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SCENARIUSZE LEKCJI DWUJĘZYCZNYCH

BIOLOGIA ■ CHEMIA ■ GEOGRAFIA

ORE Ośrodek Rozwoju Edukacji

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Ośrodek Rozwoju Edukacji
Warszawa 2018

Redakcja merytoryczna
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Redakcja językowa i korekta
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Projekt okładki, layout, redakcja techniczna i skład
Barbara Jechalska

Ośrodek Rozwoju Edukacji
Warszawa 2018

ISBN 978-83-66047-09-9

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Spis treści

Część pierwsza: BIOLOGIA

Barbara Baucz-Malij

- The human eye
- The human skeleton

The human eye

Form: students of the 7th grade – primary school; (Programme subject outline: III, III.10.1)

Realization time: 45 minutes

General aim: The students will know the structure and functions of the human eye.

Objectives:

At the end of the lesson the students will be able to:

- identify and define parts of the human eye;
- discuss how parts of the eye work together to provide vision;
- locate the names of eye structures in the picture and translate their names into Polish.

Students' background knowledge:

Students should know what senses and sense organs are. They should know the functions of the eyes. Their English level should be A2+/B1 (pre-intermediate or intermediate).

Methods and forms of work:

- warming-up questions (activating background knowledge) – brainstorming;
- doing a crossword;
- listening for general information;
- reading and labelling the picture;
- gap-filling;
- pair work: creating oral descriptions, identifying things (description of parts of an eye – gap-filling), matching activity (translation).

Didactic support:

- posters of the human eye (without labels), optionally: a model of an eye;
- copies for each student (crossword, text for a reading exercise, a picture of an eye without labels, summarizing exercise).

Procedure and stages of the lesson:

1. **Greeting**
2. **Checking the presence**
3. **Lead-in:**
   - Teacher says: We are humans and – as other animals – we have to function in the external environment and to react to changes in the surrounding. We do this thanks to senses. There are five senses – do you know any?

Predicted answers: *taste, touch, smell, hearing, sight* (teacher can write them down on the blackboard).

- Teacher says: The human sense organs help to protect the body. These organs send information to the brain so that the body can act on it.
  If you want to know what sense organ we are going to talk about today, you have to solve the crossword.
- Teacher gives a copy with the crossword for each student (see: Appendix 1).

Answers:

1) *Covers our body: **s**kin.*
2) *Directs everything that goes on inside the body: bra**i**n.*
3) *Are used for breathing: lun**g**s.*
4) *Pump the blood: **h**eart.*
5) *Stores and breaks down food: s**t**omach*.

Main answer: *sight*.

- Teacher asks: *Do you know the answer?*
- Students' answer: *sight*.
- Teacher asks: *What is the organ of the sense of sight?*
- Student's anticipated answer is: *an eye*.
- Teacher writes down the topic on the blackboard: *The human eye*.

6. Presentation:

- Teacher says: Now I will read a text to you. There is a picture of an eye on the poster that you can look at. Listen carefully and try to understand as much as possible.
- Teacher reads the text aloud and shows particular structures on the poster. The poster is not labelled.

> Many animals have eyes, but few show the complexity of human eye. Simpler animals such as snails use their eyes to detect light, but cannot form a proper image. Other animals, such as dogs, can form images but cannot distinguish colours. The human eye does all three. (…)

The tough outer coat of the eye is called the **sclera**, which is the visible, white part of the eye. At the front of the eye the sclera becomes a transparent 'window' called the **cornea**, which lets light into the eye. Behind the cornea is the coloured ring of tissue called the **iris**. In the middle of the iris is a hole called the pupil, which lets the light through. It is black because there is no light escaping from the inside of the eye.

Underneath the sclera is a dark layer called the **choroid**. It is dark because it contains many pigment cells, as well as blood vessels. The pigment stops light being refracted around inside the eye. (…)

The innermost layer of the back of the eye is the **retina**. This is the light-sensitive layer, the place where light energy is transduced into the electrical energy of nerve impulses. The retina contains cells called **rods** and **cones**. These cells react to light, producing impulses in sensory neurones. The sensory neurones then pass the impulses to the brain through the **optic nerve**. Rod cells work well in dim light, but they cannot distinguish between different colours. (…)

The cones, on the other hand, will only work in bright light, and there are three types which respond to different wavelengths or colours of light – red, green and blue. (…) Cones are particularly concentrated at the centre of the retina, in the area called the **fovea**. (…)

To form an image on the retina, light needs to be bent or refracted. (…) As a result of refraction at the cornea and **lens**, the image on the retina is upside down, or inverted. The brain interprets the image the right way up. <

from: Bradfield P., Steve Potter S., (2005), *Longman GCSE Biology*, London: Pearson/Longman

7. Practice:

- Teacher asks students: How do you feel about this text? Have you understood anything? Was it difficult or easy? What is the text about? (Students try to answer as much as they remember).
- Teacher says: Now I'll give you this text and a picture of an eye. Read it carefully yourself and try to label the picture.
- Students are given the text and a picture and do the exercise.
- After a proper amount of time teacher asks students to check the answers with their partners and try to translate the labels into Polish.
- Teacher checks the answers and completes labelling the poster.

8. Summary:

- Teacher hands in a summarising exercise to the students. They have to find out the appropriate names using the words from the text given (see: Appendix 2)
- Teacher checks the answers.

  Answer key: 1 – *retina*, 2 – *cornea*, 3 – *rods*, 4 – *optic nerve*, 5 – *cones*, 6 – *sclera*, 7 – *iris*, 8 – *fovea*, 9 – *pupil*, 10 – *choroid*.

9. The ending:

Teacher says: As your homework read the text again and try to remember as much information as you can.
Thank you very much and good bye.

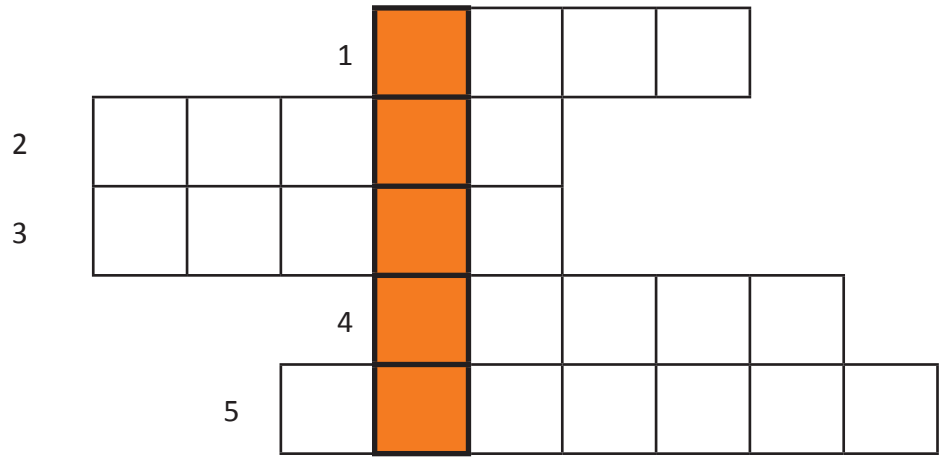
Methodological comments:

- It is a double problem for the students as they have to deal with learning new information about the subject and cope with the additional difficulty of doing it in English.
- The content is fixed and it is the number one priority. The language should be as simple as possible to make it more accessible for the students.
- The students need more time than they would need in their own language.
- Speak clearly and repeat as much as needed. Highlight explicitly new vocabulary and stress the key points. Use visual support as much as possible (models, posters, diagrams, video, animation).
- Put the key words on the board.
- Prepare the material that is listed, make sure that there are enough copies for everybody. You can use other materials, graphic or animations that are free on the Internet.

- Do not expect 100% accuracy in language, but try to make the students speak English as much as possible.
- Monitor their translation into Polish – precise translation is very important in biology.
- At the end of the lesson it is advisable to reward the most active students by '+' or using other methods that help to activate them.

Materials and references:

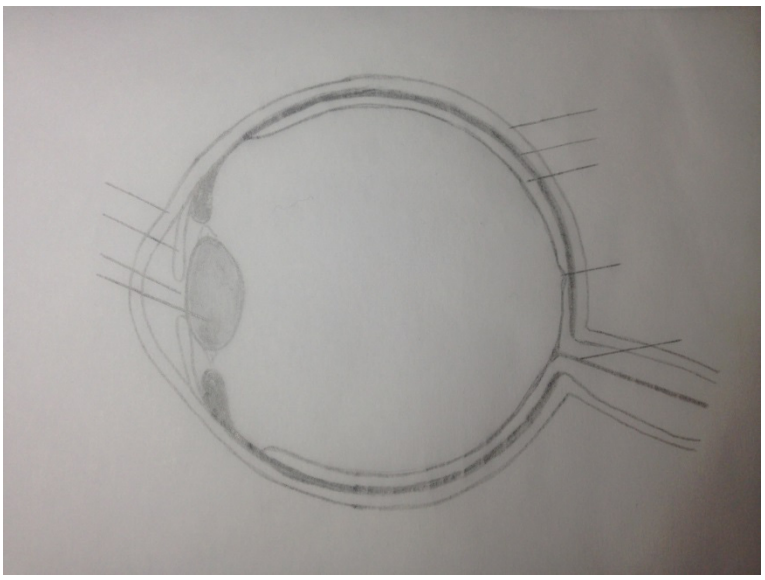
Appendix 1: crossword



1) Covers our body.
2) Directs everything that goes on inside the body.
3) Are used for breathing.
4) Pump the blood.
5) Stores and breaks down food.

(źródło: materiał własny autora)

Appendix 2: eye structure



(źródło: materiał własny autora)

Appendix 3: summarising exercise

1) _____ – contain light-sensitive cells, sends impulses to the brain.
2) _____ – is a transparent window in the front of the eye.
3) _____ – are responsible for vision at low light level.
4) _____ – receives nerve impulses and sends them to the brain.
5) _____ – are used to see colours.
6) _____ – the protective, white outer layer of the eye.
7) _____ – controls how much light enters the eye and alters the shape of the pupil.
8) _____ – provides clearest vision of all.
9) _____ – a hole that allows light through (in front of the lens).
10) _____ – contain blood vessels and pigment cells.

(źródło: materiał własny autora)

The human skeleton

Form: students of the 7th grade – primary school; (Programme subject outline: III, III.3.1, III.3.2)

Realization time: 45 minutes

General aim: The students should know the functions and structure of the human skeleton.

Objectives:

At the end of the lesson the students will be able to:

- study the importance of the skeletal system;
- identify the parts and functions of the skeletal system;
- locate the names of bones in the picture and translate their names into Polish.

Students' background knowledge:

Students should know the hierarchical structure of the human body. They should know the examples of tissues, organs, organ systems. Their English level should be A2+/B1 (pre-intermediate or intermediate).

Methods and forms of work:

- warming-up revising questions (activating background knowledge);
- pair work: discussion orbrainstorming;
- gap-filling;
- pair work: creating oral descriptions (of bones);
- identifying things (bones in the diagram);
- classifying (bones into groups);
- matching activity (translation);
- labelling a model or poster.

Didactic support:

- posters of the skeleton (without labels), optionally: model of a skeleton and bone;
- two copies for each student (picture of the skeleton with half the labels and a summarizing exercise with gap-filling);
- small sticky cards with names of bones in English and another set with the same names in Polish;
- notebooks and coloured pencils.

Procedure and stages of the lesson:

1. **Greeting**
2. **Checking the presence**

3. **Warm-up:** Teacher asks some questions to warm-up checking students' knowledge from the previous lessons

Questions:	Anticipated answers:
• What is the smallest unit of life?	– *A cell.*
• What do the cells form?	– *Cells form tissues*.
• Give me some examples of tissue.	– *Muscle t., nervous t., fat t., bone t. (teacher elicits the word 'bone')*.
• What do the tissues form?	– *Tissues form organs*.
• What are the example of organs?	– *Brain, lungs, liver, bone etc*.
• What do the organs form?	– *Organs form organ systems.*
• What are the human organ systems you know?	– *Nervous, digestive, breathing, urinary, reproductive, circulatory, skeletal*.

4. **Lead-in:**
   - Teacher says:
     Now I am going to describe a part of body that we are going to learn about. Listen carefully and try to guess what it is.

     'It weighs about 9 kg. It is made of connective tissue. It includes 206 parts. 5% of it are cells. The rest is the extracellular substance. It is the hardest tissue in our body.
     It is…'
   - Students' anticipated answer is: *the skeleton!*
   - Teacher writes down the topic on the blackboard and asks students to open their notebooks and re-write the topic: *The human skeleton*.

5. **Presentation:**
   - Teacher says: Do you have any knowledge about functions of the skeleton?
   - Brainstorming: Students discuss in pairs. They find out five most important functions of the skeleton. Teacher tries to elicit them from the students.
   - After a short discussion or brainstorming teacher writes down the functions and asks students to put them in their notebooks.

     Functions of the skeleton:
     – *protects important organs;*
     – *acts as a framework that supports soft tissues;*
     – *allows movement;*
     – *produces blood cells;*
     – *stores and releases minerals.*

6. **Practice:**
   - Students are given copies with an exercise. They fill in the gaps using the words in bold (see: Appendix 1) and then they label the picture of a bone structure choosing three of the given names (they should use: *compact bone, spongy bone and bone marrow*).

Correct answers:

The human skeleton is made of 206 ***bones****. Bone is a mixture of* ***living*** *tissue and non-living* ***material****. The living tissues contain* ***cells****. The non-living part of bone is made up of mineral* ***salts****, which make the bone* ***hard****, and* ***collagen*** *fibres, that allows the bones to be* ***flexible****. There are two types of bone tissue:* ***compact*** *bone and* ***spongy*** *bone. Some of the bones contain a substance in the middle, that is called* ***bone marrow*** *– it produces blood cells. The total weight of an* ***adult*** *skeleton is approximately 9 kg*.

- Teacher says: You know that there are 206 bones in our skeleton, you know the importance of it, but you don't know the name of individual bones. Now you have to work in pairs and gain the missing words in your picture. Make sure if you know the Polish equivalents.
- Students are asked to work in pairs. Each person has a picture with different parts of the skeleton labelled (see: Appendix 2). Their task is to complete the description of a picture without looking at their partner's picture. They should ask questions, for example: *What is the name of the longest bone in our arm? What's the name of the bone in our head that can move and help us to eat?* etc.
- Teacher monitors the exercise and checks if they do the exercise properly, than asks students to name the particular bones that are shown in the poster or/and model.
- Teacher controls the work and then asks students to translate the names into Polish. Then teacher asks students if they can guess the components of:
  - Axial skeleton (cranium, vertebral column, rib cage);
  - Appendicular skeleton:
    a. pectoral/shoulder girdle (scapula, clavicle);
    b. pelvic/hip girdle (pelvis and sacrum);
    c. arms;
    d. legs.

    (New names should be written on the blackboard.)

  Students mark or highlight in various colours these parts in their completed pictures and write down these names.

7. Summary:

- Teacher hands in to the students small sticky cards with the names of particular bones in English and in Polish.
- Teacher says: You have to find a partner who has the same name on his or her card. When they are ready, teacher says:
  - The person has the names of parts of the axial skeleton, should stick them on the model or poster.
  - The person has the names of parts of… pectoral girdle, arms, pelvic girdle, legs,…, should stick them on the model.

8. The ending:

Teacher says: After our lesson you should remember the functions and parts of the skeleton. I hope that it was an interesting and useful lesson. Thank you very much and goodbye.

