



Intercultural Competences in Vocational
Training. Transnational Strategic Partnership
2015-1-DE02-KA202-002520



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CLIL UNITS

SCIENCE

*Modules to enhance students' language and social competences in
science!*





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CONTENTS

1. INTRODUCTION.....	4
2. DNA: Observation of Human Chromosomes...Genes in a bottle: Capture your unique essense.....	7
3. History of Mathematics.....	11
4. Meeting points of a parabola.....	14
5. Pollution 1-3.....	18



CLIL UNITS (Content and Language Integrated Learning)

INTRODUCTION

In the EU, content and language integrated learning (CLIL) is a modern concept that is interpreted and implemented differently; some countries apply the concept more whereas others do it less, therefore some countries are more experienced whereas others are still improving.

One of the aims of this project is to create a CLIL module since it has been noticed that the study of English in different learning contexts is at the heart of the development of interculturality.

The intercultural approach of CLIL units, as they are described in this module, is a step forward in globalizing the techniques of integrating diversity in the teaching process. The partners in the project created CLIL units thus offering a wide range of resources that lie at the basis of building a true CLIL network among teachers willing to embrace change, to be creative and apply what they had learned in a variety of professional and social contexts.

The CLIL units are intended to develop a cognitive and cultural space that would facilitate innovative and flexible learning, build a creative and communicative environment for teachers and pupils, help develop cultural competences and openness towards Europe.

The idea is not to focus on either the content or the language, but to combine both of them. Teachers who approach the CLIL teaching technique should develop lessons in which pupils can access ideas, notions, concepts to develop their knowledge and use the vocabulary specific to the subject being taught. The activities in CLIL lessons should be centered both on the reception and understanding of notions and concepts as well as on communication by delivering messages in a foreign language. Pupils should become involved in the lesson because acquisition of knowledge will take place during their interaction with others. Thus the role of CLIL teachers is to provide pupils with methods of interaction in a foreign language on different topics. Successful learning of the content is closely related to language, which must be focused on in CLIL since the foreign language is not entirely mastered.



Integrating content and language cannot be achieved in teaching if pupils answer specific questions from the teacher, but by using techniques that involve pupils in independent research and study that encourage pupil-pupil interaction rather than pupil-teacher interaction. When pupils begin to share information, to answer each other's questions and to discuss, only then does communication learning that reinforces understanding and helps build general knowledge take place.

A very good teaching method for CLIL lessons includes project-based work, which consists of solving real-life problems through tasks that involve communication among pupils, individual study and presentations in front of the class. Communication in class should be organized in such a way that pupils understand concepts and phenomena by exchanging information. If the new concepts are introduced in an attractive way and they are understood by pupils, then this also helps improve foreign language skills at the same time with knowledge of the subject matter taught.

All CLIL teaching procedures are chosen based on the subject taught, and the selection of materials is in accordance with the objectives of the lesson. Thus, we will have different CLIL approaches, depending on the type of subject taught. For humanities and social subjects, a language closer to the everyday one will be used and communication will be mostly verbal, giving opportunities for debate. In scientific and technical subjects, in which language is somewhat standardized, the words used have clear meanings without leaving room for verbal speculation. In this type of subjects there are many symbols, codes, graphs that can be interpreted by pupils, and a real exchange of information can take place. Another category of subjects are those that include artistic and practical activities in which verbal communication is quite low during lessons and can be replaced by lectures or demonstrations.

CLIL lessons emphasize verbal communication in order to develop language skills, but depending on the type of subject matter taught, it can play different roles within the teaching techniques.

The activities used in CLIL are those that facilitate learning, so their choice is very important. Thus, we encounter activities that will lead to language exercises, gaining a specific vocabulary, and more complex activities, such as tasks in a project which are specific to the subject taught and require pupils to use already acquired knowledge, to think in order to get



to a certain result, all these by using the language. Many activities used in CLIL can be found in this paper under the heading 'Worksheets' that accompany CLIL lesson plans for different subjects.

