pacific Ring of Fire,4. can list and show on the map at least three volcanoes on every continent |
| Description of the process and teaching/ learning strategies used (what, how, in which order) | 1. **Preparatory phase**

Organizational activities1.The teacher refers to information and skills from the previous lesson. Students’ engagement is rewarded with tokens. The teacher introduces topic of the lesson and tells about lesson objectives. 1. **Realization phase**

1.The teacher introduces students to volcanic phenomena and explains terms such as: magma, lava, eruption.2.The teacher discusses lava classification: runny (alkaline) and thick (acidic). The teacher discusses their composition, how fast they relocate and draws on the whiteboard two diagrams of two kinds of volcano cones: conical and cross-section created by lavas mentioned above. 3.The teacher tells students how volcanoes function using Quiver App. Students divide themselves into groups and color volcanoes on their worksheets (attachment number 1) (Thanks to extended reality volcano model will turn into 3-D object which not only has colors corresponding to colored pencils used by students but also can move- animate)Students, using app in their smart phones, watch eruption of their volcanoes.4.The teacher asks students to name products of volcanic eruption which they watch. Students recognize them, typing their names in their smart phones. Program checks if the answers are correct. 5.To organize information the teacher tells the students how can volcanoes can be divided taking into account kinds of products of volcanic eruption: effusive volcanoes, explosive volcanoes, stratovolcanoes. 6. The teacher discusses places on Earth where volcanoes are located. Most of them is devoted to Pacific Ring of Fire – the teacher characterizes it, explains where the name of it comes from and what phenomena, under the surface of the ground, take place there. The teacher shows students this area on the map. 7.The teacher tells students how many active volcanoes are on the Earth now, lists and shows on the map the most popular European volcanoes. 8. The teacher tells about examples of several huge volcanic disasters.  |
| Methodology | Class work, individual work, team work, pair work, discussion |
| Key competences implemented | Geography, competences of ICT |
| Transversal skills worked |  |
| Resources needed (software, hardware, other tools…) | physical map of the world, physical map of Europe, geography textbook, Smartphone with the access to the Internet, Quiver App – 3-D colouring App |
| Related materials (links, pdf, etc. if any) | Bibliography:1. Cichoszewski Kazimierz, Karaś Anna, Grząba Ewa, 2015, Oblicza geografii 1. Maturalne Karty Pracy. Zakres rozszerzony. Szkoła ponadgimnazjalna.2. Malarz Roman, Więckowski Marek, 2015, Oblicza geografii 1. Podręcznik. Zakres rozszerzony. Szkoła ponadgimnazjalna.Attachements: worksheets for learners |
| Time required (hours / months / per week, etc.) | 1 lesson / 1 hour |

 

“**“Engaging students in the learning process through innovation”**

**2017‐1‐ES01‐KA219‐037963**

Lesson plan / Activity description form

|  |  |
| --- | --- |
| Title | Neighbours of Poland |
| Proposing teacher(s) | Anna Gliga |
| Country | Poland |
| Language | Polish / English |
| Target Group | Students of second year of secondary school |
| Topic(s) addressed | Learning about countries which are Poland’s neighbours; their economy, social situation and environment |
| Learning objectives / competences | 1. KnowledgeLearner:
* knows where Poland is located in Europe,
* is aware of social and economic disparateness of neighbouring countries,
* characterizes and compares natural environment of neighbouring countries
1. Skills

Learner:* defines Poland’s geographic location in Europe and can list neighbouring with Poland countries,
* can characterize natural environment of neighbouring with Poland countries,
* can compare neighbouring countries taking into account social and economic situation ,
* defines direction on the map,
* knows the spelling of countries and cities,
* shows the capitals of the countries on the map
* knows which map one should use to find information one needs,
* can read maps correctly,
* can learn by oneself,
* uses multimedia techniques to search information and solidify knowledge,
* works in a team.
 |
| Description of the process and teaching/ learning strategies used (what, how, in which order) | 1. Preparatory phase