Methodological comments:

- It is a double problem for the students as they have to deal with learning new information about the subject and cope with the additional difficulty of doing it in English.
- The content is fixed and it is the number one priority. The language should be as simple as possible to make it more accessible for the students.
- The students need more time than they would need in their own language.
- Speak clearly and repeat as much as needed. Highlight explicitly new vocabulary and stress the key points. Use visual support as much as possible (models, posters, diagrams, video, animation).
- Put the key words on the board.
- Prepare the material that is listed, make sure if there is enough copy for everybody. You can use other materials, graphic or animations that are free on the Internet.
- Do not expect 100% accuracy in language, but try to make the students speak English as much as possible.
- Monitor their translation into Polish – precise translation is very important in biology.
- At the end of the lesson it would be good to reward the most active students by '+' or using other methods that help to activate them.

Materials and references:

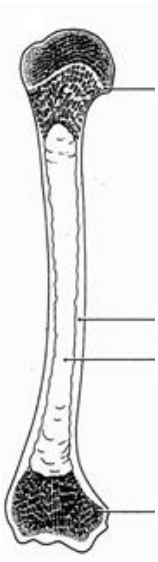
Appendix 1: Gap-filling task

Fill in the gaps using the words given:

adult	**bones**	**flexible**	**material**	**salts**	**living**
cells	**hard**	**collagen**	**compact**	**marrow**	**spongy**

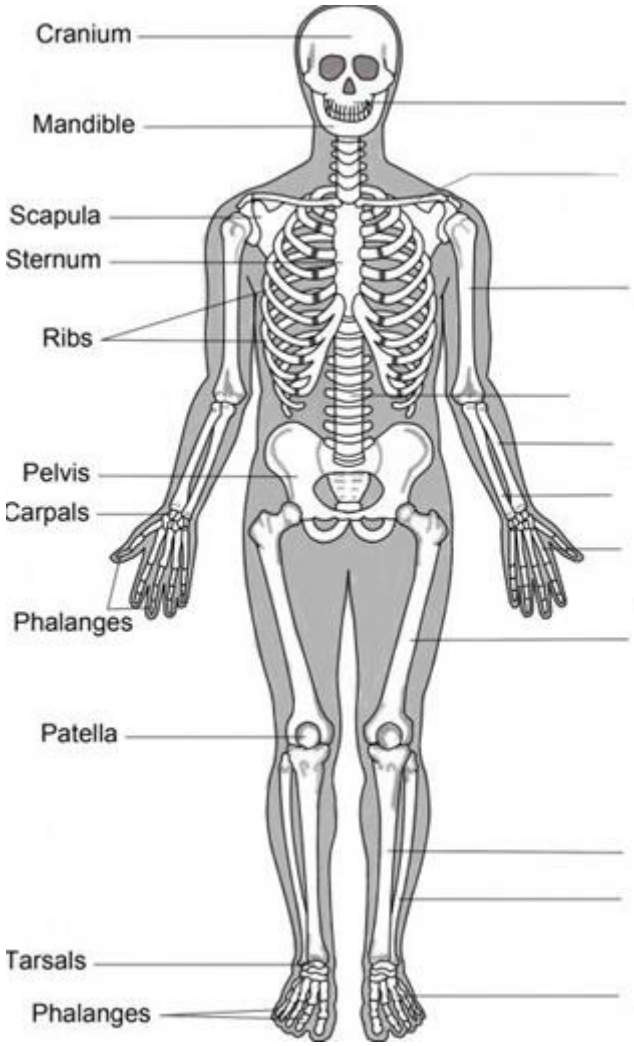
The human skeleton is made of 206 ……. . Bone is a mixture of ……. tissue and non-living …….. . The living tissues contain ……. . The non-living part of bone is made up of mineral ……, which make the bone ……., and …….. fibres, that allows the bones to be …… . There are two types of bone tissue: …….. bone and …… bone. Some of the bones contain a substance in the middle, that is called bone …… – it produces blood cells. The total weight of an …….. skeleton is approximately 9 kg.

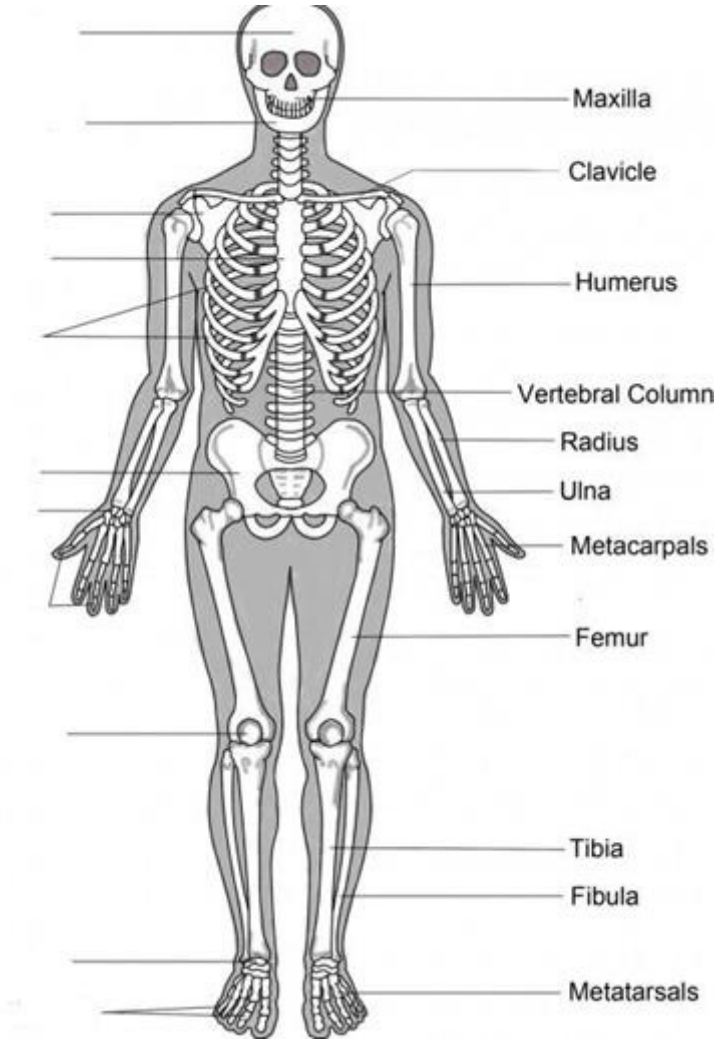
(źródło: materiały własne autora)



(from:https://oldcourses.isucomm.iastate.edu/pluginfile.php/33369/mod_resource/content/0/Bone_structure.jpg ; access: 25.06.2018)

Appendix 2: Pictures of a skeleton with half the labels





(from: https://i.pinimg.com/564x/e9/39/5a/e9395a2ab3e36df3f67d36582684117c--human-skeleton-skeletal-system.jpg ; access: 25.06.2018)

Część druga: CHEMIA

Romuald Hassa

- Hydrogen – the lightest gas of all
- Neutralization reaction
- Calculations based on the concept of density

Hydrogen – the lightest gas of all

Form: students of the 7th grade – primary school (Programme subject outline: IV. 7.)

Realization time: 45 minutes

General aim: To teach students to describe the properties of hydrogen and methods of hydrogen obtaining and detecting.

Objectives:

Students should be able to:

- present and describe one of the methods of obtaining hydrogen in a laboratory;
- list physical and chemical properties of hydrogen;
- describe one of the methods of hydrogen detection;
- distinguish observations from conclusions.

Students' background knowledge:

Students should:

- know the names of basic laboratory equipment;
- know the difference between physical and chemical properties of the substances and be able to give examples of both types of properties;
- understand the idea of density of substances;
- know how to plan an experiment and build the suitable setup;
- be able to list observations and corresponding conclusions for the experiment;
- know the types of chemical reactions and recognize them in given observations;
- know names of the (main) components of air;
- know the properties of gases.

Methods and forms of work:

- CLIL (Content and Language Integrated Learning);
- group work;
- individual work;
- teacher's presentation of the chemical experiment.

Didactic support:

- magnesium ribbon or zinc granules, hydrochloric acid or sulphuric(VI) acid solution (1M);
- matches, a setup to generate and trap hydrogen;
- handout with a text and a diagram of the setup;
  (the diagram: https://www.bbc.co.uk/education/guides/zjwnb9q/revision; online; access: 01.12.2017 – see: Appendix 2).

Procedure and stages of the lesson:

1. **Short review of the information needed to carry on the lesson:**
   - *what is matter and what are its three states (what is a gas);*
   - *(some examples of) physical and chemical properties;*
   - *names of laboratory equipment needed for the experiment: a conical flask, a thistle or dropping funnel, a delivery tube, a glass jar, a trough, a beehive shelf, a rubber stopper;*
   - *chemical reaction vs. physical phenomenon;*
   - *types of chemical reactions (synthesis, analysis or decomposition, displacement reaction)*.

2. **Motivation:**

As a warm-up teacher asks a question: Why balloons can fly in the air? (to check understanding the idea of density of substances). Students 'brain storm': *they are filled with a gas lighter then air, e.g. hot air, helium, hydrogen*.

3. **Introduction:**

Teacher divides students into groups of 3–4 and asks them to find the answers for the following questions:

- How can we generate and trap hydrogen, if the gas is obtained from a mixture of a liquid and a solid?
- How can we examine its physical and chemical properties?
- How to check if the gas is combustible or not?

Students have to think and then propose how to build a setup to generate and trap a gas. Representatives of each group will present stages of the setup construction and explain their choices.

During a group work students can use the following expressions:

- *I/We need…;*
- *To join… I will use…;*
- *I think…;*
- *It is important to…;*
- *I agree/disagree with you…;*
- *May I say something?*

4. **Development:**

- Teacher asks representatives of each group to present results of their work. After this stage, teacher distributes the handouts and asks students to complete them. While students do their task, teacher builds the setup, as it is shown in the diagram.
- Teacher asks students to observe his/her work (teacher's presentation of the experiment).
- Teacher asks students to list observation (students 'brain storm').

(Suggested vocabulary: *colourless, tasteless, odourless, lighter then air, combustible, poorly soluble in water*).

During this stage of the lesson teacher and students can use zero and first conditionals:

- *If (Simple Present) + (Simple Present).*
- *If (Simple Present) + (Future Simple = will + Infinitive).*

Additionally, teacher can point out the difference in meaning of Polish translations of the sentences:

- *If I add some acid, I obtain a gas.* (Jeśli dodaję kwas otrzymuję gaz.)
- *If I add some acid, I'll obtain a gas.* (Jeśli dodam kwas otrzymam gaz.)

Teacher asks students to explain the difference between observation and conclusion and they complete the table. (Expected answer: *observation – information taken with our senses, e.g. what can I see or hear; conclusion – information that follows from observations*).

Observations	**Conclusions**
1.	1.

5. Revision:

Students complete the text concerning observations, conclusions, physical and chemical properties and applications of hydrogen.

6. Homework:

Teacher presents the homework.

There in another method used in the laboratory to generate and trap pure hydrogen. You will need water and some metallic sodium. Sodium is a very reactive metal; it reacts vigorously with water, so there is no need for additional heating. **The reaction must be carried out with a minute amount of sodium!** The density of sodium is lower than density of water. Hydrogen is liberated during the reaction.

On the base of the delivered information and notes taken during the lesson, describe the setup and write the procedure to generate and trap hydrogen in a laboratory.

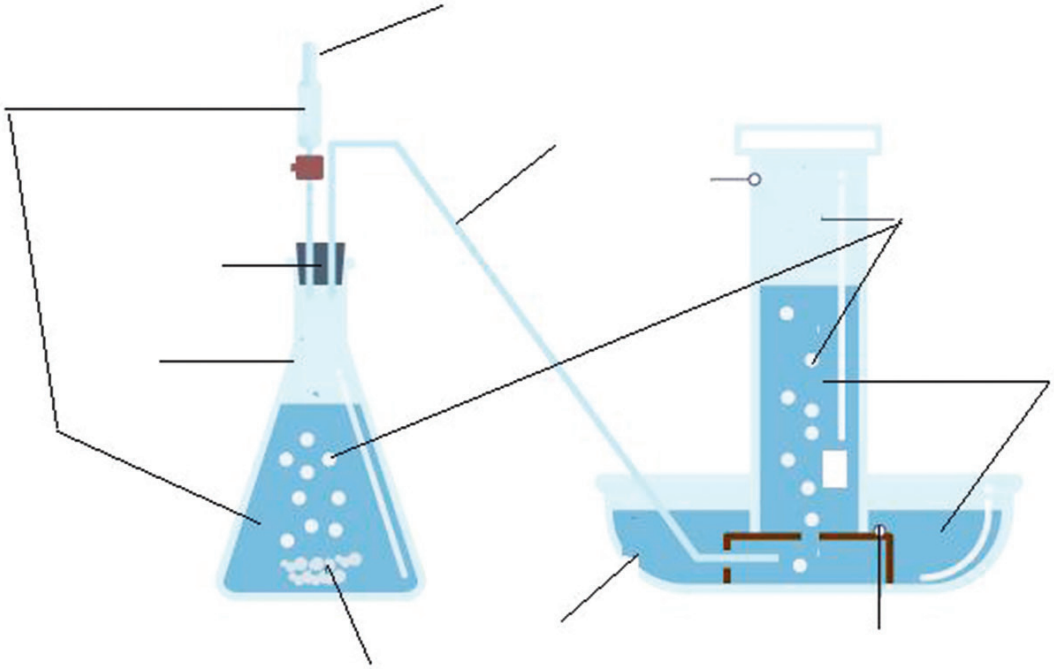
Methodological comments:

After the lesson students should be able to describe methods of obtaining and detecting hydrogen. The students should be able to describe the properties of the neighbour carry.

Materials and references:

Appendix 1: The setup used in the experiment

Name the parts of the setup and substances used in the experiment.



(from: https://www.bbc.co.uk/education/guides/zjwnb9q/revision)

Appendix 2: Text to complete

Complete the text.

After a solution of ..... acid and ..... are mixed

..... of the gas can be observed in water.

During the experiment .....
(type of the reaction: synthesis, analysis/decomposition, displacement reaction)

takes place. The reaction is ..... one as the conical flask is

..... at the end of the experiment then it was

at the beginning. The more gas is generated ..... water is removed

from the glass jar. The gas is ..... , ... and ..... .
(without colour) (without smell) (without taste)

The glass jar or a test-tube with a trapped gas must be held with its mouth down to prevent the gas from escaping as it is …… than air, it means that the density of the gas is …… than the density of air.

To confirm that the glass jar or a test-tube does in fact contains hydrogen it can be checked if the gas catches fire easily or not using a burning …… . **This part of the experiment may be dangerous so it should be avoided for the sake of safety or done by a teacher.**

Hydrogen is used to produce ammonia, vegetable oil margarine hydrocarbons or pure metals from their ores. It can be also used as a …….. in cars or spacecrafts.

Answers:

hydrochloric/sulphuric(VI); magnesium ribbon/zinc granules bubbles, displacement reaction, exothermic, hotter, the more, colourless, odourless, tasteless, lighter, lower, wooden splint/ juke stick, fuel.

Neutralization reaction

Form: students of the 8th grade – primary school (Programme subject outline: VII. 1.)

Realization time: 45 minutes

General aim: To teach students what neutralization reaction is and introduce the needed vocabulary.

Objectives:

Students should be able to:

- explain what neutralization is;
- list the substances that used in pairs produce water in neutralization reaction;
- describe one of the methods of detecting of the end point during neutralization;
- write and complete a simple chemical equation of neutralization and balance it;
- distinguish observations from conclusions.

Students' background knowledge:

Students should:

- know names of basic laboratory equipment;
- know the popular indicators, names and formula of acids and bases;
- know the colours of the popular indicators in different solutions;
- know a pH scale and types of the solutions (e.g. ranges of pH values for the neutral, acidic and basic solutions);
- know how to write and balance the chemical equations of acid and bases dissociation process;
- know the difference between a base and a hydroxide (the Arrhenius theory);
- know how to plan an experiment;
- be able to list observations and corresponding conclusions for the experiment;
- know the types of chemical reactions.

Methods and forms of work:

- CLIL;
- group work;
- individual work.

Didactic support:

- films: https://www.youtube.com/watch?v=TS-I9KrUjB0 (online; access: 26.11.2017), https://www.youtube.com/watch?v=_P5hGzA6Vb0 (online; access: 26.11.2017).
- handouts (see: Appendix 1, 2, 3, 4).

Procedure and stages of the lesson:

1. **Motivation:**

As a warm-up teacher divides students into pairs and asks them to find the solution of the crosswords (see: Appendix 1), which is the topic of the lesson.

2. **Introduction and short review** of the information needed to carry on the lesson:
   - *what is an indicator, an acid and a base;*
   - *names of some popular indicators, acids and bases;*
   - *a pH scale and types of solution;*
   - *a dissociation process of acids and bases;*
   - *colours of some popular indicators in acidic, neutral and basic solution;*
   - *names of laboratory equipment needed for the experiment: a beaker, a thistleor a dropping funnel, a glass rod;*
   - *types of chemical reactions (synthesis, analysis/decomposition, displacement reaction).*

3. **Development:**
   - Students stay in pairs and teacher asks them to watch a film in order to find out:
     – what neutralization reaction is,
     – how to detect the end point of the reaction (observations).
     Film: https://www.youtube.com/watch?v=_P5hGzA6Vb0

There is no need to revise vocabulary, as it has just been done.

- Teacher asks students to explain the difference between observation and conclusion and then to complete the table. (Expected answer: *observation – information taken with our senses, e.g. what can I see or hear; conclusion – information that follows from observations*).
- Teacher asks students for answers (students 'brain storm').

(Suggested expressions: *reaction between acid and base; to use an indicator; change of the colour of the solution*).

Observations	**Conclusions**
1.	1.

- Teacher asks students to plan an experiment – to carry out the reaction of neutralization (see: Appendix 2). This task is a summary of the information presented in the film.
- Teacher gives students handouts with some chemical equations to be balanced (see: Appendix 3).

During the pair work students can use the following expressions:

- *Let's count the numbers of atoms on both sides of the equation*.
- *I think…;*
- *It is important to…;*
- *I agree/disagree with you… .*

After a given time the students' work will be checked in front of the class.

4. Revision:

Students complete the text about the neutralization reaction (see: Appendix 4).

5. Homework:

- Find the answer for the following question:
  'What chemical substances present at home can/should I use when a bee or a wasp stings me?'
- Write the description of the experiment presented in the film:
  https://www.youtube.com/watch?v=TS-I9KrUjB0.
- Complete and balance the equations of neutralization reactions:

  1. … HBr + … $Ba(OH)_2$ → … ……. + … …….

  2. … HNO_3 + … $Ca(OH)_2$ → … ……. + … …….

  3. … H_2SO_4 + … KOH → … ……. + … …….

  4. … ……. + … ……. → … $CaSO_3$ + … …….

  5. … $Ba(OH)_2$ + … ……. → BaS + … …….

Methodological comments:

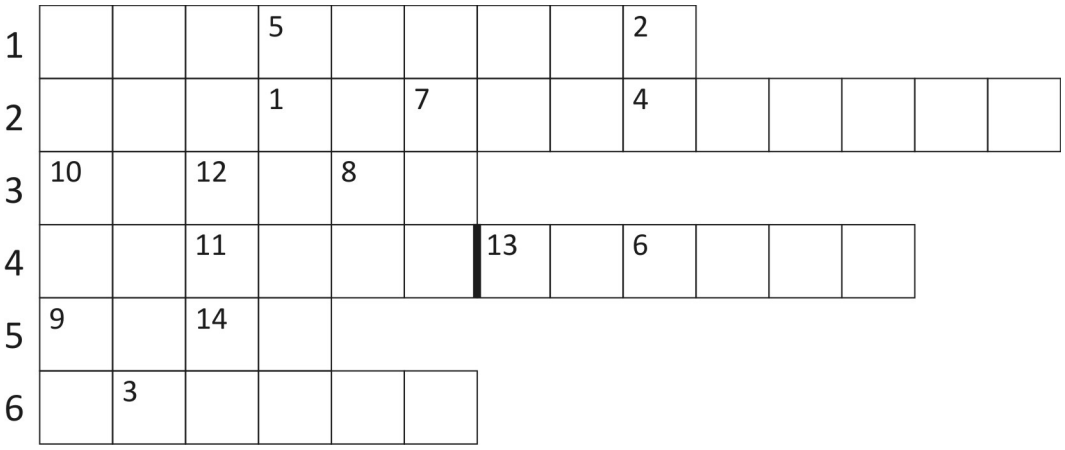
After the lesson students should be able to explain what neutralization reaction is and write balanced equation reactions.

Materials and references:

Appendix 1: Crosswords

Words to find:

1. A sodium compound that belongs to bases.
2. An indicator that is pink or magenta in basic solutions.
3. A solution with pH < 7.
4. An indicator that turns red in acids and yellow in bases.
5. A metal with the atomic number 30.
6. A yellow non-metal that forms acids.



Put the marked letters according to the increasing numbers.

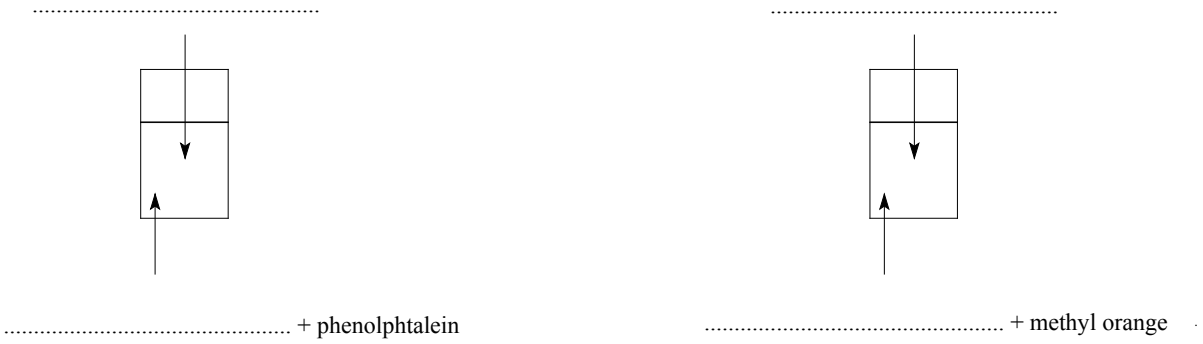
……

(Answers: 1. *hydroxide*, 2. *phenolphtalein*, 3. *acidic*, 4. *methyl orange*, 5. *zinc*, 6. *sulfur*. Solution: *neutralization*).

Appendix 2: Task

Plan the neutralization reactions.

Complete properly the diagrams with the names of the solutions of potassium hydroxide and nitric(V) acid. Write the observations.



Answer:

After adding the solution of nitric(V) acid the pink solution of potassium hydroxide discolours. After adding the solution of potassium hydroxide the red solution of nitric(V) acid turns yellow.

Appendix 3: Equations

Complete if needed and balance the equations:

1. … HCl + … KOH → … KCl + … H_2O
2. … HNO_3 + … NaOH → … $NaNO_3$ + … H_2O
3. … H_2SO_4 + … NaOH → … Na_2SO_4 + … H_2O
4. … HCl + … $Ca(OH)_2$ → … ……. + … …….
5. … $Ba(OH)_2$ + … ……. → $BaSO_4$ + … …….
6. … ……. + … ……. → K_3PO_4 + … …….
7. phosphoric acid + calcium hydroxide → … ……. + … …….

Answers:

1. *(1) HCl + (1) KOH → (1) KCl + (1) H_2O*
2. *(1) HNO_3 + (1) NaOH → (1) $NaNO_3$ + (1) H_2O*
3. *(1) H_2SO_4 + 2 NaOH → (1) Na_2SO_4 + 2 H_2O*
4. *2 HCl + (1) $Ca(OH)_2$ → (1) …$CaCl_2$... + 2 …H_2O...*
5. *(1) $Ba(OH)_2$ + (1) …H_2SO_4... → $BaSO_4$ + 2 …H_2O...*
6. *3 …KOH... + (1) …H_3PO_4... → K_3PO_4 + 3 …H_2O...*
7. *phosphoric acid + calcium hydroxide → … ……. + … …….*

   3 $Ca(OH)_2$ + 2 H_3PO_4 → $Ca_3(PO_4)_2$ + 3 H_2O

Appendix 4: Text

Complete the text.

Neutralization is a chemical process in which an …… and a ……..
react with each other. In the reaction …… and a ……..
are produced. Acids and bases are …….. of the neutralization
while water and salts are its …… .
During the neutralization the H^+ ions coming from …… and OH^- ions coming from
…….. form molecules of water, so as a result there is no ……..
of hydrogen or hydroxide ions in the solution. The pH of the neutralized solution is …….. 7.

The end point of the neutralization process can be detected by the change of the colour of a/an …… . Phenolphthalein can be used to detect the end point neutralization of a/an …….. with a/an …….. as the solution …….. . Methyl orange can be used to detect the end point neutralization of a/an …….. with a/an …….. as the solution …….. . A universal indicator can be also used for such a purpose because it exhibits several different colours depending on the pH of solution. In an acidic solution it is …… , in neutral – …… and in basic one it can be …….. or …… .

Answers:

acid; base; water; salt; substrates; products; acids/acid molecules; bases/base molecules; excess; equal to/=; indicator; base; acid; discolour; acid; base; turns yellow/orange-yellow; red; yellow; green/green; green/blue.

Calculations based on the concept of density

Form: students of the 7th grade – primary school (Programme subject outline: I. 10.)

Realization time: 2 x 45 minutes

General aim: To teach students what density is and how to calculate it; introduce the needed vocabulary.

Objectives:

Students should be able to:

- calculate density of the substances from mass and volume;
- calculate mass or volume of the substance;
- compare the substances basing on their densities;
- explain and plan simple experiments basing on the concept of density;
- distinguish observations from conclusions.

Students' background knowledge:

Students should:

- know names of basic laboratory equipment;
- know the difference between physical and chemical properties of the substances and be able to give examples of both types of properties;
- know how measure given volume of a liquid and weigh a given mass of a solid;
- be able to list observations and corresponding conclusions for the experiment.

Methods and forms of work:

- CLIL;
- group work;
- individual work;
- brainstorming.

Didactic support:

- films:
  https://www.youtube.com/watch?v=opQA9t1DzmM (online; access: 25.11.2017),
  https://www.youtube.com/watch?v=SimFy9wOMXY (online; access: 25.11.2017);
- table of densities of different liquids (see: Appendix 2) taken from:
  https://bangzabar.wordpress.com/2009/08/06/astronomi-what-is-the-difference-between-mass-and-weight/ (online; access: 30.11.2017);
- table of densities of different substances (see: Appendix 5) taken from:
  http://wps.prenhall.com/wps/media/objects/165/169061/blb9ch0104.html (online; access: 30.11.2017);

- tasks to do at home given at: http://studylib.net/doc/5882138/density-calculations-worksheet-i (online; access: 30.11.2017);
- handouts with a text and tasks to do (see: Appendix 3, 4).

Procedure and stages of the 1st lesson:

1. Introduction and motivation:

Teacher divides students into groups of 3–4 and asks them to watch a film https://www.youtube.com/watch?v=opQA9t1DzmM (0.10–2.00) to find out how to prepare solutions of different densities and use them to prepare 'colourful liquid tower'.

Vocabulary of the film, that should be explained before the presentation:

- *a food-colour* – barwniki żywności;
- *vibrant colour* – „żywa" (jasna i czysta) barwa;
- *a tablespoon* – łyżka stołowa (duża);
- *to stir* – mieszać;
- *a test-tube* – probówka;
- *a dropper* – wkraplacz;
- *a glass* – szklanka;
- *a syringe* – strzykawka;
- *dense* – gęsty (o największej gęstości).

Teacher asks for the explanation of the experiment.

Students do brainstorming. They are expected to come to the conclusion that:

1) *the more salt dissolved in water, the bigger density of solution/the heavier solution;*
2) *to make the 'tower' we have to mix solution in the proper order starting with the heaviest and finishing with the lightest*.

2. Short review of the information needed to carry on the lesson:

- *what is matter;*
- *what are physical properties and chemical properties of substance;*
- *names of laboratory equipment needed for the experiment: a beaker, a scale, a glass rod, a measuring cylinder*.

3. Development:

- Students stay in the groups and teacher asks them to watch a film to find out how to calculate the density of water (or any other liquid) and then write stages of the procedure to find out or calculate the density of a liquid: https://www.youtube.com/watch?v=SimFy9wOMXY (0.00–1.24).
- Representatives of each group will present the stages of the procedure to find out or calculate the density of a liquid.

There is no need to revise vocabulary, as it has just been done.

During the group work students can use the following expressions:

- *We should use…;*
- *I think…;*
- *It is important to…;*
- *I agree/disagree with you…;*
- *To calculate density we have to know…/divide mass by volume*.

Teacher asks students to present the stages of the procedure.

Teacher gives students handouts with some data that allow them calculate the density of different liquids and name them using information provided. During the group work students can use the expressions listed above.

After a given time the students' work will be checked in front of the class. Representatives of the groups have to stand in a line in the order of increasing liquid density and present the name of a liquid.

During this stage of the lesson students can use the following expressions:

- *I must/have to be first.*
- *You are second/third/next in a line.*
- *My value of density is bigger/lower than yours.*

Teacher asks students (that still remain in the groups) to plan an experiment to calculate the density of a solid using a scale and a beaker and the ideas used in the previous experiment.

During group work students can use the following expressions:

- *We should use…;*
- *I think…;*
- *It is important to…;*
- *I agree/disagree with you…;*
- *To calculate density we have to know…/divide mass by volume.*

Representatives of each group will present stages of the procedure to find out or calculate the density of a solid.

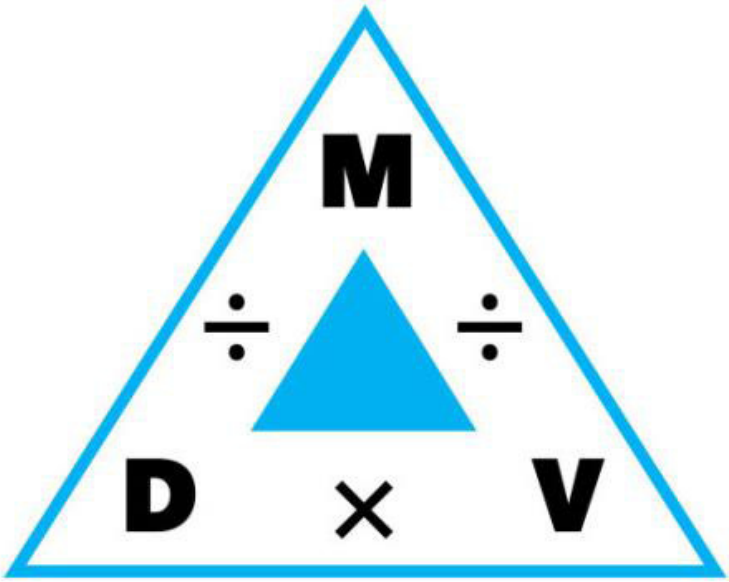
4. **Revision and homework** (end of the first 45 minutes):

Students complete the text concerning the concept of density.

Procedure and stages of the 2nd lesson:

1. **Suggested short review** of the information needed to carry on the lesson (beginning of the second 45 minutes):
   - *what is density;*
   - *how to calculate density of the substance;*
   - *what are the units of mass, volume and density;*
   - *formula; divide by; rearrange.*

2. **Development:**
   - Teacher divides students into groups of 3–4 and gives them a handout with some tasks to do. Each task is checked after a given time and explained by students (type of peer-teaching).
   - Tasks 2–4 need some explanation, e.g. how to rearrange the formula to calculate mass or volume of the substance.
   - Teacher presents 'a triangle method'.