Organizational activities1.The teacher refers to information and skills from the previous lesson. Students’ engagement is rewarded with tokens. The teacher introduces topic of the lesson and tells about lesson objectives. 1. Realization phase

The teacher asks learners to list Poland’s neighbouring countries and writes down the countries named by the on the whiteboard. Then using political map of Europe verifies their answers. The teacher highlights that Poland is situated in the centre of Europe and shows Baltic coast and Baltic countries on the map. The teacher reads aloud full names of countries which border with Poland. Learners, using given by the teacher sources of information and the Internet, describe countries taking into account their natural environment, economy development and social structure. Learners gather information about the capital. Learners prepare certain countrie’s flag on special card – (attachment number 1) – in order to present it in extended reality of Quiver program. Each group works on different country. Students draw lots which country they should work on. Learners present results of their work. Everybody come to each group’s desk to watch national symbols of certain country on smart phone using quiver App. Students find out about the most important information connected with economy, environment, capital and tourist attractions of Poland’s neighbours and show their position on the map. The teacher controls and comments students’ work. 1. Summative phase

As a summary the teacher with learners make a short note.  |
| Methodology | Class work, individual work, team work, pair work, discussion and working with textbooks |
| Key competences implemented | Communicating in native language, mathematical competences and basic scientific and technical competences, IT competences, learning skills |
| Transversal skills worked |  |
| Resources needed (software, hardware, other tools…) | * Political map of the world and Europe
* Working with different sources of information (textbooks, books, geographical magazines, dictionaries, boards, atlases
* Smart phone with the access to the Internet
* Quiver App. – 3-D colouring App.
 |
| Related materials (links, pdf, etc. if any) | Bibliography: 1. Rachwał Tomasz, 2016, Oblicza Geografii2. Podręcznik. Zakres rozszerzony. Szkoła ponadgimnazjalna. Nowa Era.2. Dawid Szczypiński, Mirosław Wójtowicz, 2015, Planeta Nowa 2. Nowa Era |
| Time required (hours / months / per week, etc.) | 1 lesson / 1 hour |

mgr Ewa Baszczak : Chorzów - my little homeland, Application Quiver 3D coloring APP

 

“**“Engaging students in the learning process through innovation”**

**2017‐1‐ES01‐KA219‐037963**

Lesson plan / Activity description form

**Geography workshops**

**using innovative teaching methods – lesson plan**

**WEBQUEST**

“Chorzów – my little homeland” – geography lesson for lower-secondary students
prepared with WebQuest method

1. **Describing the WebQuest method by the teacher**.

WebQuest (means “Searching in the Internet”) it is workshop where the basic source of information is the Internet. Students gather information, edit it and prepare presentation using electronic devices for example program for presentations or WORD with illustrations and links to the sources.
WebQuest method teaches effective usage of the Internet as a source of information. It can be used on each learning level, at school, at home, when working in a team, individually, etc.

1. **Why is this method worth using?**
* It teaches how to do research
* It supports the topic of the lesson
* It broadens students’ knowledge
* It allows students to work in their own pace
* It develops creative thinking
* It stimulates group cooperation
* It motivates students
* As a problem based learning it is more effective than traditional methods
1. **Discussing the stages of the method using “Chorzów – my little homeland”
as an example:**
* Front page,
* Introduction – short characteristics of the city
* Task – gathering information about Chorzów, analyzing and segregating information and creating informational newsletter about the city
* Process – the teacher divides class into 5 groups and gives them their tasks:

|  |  |
| --- | --- |
| Group I | Gather historical information about the city |
| Group II | Gather information about economic development of the city and characterizes educational system |
| Group III | Gather information about cultural development of the city |
| Group IV | Gather information about sport, recreation and leisure  |
| Group V | Gather information from other groups, compile and publish the bulletin (printed and multimedia version) |

* Sources – showing students Internet sites they can use and enabling them to search information using other reliable sources
* Evaluation – the rules of assessment according to criterion:
\*choice of information, its correctness and content of work
\*stylistic, grammatical, spelling accuracy, etc.