(from: http://blog.teachersource.com/2016/08/15/density-discussion-starters/ – access: 25.06.2018)

Task 4 needs some explanation, e.g. how to convert units. Students should remember that;

Please, remember! 1 ml = 1 cm^3 and 1l = 1 dm^3

1m^3 = 1000 dm^3 = 1000000 cm^3; 1 dm^3 = 1000 cm^3;

1 kg = 1000 g

or

1 cm^3 = 0.001 dm^3 = 0.000001 m^3

1 g = 0.001 kg

3. **Revision:**

Teacher asks students to do some calculations at home. (The task is given at: http://studylib.net/doc/5882138/density-calculations-worksheet-i).

Methodological comments:

After these two lessons students should be able to calculate density of the substance and use the proper vocabulary to talk about density.

Materials and references:

Appendix 1: Data about liquids

Data to calculate the densities of different liquids.

1
A mass of an empty beaker = 63 g
A mass of a beaker with a liquid = 135 g
Volume of a liquid = 72 cm^3

2
A mass of an empty beaker = 70 g
A mass of a beaker with a liquid = 87.4 g
Volume of a liquid = 20 cm^3

3
A mass of an empty beaker = 50 g
A mass of a beaker with a liquid = 96 g
Volume of a liquid = 50 cm^3

4
A mass of an empty beaker = 70.7 g
A mass of a beaker with a liquid = 140 g
Volume of a liquid = 55 cm^3

5
A mass of an empty beaker = 80.5 g
A mass of a beaker with a liquid = 39.5 g
Volume of a liquid = 50 cm^3

6
A mass of an empty beaker = 81 g
A mass of a beaker with a liquid = 160 g
Volume of a liquid = 50 cm^3

7
A mass of an empty beaker = 60 g
A mass of a beaker with a liquid = 101 g
Volume of a liquid = 40 cm^3

Answer:

2 – benzene, d = 0.87 g/cm^3; 5 – methanol, d = 0.79 g/cm^3; 3 – cooking oil, d = 0.92 g/cm^3; 1 – water, d = 1 g/cm^3; 7 – sea water, d = 1.025 g/cm^3; 4 – glycerine, d = 1.26 g/cm^3; 6 – carbon tetrachloride, d = 1.58 g/cm^3.

Appendix 2: Table of density (selected liquids)

Densities of some selected liquids at room temperature

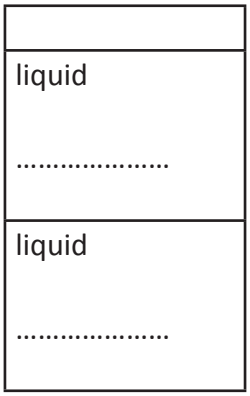
Substance	**Density** (g/cm^3)
Water	1.00
Cooking oil	0.92
Sea Water	1.025
Carbon tetrachloride	1.58
Benzene	0.87
Glycerin	1.26
Methanol	0.79

(from: https://bangzabar.wordpress.com/2009/08/06/astronomi-what-is-the-difference-between-mass-and-weight/)

Appendix 3: Text

Complete the text.

Density is one of the ..... properties of the substance. It can be calculated with a formula ....., where *m* stands for ..... and *V* stands for ..... . A substance that has lower density will ..... a liquid substance that has higher density. There are two liquids: a green one with the density 0.8 g/cm^3 and a yellow one with the density 1.1 g/cm^3. They were put carefully to a beaker, as shown in the picture. Name the liquids (write their colours in the provided spaces).



Answers:

physical; d = m/V; mass; volume; float in.

liquid ……green……
liquid ……yellow……

Appendix 4: Tasks

Do the following tasks.

1. Calculate the density of a substance if its piece of the volume equal to 15 cm^3 has a mass of 118.5 g. Name the substance (use the table).
2. Calculate the volume (in cm^3) occupied by 39.5 g of ethanol.
3. Calculate the mass (in g) of a piece of Balsa wood with volume of 120 cm^3.
4. Calculate the mass (in kg) of 2 m^2 of air.

Answers:

1. *$d = m/V = 118.5\ g / 15\ cm^5 = 7.9\ g/cm^3$; iron;*
2. *$d = m/V \rightarrow V = m/d = 39.5\ g / 0.79\ g/cm^3 = 50\ cm^3$;*
3. *$d = m/V \rightarrow m = d \cdot V = 0.79\ g/cm^3 \cdot 120\ cm^3 = 94.8\ g$;*
4. *$d = m/V \rightarrow m = d \cdot V =$*

   $0.001\ g/cm^3 \cdot 2000000\ cm^3 = 2000\ g = 2\ kg$ as $1m^3 = 1000000\ cm^3$ and $1000\ g = 1\ kg$

   or

   $0.001\ g/cm^3 = 1000\ kg/m^3 \cdot 2\ m^3 = 2\ kg$ as $1\ g = 0.001\ kg$ and $1\ cm^3 = 0.000001\ m^3$

Appendix 5: Table of density (selected substances)

Densities of Some Selected Substances at 25°C

Substance	**Density** (g/cm3)
Air	0.001
Balsa wood	0.16
Ethanol	0.79
Water	1.00
Ethylene glycol	1.09
Table sugar	1.59
Table salt	2.16
Iron	7.9
Gold	19.32

(from: http://wps.prenhall.com/wps/media/objects/165/169061/blb9ch0104.html)

Część trzecia: GEOGRAFIA

Aleksandra Zaparucha

- Shanty towns in South American cities
- The Baltic Sea
- Monsoon climate in South-East Asia

Shanty towns in South American cities

Form: students of the 8th grade – primary school; (Programme subject outline: XVI. 6.)

Realization time: 45 minutes

General aim:

- Students explain the population distribution in South America.

Objectives:

Detailed in terms of the contents:

- students understand and explain various levels of population distribution in South America;
- students explain the causes and effects of the development of slums in South American cities on the example of Favela da Rocinha in Rio de Janeiro in Brazil;
- students suggest solutions to the slum problem on the basis of a text.

Detailed in terms of the language:

- students know and use CALP language (cognitive academic language proficiency): *population distribution, shanty town/slums/favela, poverty, developing countries, standard of living, healthcare, rural-urban migration, running water, rubbish collection, cholera, dysentery, overcrowding, population density, unemployment, infant mortality, income, life expectancy, landslide, tropical storm, crime rate, open drain, make-shift house, government, sanitation pipes, services, local authority*.

Students' background knowledge:

Prior content knowledge:

- the student can read general and thematic maps from the atlas;
- the student can find necessary information on line.

Prior language knowledge:

- BICS vocabulary (basic interpersonal communication skills) – *city, hill, street, electricity, housing, entertainment, rubbish, school, hospital, toilet, disease, job, heavy rain, mud, police, gang, sewage, improvement, community, self-help, education, charity*.
- geographical names: *South America, Brazil, Rio do Janeiro*;
- language structures – Simple Present, Simple Past, Passive Voice.

Methods and forms of work:

- watching film showing Favela da Rocinha in Rio de Janeiro, Brazil;
- work on a texts describing causes and effects of the development of shanty towns in South America and a suggestion for solutions based on BBC Bitesize website;

- graphic organiser to show causes and effects of urban-rural migration to cities as well as solutions.

Didactic support:

- presentation including photo of Rocinha Favela: Alicia Nijdam (Flickr: Rocinha Favela) [CC BY 2.0 (http://creativecommons.org/licenses/by/2.0)], via *Wikimedia Commons* https://upload.wikimedia.org/wikipedia/commons/3/38/Rocinha_Favela_Brazil_Slums.jpg (access: 25.06.2018) – see: Appendix 1;
- film showing Favela da Rocinha https://www.youtube.com/watch?v=xQ9Rsde_Tco (access: 27.11.2018);
- handouts with texts on causes, effects and solutions to favela problem (from BBC Bitesize: https://www.bbc.co.uk/education/guides/zk32pv4/revision/10 and https://www.bbc.co.uk/education/guides/zk32pv4/revision/11; access: 25.06.2018) – see: Appendix 2;
- flipchart paper and markers.

Procedure and stages of the lesson:

1. **Introduction and motivation**

   Warmer: Do Now Activity

2. **Development**

   Slide 1
   Teacher shows the slide with questions: What? Where? Who?
   Students see the slide when coming into the classroom.
   Teacher collects answers and writes them down on the board in a table divided into two columns (Photo 1 and Photo 2). This may include vocabulary in both Polish and English. Teacher should encourage students to suggest nouns (e.g. *high-rise buildings*) as well as adjectives (e.g. *nice environment*).

   Slide 2
   The same procedure as with the Slide 1. Teacher asks students where these two places can be found. Teacher accepts all the answers and writes them on the board.

   Slide 3
   Teacher shows that both photos are parts of the same picture. This is Favela da Rocinha in Rio de Janeiro in Brazil. Teacher asks questions: Why are these two places so close to each other? What do people living in both parts have in common? What do they think of each other? Teacher accepts all the answers and suggestions.

   Slide 4
   Teacher introduces the topic: *Slums in South America*.

   Slide 5
   Teacher explains that the terms *shanty towns* and *slums* can be used interchangeably to name the same type of urban area. In South America the term *favela* is used.

Slide 6
The lesson is based on a Rio do Janeiro case study. Teacher shows the location of Rio de Janeiro on the map of Brazil. Teacher may ask students about associations they have with Rio de Janeiro. Students may suggest: *carnival and Olympics*.

Slide 7
Teacher shows the location of Favela da Rocinha on the map of Rio de Janeiro. Teacher explains, that Favela da Rocinha is nearby most famous beaches in Rio (Copacabana, Ipanema).

Slide 8
Teacher shows the film on Favela da Rocinha. The film has no comments, only music. Students watch and write down their observations. They can write single words or expressions, both in Polish or English. Teacher may help by suggesting what to pay attention to: streets, buildings, people, sport areas, cleanliness, water, electricity etc. After watching the film students work in pairs to compare their answers. Teacher elicits student suggestions and adds them to the list on favelas on the board.

Slide 9
Teacher introduces the text on causes, effects and solutions to the slum issue from the BBC Bitesize website. Teacher explains, that what they see in the photo and in the film are effects of some processes. They need to understand the causes of this situation and think of solutions to this issue.

Slide 10
Class is divided into 4 groups. Each of them gets one part of the text to read. Their task is to note down (underline) all the expressions that describe causes, effects and/or solutions to the Favela da Rocinha problem. When ready, teacher forms new groups of four students in which every student is an expert on one part of the text. Students make a poster showing causes, effects and solutions (an example grid is in Slide 10).

Suggested causes, effects and solutions based on the text:

Causes:
- *mass rural-urban migration;*
- *poor standards of living in rural areas;*
- *search of a better life;*
- *well-paid jobs in factories in cities;*
- *better schools in cities;*
- *entertainment in cities;*
- *better healthcare;*
- *higher standard of living in cities.*

Effects:
- *houses out of basic materials such as tarpaulin, corrugated sheets and broken bricks;*
- *houses built illegally (no government services);*
- *no electricity;*
- *no rubbish collection;*

- *no schools;*
- *no hospitals;*
- *no running water;*
- *no toilets;*
- *diseases (cholera, dysentery);*
- *overcrowding (population density of about 37,000 people per square kilometre);*
- *poor sanitation;*
- *sewage in open drains;*
- *poverty;*
- *high infant mortality rates;*
- *life expectancy is low (on average 56 years;*
- *high unemployment rates;*
- *informal sector of 'cash in hand';*
- *high crime rate;*
- *organised crime ;*
- *feared by police;*
- *landslides;*
- *houses – little protection to people, easily washed away by the heavy rain and mud*.

Solutions:

- *improve existing shanty towns by the government;*
- *self-help schemes (small scale projects to help local people to improve their area – open services, improve housing);*
- *site and service schemes (projects by the local authority to relocate residents from favelas;*
- *charities (providing money for self-help scheme).*

Methodological comments:

The lesson is designed in a way allowing students to smoothly use the language for understanding the concept presented. This means the lesson structure should be followed as closely as possible, especially in terms of the number of parts the films was cut into and the number of times students watch the film.

Another issue is the fact that the main goal of the lesson is to familiarise the students with the topic, thus the language issues become less important. As a result, it is obvious for the teacher to help students understand with (sporadic) use of Polish. Similarly, students should not be penalised for the use of their native language in the classroom, especially when they work in pairs.

Visual aids in a CLIL classroom are especially important, as they support understanding the concept presented. This is why teachers are advised not to remove any of the visuals from the lesson.

Materials and references:

Appendix 1: Presentation

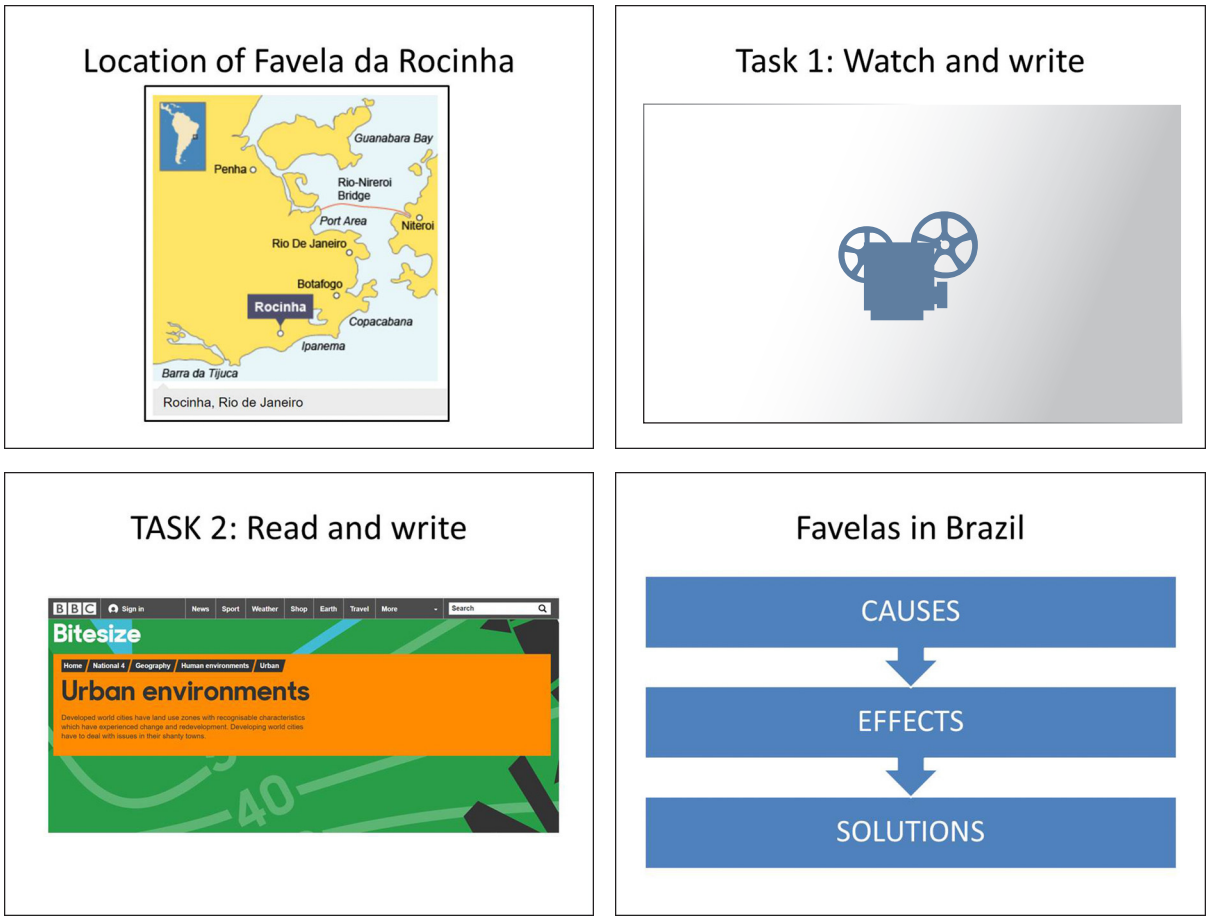
Photo 1: What? Where? Who?

Photo 2: What? Where? Who?

Favelas of South America

favelas
shanty towns
slums

Location of Rio de Janeiro



Appendix 2: Text

Favelas in Brazil: causes, effects and solutions

Part 1

Rural – urban migration

Many people in developing countries have given up subsistence farming in the countryside and made their way to large cities like Rio de Janeiro.

They move in search of a better life. People are attracted to cities in the hope of finding well-paid jobs in factories, better schools for their children, entertainment, better healthcare and a higher standard of living.

Unfortunately, the reality is very different as many families find themselves struggling for survival in slums – called favelas in Brazil.

Issues in shanty towns

The huge volume of people migrating to cities has caused many problems.

New arrivals to the city build their own houses out of basic materials such as tarpaulin, corrugated sheets and broken bricks, on land which they neither own nor rent.

These areas are illegal and are not catered for by the government, so there is no electricity, rubbish collection, schools or hospitals. The houses in these settlements have no basic amenities such as running water or toilets, so diseases like cholera and dysentery are common.

Part 2

Overcrowding is a major problem in Rio's favelas. On average, the population density is about 37,000 people per square kilometre. Because of the lack of toilets and poor sanitation, sewage often runs in open drains. This causes diseases which spread rapidly.

People are poor and cannot afford healthcare or medicines so illnesses go untreated. Diseases spread quickly. As a result, infant mortality rates are high and life expectancy is low (on average 56 years) in a Rio favela.

There are not enough jobs to go around, so unemployment rates are high. Most people who do have a job work in the informal sector for ‚cash in hand', e.g. labourers or cleaners. Informal sector jobs are very poorly paid and the work is irregular so a steady income is not guaranteed.

Crime rate in the favelas is extremely high as they are controlled by gangs who are involved in organised crime. Rocinha is so feared by police that they do not patrol on foot without guns.

Rio is hemmed in by mountains, so during tropical storms landslides are common. Make-shift houses in favelas offer little protection to people and houses are easily washed away by the heavy rain and mud.

Part 3

Development issues in shanty towns

The Brazilian Government has realised that it cannot solve the housing problem in city favelas like Rio by destroying them. The government wants to improve existing shanty towns but does not want to encourage more to develop. The favelas are eyesores and portray a poor image of the city.

Solutions

- Self-help schemes

These are small scale projects which allow local people to use their skills to help improve their local area. The government has provided materials such as bricks, cement and glass to enable residents to improve their own homes. This often fosters a community spirit as many families work together to make the improvements.

In Rocinha, self-help schemes have improved the area from slums to low quality housing where the majority of homes have basic services like electricity. There are now also many services in Rocinha including cafes and shops. Some people have been granted legal ownership of the land on which their houses are built.

Part 4

- Site and service schemes

These are projects undertaken by the local authority to relocate residents from favelas. Brick houses are built with electricity, running water and sanitation pipes.

People may be allowed to buy these houses. An example of such a scheme is 'The Favela Bairro Project' or 'Slum to Neighbourhood' project. Services in these areas also include refuse collection, schools and health centres.

- Charities

Charities help to improve life for people in shanty towns by providing money for self-help schemes. The Developing Minds Foundation builds schools and supports education programmes in Rio's favelas. Their aim is to improve the literacy rates of children so they can get a good job, improve their standard of living and have more life choices.

(from BBC Bitesize: https://www.bbc.co.uk/education/guides/zk32pv4/revision/10 and https://www.bbc.co.uk/education/guides/zk32pv4/revision/11)

The Baltic Sea

Form: students of the7th grade – primary school; (Programme subject outline: IX. 1.; IX. 2.; IX. 13.; XI. 7.)

Realisation time: 45 minutes

General aims:

- the student characterises the specificity of the location of the Baltic Sea and the environmental threats stemming from that;
- the students lists the elements of the Baltic Sea shoreline.

Objectives:

Detailed in terms of the content:

- the student describes the location of the Baltic Sea;
- the student shows on a map the Baltic Sea bays, island and straights;
- the student lists the most important elements of the Baltic Sea environment;
- the students discuss the physical characteristics of the Baltic Sea;
- the student lists the sources of the Baltic Sea pollution.

Detailed in terms of the language:

- the student knows and understands the following terms in the English CALP language (cognitive academic language proficiency): *pollution, toxic waste, nuclear waste, agriculture, sewage* etc.;
- student can explain meaning the name and functions of HELCOM (*Baltic Marine Environment Protection Commission; Helsinki Commission*) and WWF (*World Wide Fund for Nature*).

Students' background knowledge:

Prior content knowledge and skills:

- the student knows the physical and political maps of Europe;
- the student can read thematic maps;
- the student can find information on line.

Prior language knowledge and skills:

- BICS vocabulary (basic interpersonal communication skills) – *sea, ocean, land, island, river, straight, bay, gulf, north, south, east, west*;
- geographical names: *Europe, Poland, Germany, Sweden, Finland, Russia, Estonia, Lithuania, Latvia, Denmark*;
- language structures – Present Simple tense, Passive Voice.

Methods and forms of work:

- brainstorming;
- working on a *Wikipedia* text;
- working with a film.

Didactic support:

- *Wikipedia* text on the Baltic Sea in Simple English: https://simple.wikipedia.org/wiki/Baltic_Sea (access: 25.06.2018 – see Appendix 2);
- presentation including a photo of Baltic Sea: https://en.wikipedia.org/wiki/Baltic_Sea#/media/File:BalticSea_March2000_NASA-S2000084115409_md.jpg (access: 25.06.2018 – see: Appendix 1);
- an Al Jazeera news piece on the HELCOM meeting regarding the Baltic Sea pollution: The Baltic Sea_full_film.mp4 (access: 25.06.2018);
- handouts (see: Appendix 2 and 3);
- general and thematic maps in the atlas.

Procedure and stages of the lesson:

1. **Introduction and motivation**
   Warmer: Do Now Activity.

2. **Development:**

   Slide 1
   Teacher shows Slide 1 before the students enter the classroom. This means that during the preparation stage the slide will be visible to students.

   Slide 2
   Teacher asks detailed questions:
   – What is it? (The Baltic Sea; satellite image);
   – Where is it? (Northern Europe);
   – When was it taken? (in winter – what we see is a fragment is the ice-covered Bay of Bothnia; lack of snow cover in the southern part means it is not a severe winter);
   – What is shown in white? (in the northern part it is snow and ice, in the southern part these are clouds);
   – What is shown in dark blue? (water areas – The Baltic Sea, lakes). What is shown in brown colour? (land areas not covered with snow).

   Slide 3
   Teacher introduces the topic: *The Baltic Sea*.

   Slide 4
   Task 1: Brainstorming

   The students get one minute (or one and a half, if the teacher decides the task is challenging for the class). During that time they need to list as many names as they can think of that are connected with the Baltic Sea.

Slide 5

Teacher can suggest the names showing Slide 5. Students may write Polish or English names.

After one minute students count their names. In pairs they compare their lists and make a common one (that is every student noted down the name his/her partner has). Later on students get new pairs or get into groups of four to do the same.

Later on students dictate the names to teacher, who writes them down on the board creating a mindmap. These names will be used as a starting point for the second activity.

Slide 6

An example mindmap on the Baltic Sea.

3. Work with text

Slide 7

Teacher distributes handouts (see Appendix 2).

Slide 8

Handout includes a *Wikipedia* text on the Baltic Sea in Simple English.

Students' task is to write questions to the Simple English text. Teacher may help with the first 2–3 examples. Later on, students need to work in groups (every group working on a different part of the text) or teacher may decide to continue to do the rest of the exercise as a whole class.

To make things easier, the places where the questions may be asked have been marked.

Later on students work in groups to find answers to the specific questions. They can use general or thematic maps in the atlas and/or get on line.

4. Work with film

Slide 9

Teacher tells students that they will watch a film from the news. First, teacher shows four still images from the film.

Slide 10

Still image 1. Teacher makes sure students understand the title. If needed, this can be translated into Polish (*Szczyt dotyczący zanieczyszczenia Bałtyku. Przywódcy będą dyskutować na temat oczyszczenia*). At this time teacher may explain the specificity of the journalist language (e.g. *'to discuss' in the news title means the future*).

Teacher needs to draw students' attention to the TV station – Al Jazeera is an Arab-language station which also has an English channel; it is based in Doha, Qatar.

Slide 11

Still image 2. Teacher's questions: Who is he? Where is he? What is the time of the year? (*Al Jazeera journalist; on a boat somewhere on the Baltic Sea; winter time*).

Slide 12

Still image 3. Teacher's questions: Who is he? What is WWF? Where is he from? (*Founder WWF, World Wide Fund for Nature, Finland*).

Slide 13
Still image 4. Teacher's questions: Who is she? What is HELCOM? (*One of the heads of HELCOM, which is Helsinki Commission working for the protection of the Baltic Sea*).

Slide 14
Teacher distributes handouts (see: Appendix 3).

The recording has three parts. Students try to solve each of them before listening to the recording (no vision). Each recording needs to be played at least twice.

Part 1 – Students insert the words in the gaps. Then they listen to check the answers.

Slide 15
Part 2 – Students read the text and try to insert some words in the gaps. They listen to the recording to check correctness. Teacher plays the recording twice.

Slide 16
Part 3 – Students put fragments of the sentences in logical and grammatically appropriate order. When listening they also check the order in which the sentences appear in the text. Teacher plays the recording twice.

Slide 17
Students watch the entire film.

Slide 18
Teacher summarises the information from the recording: What are the biggest Baltic Sea problems?

Students need some time to review their handouts.

The biggest issues are Second World War weapons and ammunition, Russian nuclear waste, untreated sewage, agriculture and the gas pipeline.

Teacher may add: *oil spills, dirty rivers*.

5. Summary

Slide 19
As a summary students write on pieces of paper the words *The Baltic Sea* from top to the bottom and then add words horizontally to form a crossword. The words needs to be connected with the theme of the lesson.

Students may work in groups or in pairs. Teacher may suggest a specific Baltic theme to every group, such as: islands; bays and lagoons; countries and cities; threats; natural environment etc.

Slide 20
This slide shows an example of a ready crossword.

Methodological comments:

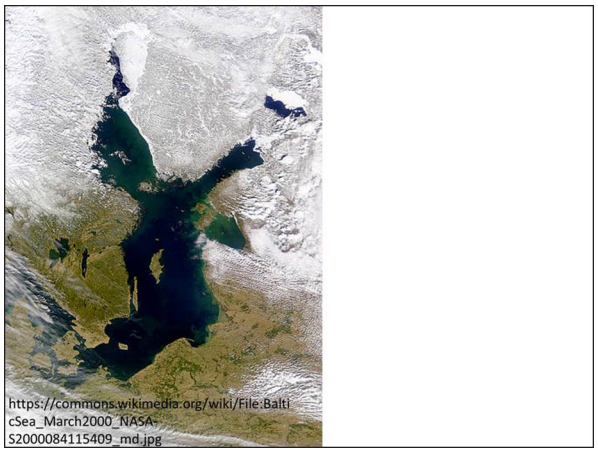
The lesson is designed in a way allowing students to smoothly use the language for understanding the concept presented. This means the lesson structure should be followed as closely as possible, especially in terms of the number of parts the films was cut into and the number of times students watch the film.

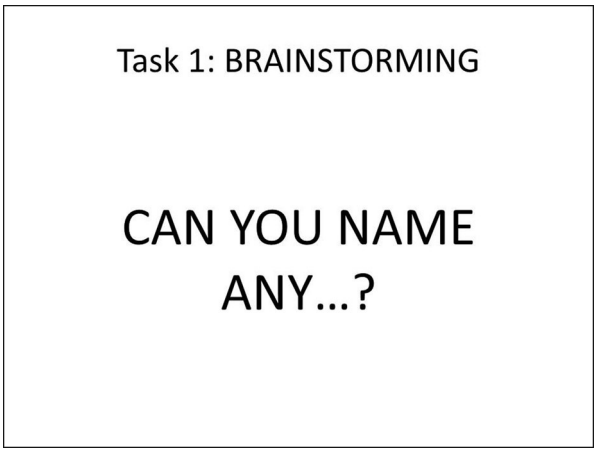
Another issue is the fact that the main goal of the lesson is to familiarise the students with the topic, thus the language issues become less important. As a result, it is obvious for the teacher to help students understand with (sporadic) use of Polish. Similarly, students should not be penalised for the use of their native language in the classroom, especially when they work in pairs.

Visual aids in a CLIL classroom are especially important, as they support understanding the concept presented. This is why teachers are advised not to remove any of the visuals from the lesson.

Materials and references:

Appendix 1: Presentation



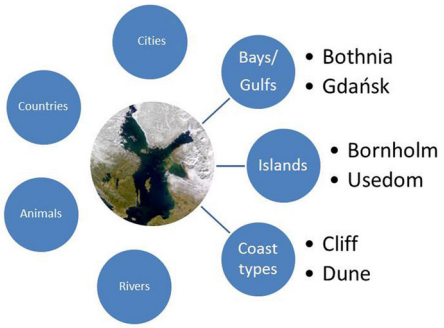


Task 1

Can you name any:

- bays?
- islands?
- coast types?
- rivers?
- animals?
- countries?
- cities?

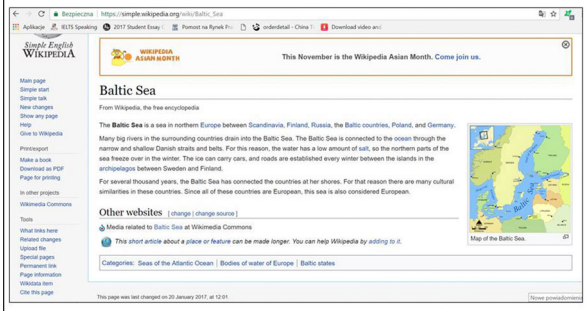
Task 1



Task 2: RESEARCHING

SIMPLE ENGLISH
WIKIPEDIA ENTRY

Task 2: RESEARCHING



Task 3: BALTIC IN THE NEWS

THE BALTIC SEA
PROBLEMS

Task 3: Part 1

Task 3: Part 2

Task 3: Part 3

Task 3: Full film

Task 3: BALTIC IN THE NEWS

THE BALTIC SEA PROBLEMS

Consolidation

						T						
						H						
						E						
						B						
						A						
						L						
						T						
						I						
						C						
						S						
						E						
						A						

Consolidation

			T	A	L	L	I	N	N	
			H	E	L	S	I	N	K	I
		H	E	L						
S	A	M	B	I	A					
			A	L	A	N	D			
	S	A	L	I	N	I	T	Y		
	E	S	T	O	N	I	A			
T	O	X	I	C	W	A	S	T	E	
			C	L	I	F	F			
	R	U	S	S	I	A				
		N	E	M	A	N				
		S	A	R	E	M	A	A		

Appendix 2: Text from *Wikipedia*

The *Wikipedia* entry on The Baltic Sea in Simple English.

Part 1

The Baltic Sea is a sea in northern Europe [*Where?*] between Scandinavia [*Country?*], Finland, Russia, the Baltic countries [*What?*], Poland and Germany.

Where? _____

Country? _____

What? _____

Part 2

Many big rivers [*?*] in the surrounding countries drain into the Baltic Sea.

_____

The Baltic Sea is connected to the ocean [*?*] through the narrow and shallow Danish straights and belts [*?*].

_____

_____

Part 3

For this reason, the water has a low amount of salt [*?*], so the northern parts of the sea freeze over the winter [*?*].

_____

_____

The ice can carry cars, and roads are established every winter between the islands in the archipelagos [*?*] between Sweden and Finland.

_____

Part 4

For several thousand years the Baltic Sea has connected the countries at her shores [*?*].