\*layout and neatness of work
\*teamwork skills

One can get 16 points altogether (model work)

* Summary
1. **Presentation of exemplary albums about Chorzów created with WebQuest method (printed versions)**

**APPLICATION “QUIVER – 3-D COLORING APP”**

1. **Presenting free Quiver App**

This App. Is used to create 3-D animation after scanning colouring book which must have special tags. There are free and chargeable colouring books accessible in the Internet.

1. **Show of short instructional video** (<https://youtube./com/watch?v=xirCqQFr6K8>)
2. **Workshop participants create works about volcanoes and flags and then animate them using Quiver App.**
3. **Learning about other options of the App.:**
* quiz testing user’s knowledge
* zooming in function
* sound effects

Summary of the workshops, thank-you, ending ☺
 Ewa Łubkowska - Baszczak

Matematyka:

mgr inż. Hanna Bialik : Eyes on shopping - it means statistics in everyday life

 

“**“Engaging students in the learning process through innovation”**

**2017‐1‐ES01‐KA219‐037963**

Lesson plan / Activity description form

|  |  |
| --- | --- |
| Title | **Eyes on shopping - it means statistics in everyday life**. |
| Proposing teacher(s) | Hanna Bialik﻿ |
| Country | Poland |
| Language | Polish/ English |
| Target group | Students of lower secondary school |
| Topic(s) addressed | ﻿Application of selected statistical elementsin design work |
| Learning objectives/competences |   **Knowledge** |
| - the student will know how to collect data for statistical surveys |
| - the student will know the concept of arithmetic mean, weighted average, median, dominant |
| - the student will know what programs he can use to make simple statistical calculations |
| -the student will know how to create different types of graphs in the selected program (pie, bar, band, spot) |
|   **Skills** |
| -the student will be able to use the spreadsheet for statistical calculations |
| - the student will be able to use selected elements of the statistics to present the collected results of the conducted surveys |
|  ﻿the student will be able to create a multimedia presentation using various types of charts |
| - the student will be able to create a mathematical quiz on the basis of the collected results |
| Descriptions of the proces and teaching / learning strategies used | 1. **Preparatory phase**
 |
|  | **2.**Organizational activities |
| - checking attendance, entering eg, giving the topic of the lesson, purpose of the lesson).  |
| 1. **Realization phase**
 |
| - presentation of the multimedia presentation "Eyes on shopping" by a group of students |
| - teacher's talk (based on the viewer's presentation) what is the statistics and what it is for |
|  -reminding of the concept of the arithmetic mean and the weighted average - an indication of the elementary examples of application in the student's life |
| - a mini lecture on medians, dominants |
| - reminding of the spreadsheet's possibilities, the use of the creation of various types of charts (point, band, bar, column, pie)-pointing to differences, paying attention to the legibility of the presented data |
| - reminding of the possibilities of programs for creating multimedia presentations and drawing attention to the fact that the latest versions offer a lot of possibilities for presenting the results in an interesting way |
| 1. **evaluation**
 |
|  a quiz that uses the information learned in the field of statistics and the presented multimedia presentation |
| Methodology | - ﻿talk, group work, discussion, use of the Internet |
| Key competences implemented | ﻿communication in mother tongue and in English - the ability to read and interpret written instructions (including the language of mathematics) |
| correctness and legibility of the record in accordance with the symbolism used in the language of mathematics |
| the use of mathematical thinking in practical situations |
| -learning to learn |
| - ability to work in a group |
| -time management skills |
| - using modern techniques in learning (games, Internet) |
|  |  |
| Resources needed | ﻿chalk, blackboard, ruler, setsquare, computer, multimedia projector and interactive quiz regarding presented presentations, mobile phones with Internet connection |
| Related materials | - Matematyka 2001 – handbook for lower secondary school students |
| - Excel |
| - Power Point |
| - [www.quizzy.in](http://www.quizzy.in), [www.kahoot.it](http://www.kahoot.it)  |
| Time required (hours/months/per week, etc) | 1 lesson |

Biologia:

mgr Beata Staczewska : Phenological diversity of selected tree species.