_____

For that reason there are many cultural similarities in these countries [*?*].

_____

Since all of these countries are European, this sea is also considered European [*?*].

Any extra questions:

_____

_____

Answers (Examples of questions):

The Baltic Sea is a sea in northern Europe [Where exactly? What are the coordinates?] between Scandinavia [Is this a country?], Finland, Russia, the Baltic countries [What are these countries?], Poland and Germany.

Many big rivers [How many? What are the biggest?] in the surrounding countries drain into the Baltic Sea.

The Baltic Sea is connected to the ocean [Which ocean?] through the narrow and shallow Danish straights and belts [What are they?].

For this reason, the water has a low amount of salt [How much salt is it?], so the northern parts of the sea freeze over the winter [How about the southern part? Does it freeze every winter?].

The ice can carry cars, and roads are established every winter between the islands in the archipelagos [What archipelagos are these?] between Sweden and Finland.

For several thousand years, the Baltic Sea has connected the countries at her shores [How has the Baltic connected these countries?].

For that reason there are many cultural similarities in these countries [What are these cultural similarities? What about other similarities – economy, politics, international cooperation?].

Since all of these countries are European, this sea is also considered European [Do these countries cooperate? How?].

Extra questions:

How deep is the Baltic Sea?
What are the largest bays of the Baltic Sea?
What are the names of the largest islands on the Baltic Sea?
What are the biggest peninsulas of the Baltic Sea?
What are the names of the animals of the Baltic Sea?
What are names of the plants of the Baltic Sea?
What are the largest cities on the Baltic Sea?
What is the population of the countries on the Baltic Sea?
What are the largest ports of the Baltic Sea?
What are the most popular tourist destinations on the Baltic Sea?
What are the biggest problems of the Baltic Sea?

Answers: (Example of a long text)

Main text

The Baltic Sea is a sea in northern Europe. The sea stretches from 53°N to 66°N latitude and from 10°E to 30°E longitude. It is between Scandinavia (i.e. Denmark, Sweden), Finland, Russia, the Baltic countries (i.e. Lithuania, Estonia, Latvia), Poland and Germany.

About 200 rivers in the surrounding countries drain into the Baltic Sea, for example the Vistula, Oder, Neva and Neman.

The Baltic Sea is connected to the [Atlantic Ocean] through the narrow and shallow Danish straights and belts. These are: Little Belt, Great Belt and Sound.

For this reason, the water has a low amount of salt [of 2.5%], so the northern parts of the sea sometimes freeze over the winter. The southern part freezes very rarely.

The ice can carry cars, and roads are established every winter between the islands in the Stockholm and Åland archipelagos between Sweden and Finland.

For several thousand years, the Baltic Sea has connected the countries at her shores. One example is a trade organisation of Hanseatic League.

For that reason there are many cultural similarities in these countries, like some languages. Besides Russia, all the Baltic states are the member states of the European Union.

Since all of these countries are European, this sea is also considered European.

Additional questions – answers

The deepest part of the Baltic Sea is 524 m.

The largest bays of the Baltic Sea are Bothnia Bay, Bay of Finland, Riga Bay, Bay of Gdańsk and Curonian Spit Lagoon.

The largest islands on the Baltic Sea are: Zealand, Rügen, Bornholm, Wolin, Usedom (Uznam), Gotland, Lolland, Öland and Hiuumaa and Saremaa. Groups of islands include: Åland Islands and Stockholm Archipelago.

The largest peninsulas of the Baltic Sea are Hel Peninsula, Sambia Peninsula and Curonian Spit.

Some of the animals of the Baltic Sea are freshwater and some sea animals.

The plants of the Baltic Sea include algae.

The largest cities on the Baltic Sea are Helsinki, Stockholm, Tallinn, Copenhagen, Malmö, Klaipeda, Gdańsk, Tallinn, Riga, Saint Petersburg, Kaliningrad Mecklenburg, Lübeck, Kiel.

The population of the countries on the Baltic Sea?

The largest ports of the Baltic Sea are Świnoujście, Saint Petersburg, Stockholm, Riga, Helsinki, Gdańsk, Tallinn, Kaliningrad, Szczecin, Gdynia, Kiel, Lübeck, Rostock, Klaipėda, Oulu, Turku, Kołobrzeg, Świnoujście, Police, Władysławowo and Darłowo.

The most popular tourist destinations on the Baltic Sea are: Gotland, Öland, Jūrmala, Riga, Curonian Spit and Klaipeda.

The biggest problem of the Baltic Sea is pollution. It comes from agriculture, untreated sewage and oil spills. One-third of it is dead sea.

Appendix 3: Listening and gap filling

Baltic Sea Pollution Summit: Leaders to discuss clean up

Part 1 [00:00–00:51]

Insert the words given below in the appropriate gaps. Listen to the first part of the film to check your answers.

agriculture, bad, poisoned, poisoning, sewage, sinners, toxins, treatment, ugly, worse

The Finnish winter landscape looks pretty enough, but the ice hides an (1) …… truth. The water is (2) …… . This is the Baltic, the closed sea bordered by nine countries who all at one time or another have tipped tons of (3) …… into the water.

[Steven Cole, Al Jazira] Who is to blame for (4) …… the Baltic?

[Pertti Salolainen, WWF Founder, Finland] First of all, we're all (5) ……, all the nations which are around the Baltic are sinners. But of course there are spots which are (6) …… than others. And if you take one spot you can say that, say, Petersburg was very (7) …… spot, now it's improving, Kaliningrad is very bad now. Four hundred thousand people are letting their (8) …… into the Baltic without any (9) …… . But is we talk about Finland, Finland's (10) …… is very bad too.

Part 2 [00:51–01:50]

Listen to the second part of the film and insert two-word expressions in the gaps.

The sea has been a (1) _____ _____ for Europe's darkest secrets: thousands of Second World War aeroplanes, _____ _____ , ammunitions. The (3) _____ _____ threw thousands of dead German soldiers into the water. And now the Finnish government is investigating reports Russian (4) _____ _____ has also been dumped.

The (5) _____ _____ , or HELCOM, who've been trying to save this sea, estimates there are between (6) _____ _____ and (7) _____ _____ tons of chemical weapons, mainly gases, lying on the seabed. They're increasingly worried now that trying to bring up those weapons will release yet more (8) _____ _____ into the water.

The volatile seabed will be further disturbed when a new and controversial (9) _____ _____ is laid in the spring. The pipe will transport gas from Russia to Germany, and it's

divided all the Baltic loyalties. But HELCOM hopes the sea's (10) _____ _____ will bring them back around the table.

Part 3 [01:50–02:32]

Put the parts of the sentences in a logical order. Then listen to the third part of the recording to check your answers.

[Anne Christine Brusendorff, HELCOM Executive Secretary]:

a. and Russian politics all meet.
b. but also actually showing their specific commitments
c. but if the old east-west cracks appear
d. by the time spring arrives.
e. for how they are going to do it.
f. gathering here in Helsinki
g. in order to express not only that they see
h. than the water under the ice
i. that it is important to protect the Baltic,
j. that we will see presidents, prime ministers, business leaders, NGOs,
k. The Baltic is where western, eastern
l. They are here to agree a way
m. to save the sea
n. Well, I must say that I'm extremely pleased
o. will be even more polluted

Answers:

Part 1

1. *ugly,* 2. *poisoned,* 3. *toxins,* 4. *poisoning,* 5. *sinners,* 6. *worse,* 7. *bad,* 8. *sewage,* 9. *treatment,* 10. *agriculture.*

Part 2

1. *dumping ground,* 2. *chemical weapons,* 3. *Soviet Union,* 4. *nuclear waste,* 5. *Helsinki Commission,* 6. *thirty-five thousand,* 7. *forty thousand,* 8. *toxic material,* 9. *Nordstream Pipeline,* 10. *ecological crisis.*

Part 3

(1n) *Well, I must say that I'm extremely pleased.* (2j) *that we will see presidents, prime ministers, business leaders, NGOs,* (3f) *gathering here in Helsinki* (4g) *in order to express not only that they see* (5i) *that it is important to protect the Baltic,* (6b) *but also actually showing their specific commitments* (7e) *for how they are going to do it.* (8k) *The Baltic is where western, eastern* (9a) *and Russian politics all meet.* (10l) *They are here to agree a way* (11m) *to save the sea* (12c) *but if the old east-west cracks appear* (13h) *than the water under the ice* (14o) *will be even more polluted* (15d) *by the time spring arrives.*

Monsoon climate in South-East Asia

Form: students of the 7th grade – primary school; (Programme subject outline: XIV. 4.)

Realization time: 45 minutes

General aim:

- Student understands and explains the cause and effect relations between the monsoons in Asia and their importance of the economy of the region of SE Asia.

Objectives:

Detailed in terms of the content:

- Student understands and explains seasons distribution of temperatures, pressures and wind directions in Asia and over the Indian Ocean;
- Student explains the development of monsoon weather based on a schematic pictures.

Detailed in terms of the language:

- Student knows and understands the following terms from CALP language (cognitive academic language proficiency): *soil moisture, monsoon, landslide, wind pattern, data from satellites, evaporate/evaporation, precipitation, saturate; GPM – Global Precipitation Measurement.*

Students' background knowledge:

Prior content knowledge:

- Student understands the relations between the type of land (land, water body) and the rate of heating up and cooling down;
- Student understands the relations between the temperature and the air pressure;
- Student understands and explains the correlation between the air pressure and the wind direction;
- Student understands and explains the influence of the relief on the rainfall forming on orographic barriers (e.g. the Himalayas).

Prior language knowledge:

- BICS vocabulary (basic interpersonal communication skills) – *wet, dry, (heavy) wind, rain, flood, cloud, season, ocean, land, north/south/east/west*;
- geographical names: Asia, South-East Asia, the Indian Ocean, the Himalayas, India, China, Vietnam, Thailand etc.;
- language structures – Simple Present, Passive Voice.

Methods and forms of work:

- work with film (answering questions, completing text);
- description of a cause and effect sequence of monsoon weather type and the distribution of rice cultivation;
- completing the summer and winter monsoon scheme in South-East Asia.

Didactic support:

- film explaining the monsoon weather pattern from *Wikipedia*: https://en.wikipedia.org/wiki/Monsoon (access: 25.06.2018);
- presentation (see: Appendix 1) including slides showing photos of India, Cambodia and Pakistan:
  - West Ghats: Arne Hückelheim – Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=23414909 (access: 25.06.2018);
  - People growing rice in Cambodia: Brad Collis [CC BY 2.0 (http://creativecommons.org/licenses/by/2.0)], via *Wikimedia Commons* https://en.wikipedia.org/wiki/Agriculture_in_Cambodia#/media/File:Cambodian_farmers_planting_rice.jpg (access: 25.06.2018);
  - Flood in Pakistan: FAYAZ AZIZ/REUT http://www.aljazeera.com/indepth/inpictures/2015/08/photo-essay-floods-wreak-havoc-south-asia-150806150004267.html (access: 25.06.2018);
- handouts (see: Appendix 2, 3, 4, 5, 6).

Procedure and stages of the lesson:

1. **Introduction and motivation**

   Warmer: Do Now Activity.

   Slide 1

   Teacher shows the slide before students enter the classroom so that they can see it immediately while preparing for the lesson.

   Suggested answers to the questions on the slide:

   1. Sand heats up faster than water.
   2. In the evening because water takes time to heat up.
   3. You feel cold in your feet first because cold air is heavier than warm air.
   4. The mirror will get covered by water because it is cold. Warm air holds more water vapour, but when it cools down when touching the mirror it, loses some water vapour. This is called ‘condensation’.

   Polish can be used to explain the phenomena discussed in the questions to make sure students understand the processes.

   Teacher shows three slides and asks students to describe them.

Slide 2
West Ghats, India – mountains, valleys, dry, wet, dry season, wet/rainy season, brown, green; extra question: Why is the colour of the mountains so different in those two seasons?

Slide 3
Cambodia: people growing rice, farmers, water, planting, standing in water; extra question: what happens if the rain comes too early or too late?

Slide 4
Pakistan: people in the water, flood, a man carrying his (possibly) father, catastrophe, rain, too much rain; extra question: Why does this happen?

Slide 5
Teacher introduces the theme: *Monsoons*.

2. Development

Slide 6
Teacher distributes handouts (see: Appendix 2). Students read and try to complete the tasks **before** watching the film. Teacher checks suggestions but does not give correct answers.

Slide 7
Teacher shows the first part of the film from the *Wikipedia* entry on monsoons.

Slide 8
Students compare their results. Teacher elicits the answers. If there are few correct answers, teacher may show the film again.

Slides 9–17
Teacher shows still images from the film. Students check their answers.

Answers:

1. *Wet, Dry;*
2. *Scientist;*
3. *white;*
4. *red, blue;*
5. *green;*
6. *blue;*
7. *landslides;*
8. *summer, winter;*
9. *hot, blue.*

Slide 18
Teacher distributes handouts (see: Appendix 3). Students work in pairs. Then they compare the results with another pair of students.

Slide 19
Teacher shows the film with no vision. Students compare their answers.

Answers:

Monsoons: wet, dry, repeat…

Part 1

The monsoon is a **seasonal rain and wind pattern** that was first described over South Asia. You see the clouds blossoming here during the summer part of the monsoon. For centuries people have known about it but only recently have we received enough **data from satellites** to really describe what's going on.

What you can see here is **moist air** that **has evaporated from the ocean** coming across India and providing rainfall driving the **monsoon season**. The great thing about **GPM** is that it allows us to see precipitating systems as a whole – over land and oceans, and then as a transition from one boundary to the next.

Part 2

All this rainfall drives **soil moisture** over land. It's beneficial because it promotes the **economic activity** that people depend on, for example **agriculture**, as well it fills the rivers which provides **water for human activity** and the **natural environment**, as well as **transportation**. If the rivers get too full of course it becomes flooding. At first, the **floods** you see here are fairly minor and wide-scale but then they concentrate in a few wiggly lines which are the **river basins**, for example in Central Eastern China.

In **mountainous regions**, when the ground becomes **saturated due to heavy rains** it can lead to **landslides**. Landslides kill thousands of people every year, and are primarily **triggered by rainfall**. They are specially common within the **Himalayan region** each monsoon season.

Part 3

One really cool way to look at the monsoon is to do a split screen and look at the summer and the winter at the same time. In the summer the wind is **blowing onshore** bringing the **moist rain-laden air** into the continent. In winter time it **blows off the continent**.

Now, **those winds are basically driven by temperature differences between the ocean and the land**. And where the land is nice and warm the **air expands** and it draws in the moist air from the ocean waters. But in the winter time it's very cold. The moisture then goes from the continent back into the oceans.

Slide 20

Teacher shows the film again – with vision. Students try to 'hear' the expressions they had a problem with.

Slide 21

Teacher distributes handouts (see: Appendix 4). Students insert the words in appropriate boxes.

1. *wind*
2. *land*
3. *ocean*
4. *warm*
5. *expands*
6. *moist*
7. *laden*
8. *water*
9. *agriculture*
10. *transportation*
11. *floods*
12. *landslides*
13. *cold*
14. *contracts*
15. *dry*

3. **Summary**

Slide 22
Teacher distributes handouts (see: Appendix 5). Students work in groups. They use the information from the film to complete the schemes of the summer and winter monsoons.

Slides 23–26
Slide shows answers to handout.

Slides 27–29
Teacher draws students' attention to the connection between the monsoon climate and the distribution of rise cultivation.

4. **Checking understanding**

Slide 30
Teacher distributes handouts (see: Appendix 6). Students complete the text individually.

Second part of the film

The second part of the film refers to other regions of the world where monsoon wind pattern is observed. It can be used as an extension or as homework (individual work) or can be omitted altogether.

Over the past fifty years or so, satellites have been used to measure precipitation all around our Earth. With that data set we are able to understand that monsoons occur not only in South Asia and India but in other parts of the world as well. For example, Africa, where the temperature gradient is between the Atlantic Ocean and the Sahara Desert. The wind blows from the moist Atlantic Ocean onto West Africa providing the moisture for the precipitation. Some of these westward moving storms provoke hurricanes over the Atlantic that occasionally make it to the US. South-western North America also has a summertime monsoon. You see high soil moisture in regions where there is a lot of precipitation in western Mexico and later in season this extends up into the south-western US. And the southern hemisphere has a monsoon as well. This occurs in the northern hemisphere winter, which is the southern hemisphere summer when Australia is warmer than the ocean to the north.

Having a better understanding of the global water cycle and monitoring changes over time is important for society, for everyday lives and our long-term future.

Methodological comments:

The lesson is designed in a way allowing students to smoothly use the language for understanding the concept presented. This means the lesson structure should be followed as closely as possible, especially in terms of the number of parts the films was cut into and the number of times students watch the film.

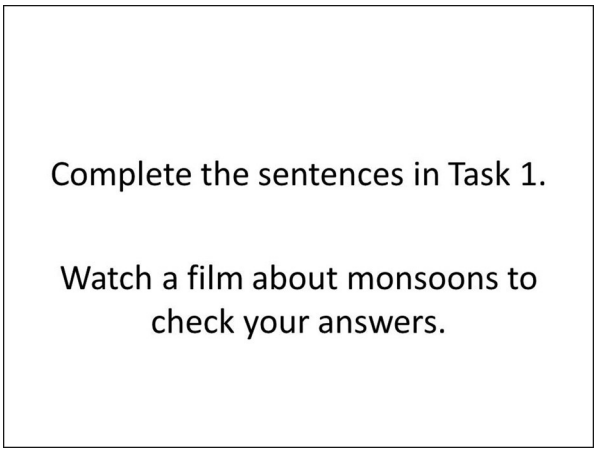
Another issue is the fact that the main goal of the lesson is to familiarise the students with the topic, thus the language issues become less important. As a result, it is obvious for the teacher

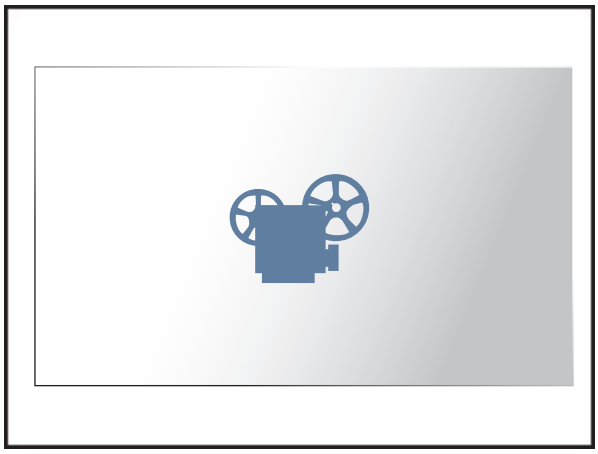
to help students understand with (sporadic) use of Polish. Similarly, students should not be penalised for the use of their native language in the classroom, especially when they work in pairs.

Visual aids in a CLIL classroom are especially important, as they support understanding the concept presented. This is why teachers are advised not to remove any of the visuals from the lesson.

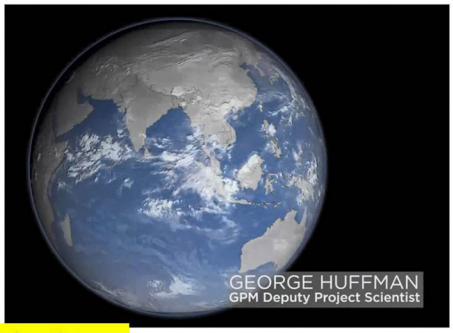
Materials and references:

Appendix 1: Presentation





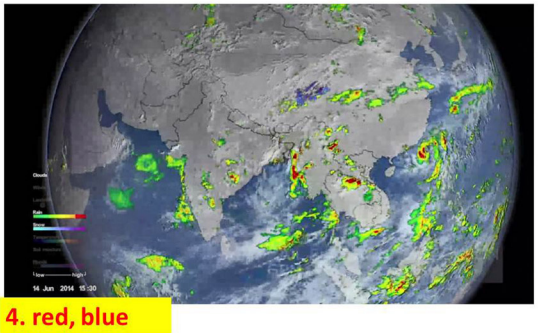
1. Wet, Dry



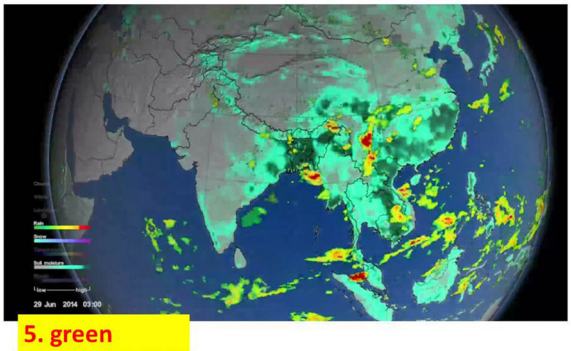
2. Scientist

GPM – Global Precipitation Measurement

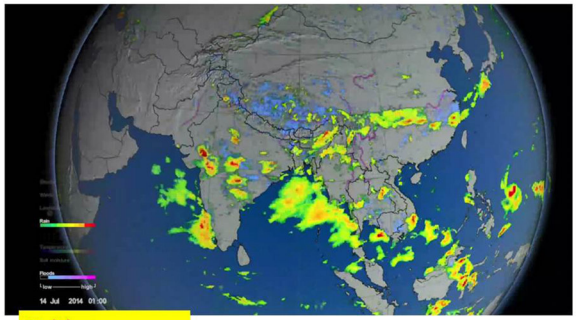
3. white



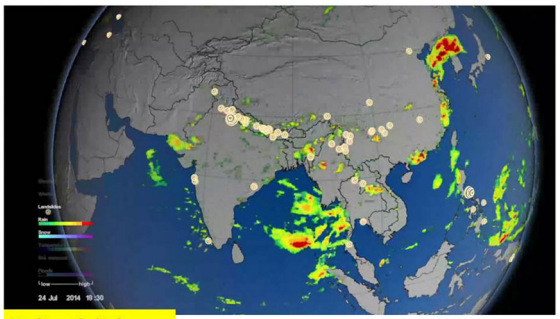
4. red, blue



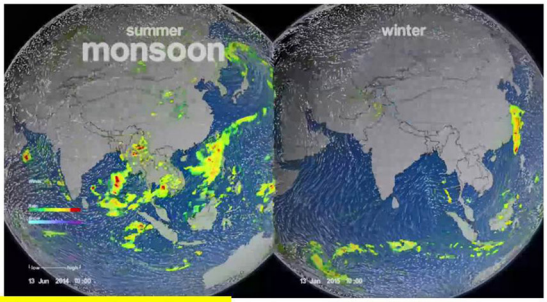
5. green



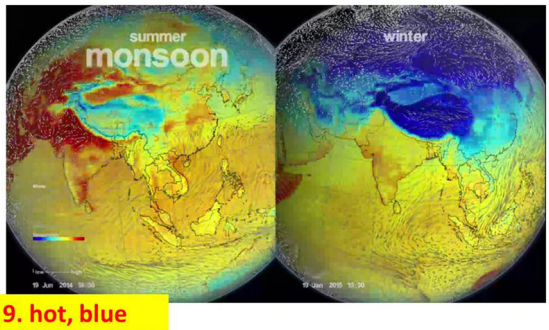
6. blue



7. landslides



8. summer, winter



9. hot, blue

Work in groups

Complete the text in Task 2.

Listen to the film again to check your answers.

Cause and effect

Work in groups

Use the information from the film to complete the diagram.

Cause and effect

Work in groups

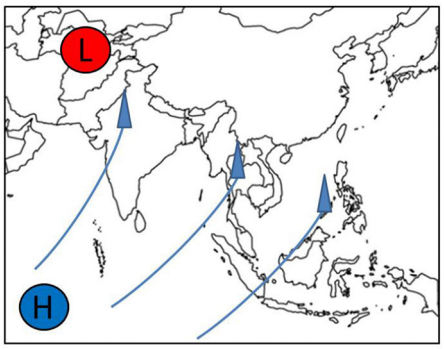
Use the information from the film and other Task 1. and 2. to complete scheme.

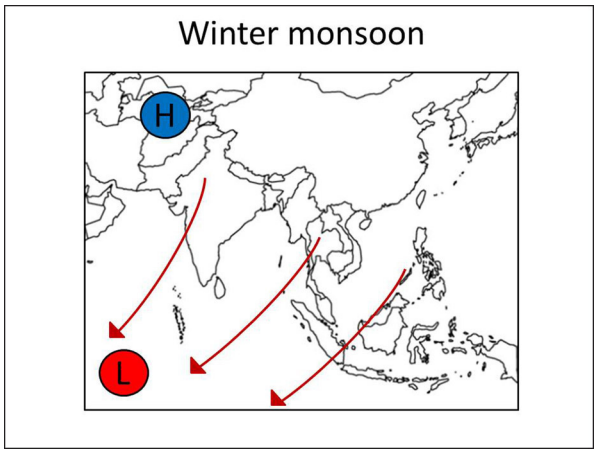
Summer monsoon

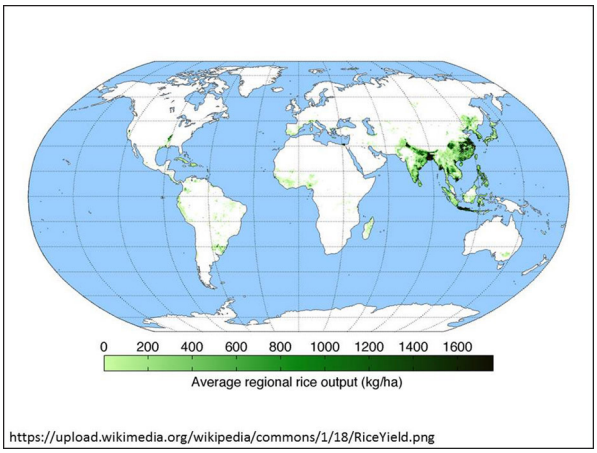
In summer the continent of Asia gets very (1) **hot**/cold. As (2) **hot**/cold air is (3) heavy/**light**, it creates (4) high/**low** air pressure centre over the land. The temperature of the Indian Ocean is (5) **lower**/higher at that time and thus the air pressure is (6) lower/**higher**.

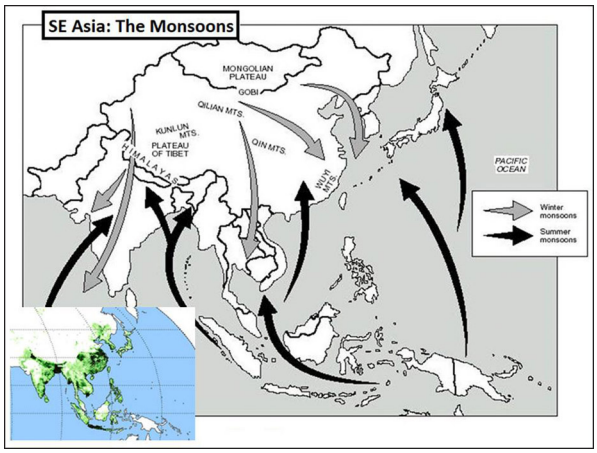
As wind always blows from high to low, summer monsoon blows from the (7) land/**ocean** onto the (8) **land**/ocean. At it blows from the (9) land/**ocean** it is (10) **humid**/dry. When it moves up over the (11) ocean/**land** it (12) **cools down**/heats up and produces rain. Summer monsoon is also called (13) **rainy**/dry season, or (14) **south--west**/north-east monsoon.

Summer monsoon









Finish the sentences.

Monsoons are a (1) ..... wind pattern. In summer Asia gets very (2) ..... so the air (3) ..... . At that time the Indian Ocean is much (4) ..... so the air pressure is (5) ..... . As a result, the wind blows from the (6) ..... to the (7) ..... . The summer monsoon brings (8) ..... which allow people to grow (9) ..... . Sometimes summer monsoon causes (10) ..... and (11) ..... . In winter Asia is very (12) ..... so the air pressure is (13) ..... . As a result, the wind blows from the (14) ..... to the (15) ..... It is very (16) ..... .

Appendix 2: Task 1.

Watch the film about monsoons. Complete these sentences:

1. The film title is: *Monsoons*: ....., ..., *Repeat*.
2. George Huffmann is a GPM Deputy Project ..... .
3. Clouds are shown in ..... colour.
4. Rain is shown in green, yellow and ....., while snow in light and dark ..... .

5. Soil moisture is shown in light and dark …… .
6. Floods are shown in …… and purple.
7. Light yellow circles show …… .
8. Two monsoon seasons are …… and …… .
9. In summer the continent of Asia is mostly yellow and red because it is very ……., while in winter it is mostly …… because it is very cold.

Answers:

1. *Wet, Dry*;
2. *Scientist*;
3. *White*;
4. *red, blue*;
5. *green*;
6. *blue*;
7. *landslides*;
8. *summer, winter*;
9. *hot, blue*.

Appendix 3: Task 2. *Monsoons: Wet, Dry, Repeat…*

Part 1

Listen and complete the text using the phrases below.

data from satellites	**GPM**	**has evaporated from the ocean**
moist air	**monsoon season**	**seasonal rain and wind pattern**

The monsoon is a (1) _____ that was first described over South Asia. You see the clouds blossoming here during the summer part of the monsoon. For centuries people have known about it but only recently have we received enough (2) _____to really describe what's going on.

What you can see here is (3) _____ that (4) _____ coming across India and providing rainfall driving the (5) _____. The great thing about (6) _____ is that it allows us to see precipitating systems as a whole – over land and oceans, and then as a transition from one boundary to the next.

Part 2

Listen and complete the text below with appropriate phrases. The first letters have been given. The number of strokes represents the number of letters in a word.

All this rainfall drives **s _ _ _ m _ _ _ _ _ _** over land. It's beneficial because it promotes the **e _ _ _ _ _ _ a _ _ _ _ _ _** that people depend on, for example **a _ _ _ _ _ _ _ _ _ _** ,

as well it fills the rivers which provides **w _ _ _ _ for h _ _ _ _ a _ _ _ _ _ _ _** and the **n _ _ _ _ _ _ e _ _ _ _ _ _ _ _ _ _ _**, as well as **t _ _ _ _ _ _ _ _ _ _ _ _ _ _ _**. If the rivers get too full of course it becomes flooding. At first, the **f _ _ _ _ _** you see here are fairly minor and wide-scale but then they concentrate in a few wiggly lines which are the **r _ _ _ _ b _ _ _ _ _**, for example in Central Eastern China.

In **m _ _ _ _ _ _ _ _ _ _ r _ _ _ _ _ _**, when the ground becomes **s _ _ _ _ _ _ _ _ due to h _ _ _ _ r _ _ _ _** it can lead to **l _ _ _ _ _ _ _ _ _ _**. Landslides kill thousands of people every year, and are primarily **t _ _ _ _ _ _ _ _ by r _ _ _ _ _ _ _**. They are specially common within the **H_ _ _ _ _ _ _ _ r_ _ _ _ _** each monsoon season.

Part 3

One really cool way to look at the monsoon is to do a split screen and look at the summer and the winter at the same time. In the summer the wind is _____ _____ bringing the _____ _____ _____ into the continent. In winter time it _____ **off the** _____ .

Now, **those** _____ **are basically** _____ by _____ _____ **between the** _____ **and the** _____. And where the land is nice and warm the air expands and it draws in the moist air from the ocean waters. But in the winter time it's very cold. The moisture then goes from the continent back into the oceans.