 

“**“Engaging students in the learning process through innovation”**

**2017‐1‐ES01‐KA219‐037963**

Lesson plan / Activity description form

|  |  |
| --- | --- |
|  Title | **﻿ Phenological diversity of selected tree species.** |
| Proposing teacher |  Beata Staczewska |
|  Country |  Poland |
|  Language |  Polish/English |
|  Target Group |  Students of second year of secondary school |
|  Topic(s) addressed |  Learning about plants and phenomena related to them |
|  Learning objectives/ competences |  **a) Knowledge** Learner: - ﻿the student knows the meaning of the concept of phenology, foliage, flowering and fruiting﻿ - can list of selected tree species - is aware of changes in plants related to phenology **b) Skills** Learner: -﻿ can recognize selected plant species using prepared schemes - ﻿can estimate the phenological stage of a plant - marks the analyzed values ​​in the worksheed - observes phenomena occurring in nature |
|  Description of the process and teaching/learning strategies used (what, how, in which order) | **a) Preparatory phase**Classes are held in a school garden or park. The season is optional. You can conduct classes in winter and summer to compare the observations carried out.Organizational activities1. The teacher introduces topic of the lesson and tells about lesson objectives.﻿ 2. Class division into groups. ﻿ 3. Assignment of tasks in groups.**b) Realization phase**1. The teacher introduces term “phenological seasons” and tells students how phenological seasons depend on weather conditions. 2. The teacher presents worksheets and explain what to do / how to fill them.3. The students read worksheets and learn about ﻿ selected tree species  features. 4. The students make weather and trees observations.5. The students ﻿make posters presenting four selected species of trees in  relation to the current season. They discuss about features of the trees  and evaluate phenological stages of the trees.6. The ﻿teams leaders present posters, ﻿talk about features of the trees and their phenological stages.**c) Summative phase**1. ﻿The teacher asks control questions about changes in plants related  to phenology ﻿to consolidate the material being taught.2. ﻿Students assess their own way of learning. |
|  Methodology |  talk, team work, discussion, learning by doing, observation, collaborative solving problem, |
|  Key competences implemented | ﻿ -effective communication -organizing teamwork -cooperation in a team -﻿using instructions and source material providing information  -problem solving in a creative way -﻿assessing one's own learning |
|  Transversal skills worked | teamwork, problem solving |
| Resources needed (software, hardware, other tools) | worksheets, ﻿thermometers for measuring air temperature, pencils, markers, paper sheets |
| Related materials (links,pdf,etc. if any) | Attachements : worksheets for learners and written ﻿work instruction |
| Time required (hours / months /per week, etc.) | 2 lessons / 2 hours |

**WORK INSTRUCTION :**

Phenologically, the seasons are determined on the basis of nature observations and weather conditions. ﻿ Each plant species adapts to changing conditions and undergoes an annual development cycle.

﻿

1. Observe the construction of four tree species.

2. Observe today's weather conditions.

3. On the basis of these observations, guess the species of these trees and determine their phenological phase/ stage.

4. ﻿Make posters presenting four selected species of trees in relation to the current season.

**WORKSHEET NUMBER 1**

Date of the lesson:................................................................................................................................

Group members: ..................................................................................................................................

**Characterize today's weather and complete the chart.** ﻿

You can use such terms as: very﻿ sunny, windy, rainy, cloudy, dry air, snow, no wind, strong wind etc.

|  |  |
| --- | --- |
| **Weather components** |  **﻿Estimate :** |
| ﻿air temperature |  |
| ﻿sun operation |  |
| clouds |  |
| the wind strenght |  |
| air humidity |  |

**WORKSHEET NUMBER 2**

**Fill in the chart using your own observation and the attachement.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Nr | the plant species name | flowers (their colour, lack of blooming etc.) | ﻿ leaf shape | ﻿features of buds on a twig/branch | leaf shape, innervation | fruit (colour), lack of fruit |
| 1. |  |  |  |  |  |  |
| 2. |  |  |  |  |  |  |
| 3. |  |  |  |  |  |  |
| 4. |  |  |  |  |  |  |