Answers:

Part 1

The monsoon is a *seasonal rain and wind pattern* that was first described over South Asia. You see the clouds blossoming here during the summer part of the monsoon. For centuries people have known about it but only recently have we received enough data *from satellites* to really describe what's going on.

What you can see here is *moist air* that *has evaporated from the ocean* coming across India and providing rainfall driving the *monsoon season*. The great thing about *GPM* is that it allows us to see precipitating systems as a whole – over land and oceans, and then as a transition from one boundary to the next.

Part 2

All this rainfall drives *soil moisture* over land. It's beneficial because it promotes the *economic activity* that people depend on, for example *agriculture*, as well it fills the rivers which provides *water for human activity* and the *natural environment*, as well as *transportation*. If the rivers

get too full of course it becomes flooding. At first, the *floods* you see here are fairly minor and wide-scale but then they concentrate in a few wiggly lines which are the *river basins*, for example in Central Eastern China.

In *mountainous regions*, when the ground becomes *saturated due to heavy rains* it can lead to *landslides*. Landslides kill thousands of people every year, and are primarily *triggered by rainfall*. They are specially common within the *Himalayan region* each monsoon season.

Part 3

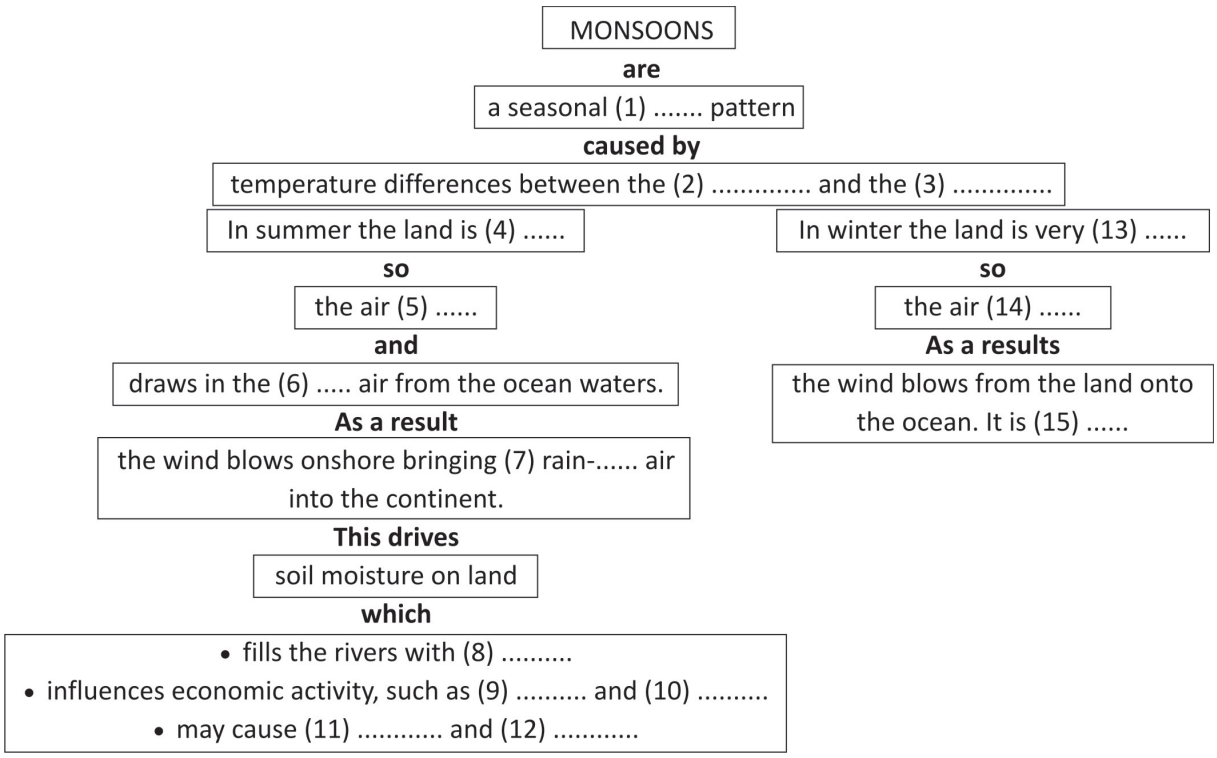
One really cool way to look at the monsoon is to do a split screen and look at the summer and the winter at the same time. In the summer the wind is *blowing onshore* bringing the *moist rain-laden air* into the continent. In winter time it *blows off the continent*.

Now, *those winds are basically driven by temperature differences between the ocean and the land*. And where the land is nice and warm the *air expands* and it draws in the moist air from the ocean waters. But in the winter time it's very cold. The moisture then goes from the continent back into the oceans.

Appendix 4: Diagram

Use the information from the film to complete the diagram of cause and effect.

agriculture	**floods**	**ocean**
cold	**laden**	**transportation**
contracts	**land**	**warm**
dry	**landslides**	**water**
expands	**moist**	**wind**

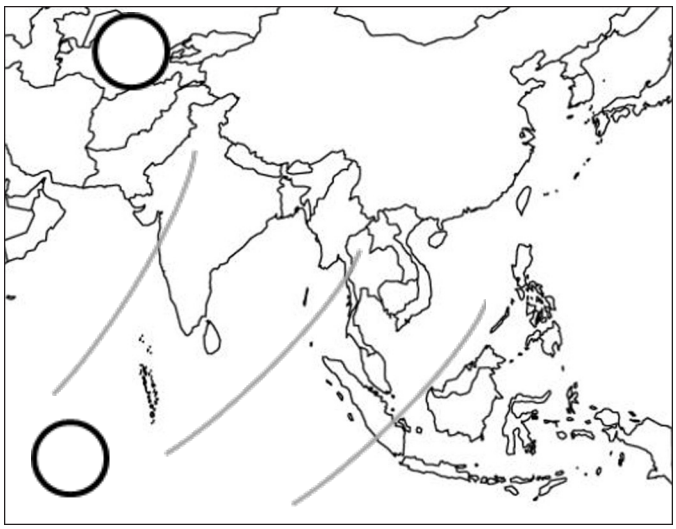


Answers:

1. *wind*
2. *land*
3. *ocean*
4. *warm*
5. *expands*
6. *moist*
7. *laden*
8. *water*
9. *agriculture*
10. *transportation*
11. *floods*
12. *landslides*
13. *cold*
14. *contracts*
15. *dry*

Appendix 5: Scheme of summer monsoon and winter monsoon

Summer monsoon



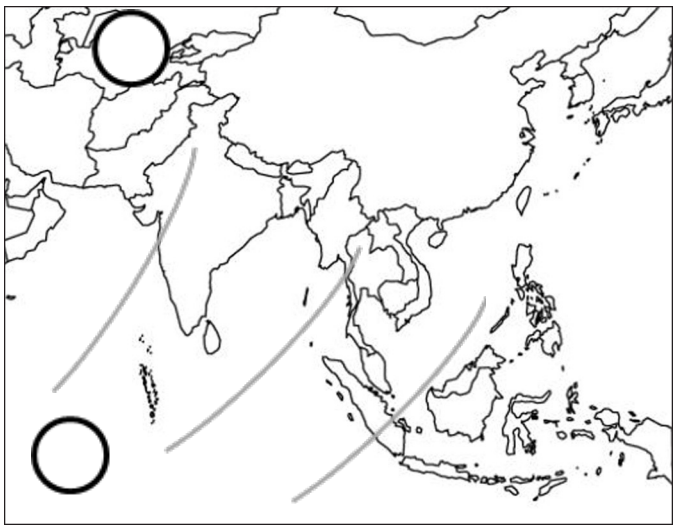
Task 3. Colour the circles: red where the temperature is high, and blue where the temeprature is lower. Insert the letters in the circles: H where the air pressure is higher, and L where the air pressure is lower.

Add arrows to show the wind direction. Colour them blue if the wind brings rain or brown if the wind is dry.

Choose the appropriate words to describe the summer monsoon:

In summer the continent of Asia gets very (1) hot/cold. As (2) hot/cold air is (3) heavy/light, it creates (4) high/low air pressure centre over the land. The temperature of the Indian Ocean is (5) lower/higher at that time and thus the air pressure is (6) lower/higher. As wind always blows from high to low, summer monsoon blows from the (7) land/ocean onto the (8) land/ocean. At it blows from the (9) land/ocean it is (10) humid/dry. When it moves up over the (11) ocean/land it (12) cools down/heats up and produces rain. Summer monsoon is also called (13) rainy/dry season, or (14) south-west/north-east monsoon.

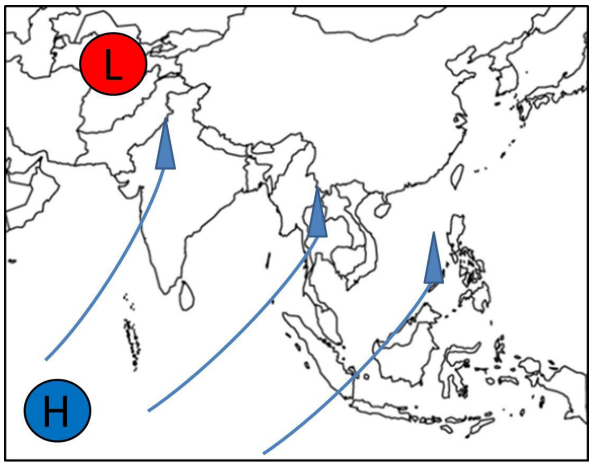
Winter monsoon



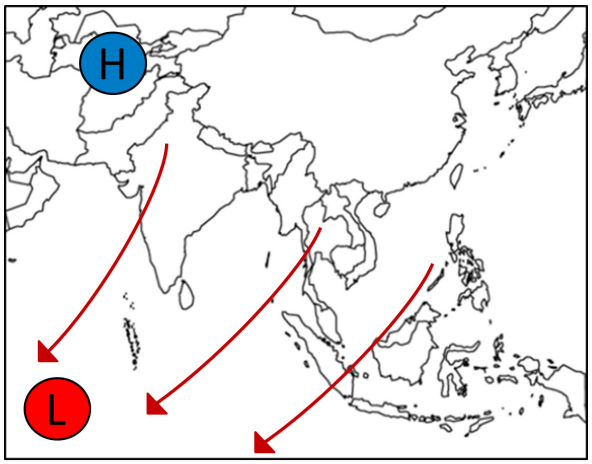
Task 4. Now do the same on the winter monsoon map.

Use the model of the summer monsoon text to write about the winter monsoon.

Answers:



In summer the continent of Asia gets very (1) *hot*/cold. As (2) *hot*/cold air is (3) heavy/*light*, it creates (4) high/*low* air pressure centre over the land. The temperature of the Indian Ocean is (5) *lower*/higher at that time and thus the air pressure is (6) lower/*higher*. As wind always blows from high to low, summer monsoon blows from the (7) land/*ocean* onto the (8) *land*/ ocean. At it blows from the (9) land/*ocean* it is (10) *humid*/dry. When it moves up over the (11) ocean/*land* it (12) *cools down*/heats up and produces rain. Summer monsoon is also called (13) *rainy*/dry season, or (14) *south-west*/north-east monsoon.



In winter the continent of Asia gets very (1) cold. As (2) cold air is (3) heavy, it creates (4) high air pressure centre over the land. The temperature of the Indian Ocean is (5) higher at that time and thus the air pressure is (6) lower. As wind always blows from high to low, WINTER monsoon blows from the (7) land onto the (8) ocean. At it blows from the (9) land it is (10) dry. ~~When it moves up over the (11) ocean/land it (12) cools down/heats up and produces rain.~~ Winter monsoon is also called (13) dry season, or (14) north-east monsoon.

Appendix 6: Gap-filling

Finish the sentences with the appropriate words.

Monsoons are a (1) …… wind pattern. In summer Asia gets very (2) …… so the air (3) …… . At that time the Indian Ocean is much (4) …… so the air pressure is (5) …… . As a result, the wind blows from the (6) …… to the (7) …… . The summer monsoon brings (8) …… which allow people to grow (9) …… . Sometimes summer monsoon causes (10) …… and (11) …… . In winter Asia is very (12) …… so the air pressure is (13) …… . As a result, the wind blows from the (14) …… to the (15) …… . It is very (16) …… .

Answers:

Monsoons are a (1) *seasonal* wind pattern. In summer Asia gets very (2) *hot* so the air (3) *is light*. At that time the Indian Ocean is much (4) *cooler* so the air pressure is (5) *light*. As a result, the wind blows from the (6) *ocean* to the (7) *land*. The summer monsoon brings (8) *rains* which allow people to grow (9) *rice*. Sometimes summer monsoon causes (10) *floods* and (11) *landslides*. In winter Asia is very (12) *cold* so the air pressure is (13) *high*. As a result, the wind blows from the (14) *land* to the (15) *ocean*. It is very (16) *dry*.

Noty biograficzne

Barbara Baucz-Malij – nauczyciel z ponad 20-letnim stażem. Studiowała biologię na Uniwersytecie Wrocławskim, gdzie uzyskała tytuł magistra, a następnie doktora nauk biologicznych. Zdobyła również certyfikat biegłej znajomości języka angielskiego (CPE) oraz ukończyła 4-semestralne studia podyplomowe dla nauczycieli języka angielskiego. W swojej karierze zawodowej nauczała na wszystkich szczeblach edukacji – zaczynając od języka angielskiego w klasach 1–6, poprzez przyrodę w szkole podstawowej, biologię w gimnazjum i liceum, po zajęcia ze studentami biologii prowadzone podczas studiów doktoranckich. Pasjonuje się nauczaniem dwujęzycznym, które realizuje nieprzerwanie od roku 2000. Uczy biologii w języku angielskim w Zespole Szkół Ogólnokształcących w Opolu, pracuje też w Zespole Szkół w Dobrzeniu Wielkim. Brała udział w wielu szkoleniach i kursach w zakresie CLIL, m.in. organizowanych przez ORE, a także w Wielkiej Brytanii.

Romuald Hassa – ukończył studia chemiczne na Uniwersytecie Śląskim w Katowicach, gdzie następnie uzyskał tytuł doktora nauk chemicznych. Był pracownikiem Zakładu Chemii Nieorganicznej i Radiacyjnej oraz Zakładu Dydaktyki Chemii. Jednocześnie zdobywał doświadczenie pedagogiczne, dydaktyczne i metodyczne, pracując jako nauczyciel chemii (także nauczanej w języku angielskim) w szkole podstawowej, gimnazjum i liceum ogólnokształcącym. Nauczał chemii w systemie Matury Międzynarodowej (IB). Przed wprowadzeniem reformy ustanawiającej gimnazja uzyskał III stopień specjalizacji zawodowej, zaś w 2002 stopień awansu zawodowego nauczyciela dyplomowanego. Obecnie pracuje jako nauczyciel w IV Liceum Ogólnokształcącym im. St. Staszica z Oddziałami Dwujęzycznymi w Sosnowcu. Jest współautorem serii podręczników do chemii: *Chemia. Podręcznik i zbiór zadań w jednym*; *To jest chemia, kl. 1. Zakres podstawowy*; *Przyroda. Szkoła ponadgimnazjalna*; *Podręcznego Słownika Chemicznego* oraz autorem zbioru zadań maturalnych wydanego przez Vidograf II. Publikował również liczne artykuły w czasopismach dla nauczycieli, takich jak: „Chemia w Szkole" oraz „Języki Obce w Szkole". Współpracuje z ORE, tworząc materiały dydaktyczne dla nauczycieli uczących chemii w klasach dwujęzycznych.

Aleksandra Zaparucha – magister geografii i filologii angielskiej z trzydziestoletnim stażem pracy w zawodzie nauczyciela, od dziesięciu lat zaangażowana w zintegrowane kształcenie przedmiotowo-językowe jako trener nauczycieli oraz autorka artykułów i materiałów dotyczących CLIL – w tym nagradzanych przez British Council (nominacja do ELTons 2014, grupowa nagroda ELTons 2017).