The role of teachers in implementing CLIL lessons is to keep the focus on 3 levels: language, content and learning skills. They will need to develop a language specific to the subject matter, to teach pupils how to work with authentic materials in order to anchor them in everyday life, and to distinguish between content errors and language errors in order to motivate students to communicate in a foreign language and not stop them from expressing themselves freely. Teachers who work with CLIL should also give higher importance to constructive feedback focused on what the pupils involved in various CLIL activities do, become aware of the fact that errors are part of the learning process and alternate content teaching techniques with those that develop thinking or language skills.

A specific aspect of CLIL is the assessment that should cover both content and language, focusing on all aspects of communication used in the lesson. A basic principle in CLIL is text comprehension, which is monitored through specific strategies - individual observation sheets, worksheets with pupils' feedback - and language accuracy that can be achieved by allowing enough time to correct pupils' errors.

In CLIL assessment, it is desirable to have activities that make use of the pupils' creativity in addition to the tools that render the degree of text comprehension.

In the following chapter the modules implemented and revised during the project and applied especially during the intercultural exchanges of the project are presented. All the modules were designed by taking into consideration the subject matter taught as well as the multicultural aspect of the target group and the school characteristics where the mobility-learning activity took place. The planning of the CLIL units is simple and clear so that any teacher willing to implement them could use the existing ones or change and adapt them to match their school characteristics, subject taught, target group and lesson objectives. A similar structure has been preserved throughout the planning of the CLIL units, which gives homogeneity to the present paper and simplifies understanding for those who wish to use this material for didactic and innovative purposes.



B.Science

Unit Title: DNA: Observation of human chromosomes...Genes in a bottle. Capture your unique essence.

By Alikı Rontoyanni, Dr., GENERAL LYCEUM OF LAVRIO

Topic: Biology

Language: English

Language Level **B1** / **B2**

Target students: Secondary school (ages from 16 years)

Time: 4 hours

Aims:

- To learn basic terminology of Biology like nucleic acids, nucleotides, hereditary material, base pairs, genetic code, proteins, chromosomes, mitosis, metaphasis, cell membrane, enzymes, etc.
- To communicate using words and expressions related to molecular Biology, microscopy and chemistry.
- To understand the 3D structure of DNA by using molecular models.
- To observe metaphase human chromosomes under a microscope (400X).
- To learn how he/she can isolate DNA from his/her cheek cells .

Final product: Capture of DNA in a small necklace.

Methodology, classroom activities:

- Teacher's presentation (ppt)
- Demonstration of molecular models of DNA nucleotides and DNA double helix.
- Microscopes and samples
- Laboratory equipment



- Material (enzymes, lysis buffer, alcohol, laptops, projector, power point presentations, Laboratory equipment).

Assessment tools: Conversation, final product (DNA in a necklace)

Documents and materials : Scientific Articles about DNA, presentation, papers for taking notes or notepads.

Description of activities

Students work	Methods and resources	Assessment
First Lesson: General Information about DNA structure.		
The students are informed about the structure of DNA and the main steps of DNA extraction (2h).	Teacher's speech Powerpoint presentation	Conversation & keeping notes.
Second Lesson: DNA extraction		
The second lesson (2h) takes place in the Chemistry Laboratory. The students observe metaphase human chromosomes under a microscope. Metaphase is the third phase of mitosis, the process that separates duplicated genetic material carried in the nucleus of a parent cell into two identical daughter cells. The chromosomes, which have been replicated and remain joined at a central point called	Group work Teacher's guidance http://onlinelibrary.wiley.com/doi/10.1002/bmb.20351/pdf	Final product: the DNA in a small necklace. Conversation. Notes about the procedure of extracting DNA. Conclusions on a Flipchart.



Students work	Methods and resources	Assessment
<p>the centromere, are called sister chromatids. (SEE IMAGE AT THE APPENDIX).</p> <p>Each student is invited to extract his/her own DNA from cheek cells.</p> <p>The students realize that our “unique essence” is included in the nucleus of every cell of our body in the form of a miraculous molecule, the DNA and that it can be easily isolated, captured and live in a bottle for quite a long time!</p>		

WORKSHEETS

Worksheet 1: Build groups of three students. Write down 10 words/expressions associated with the DNA structure.

word/ expression	Translation

Write down 10 sentences associated with Chemistry and the DNA extraction.

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Worksheet 2



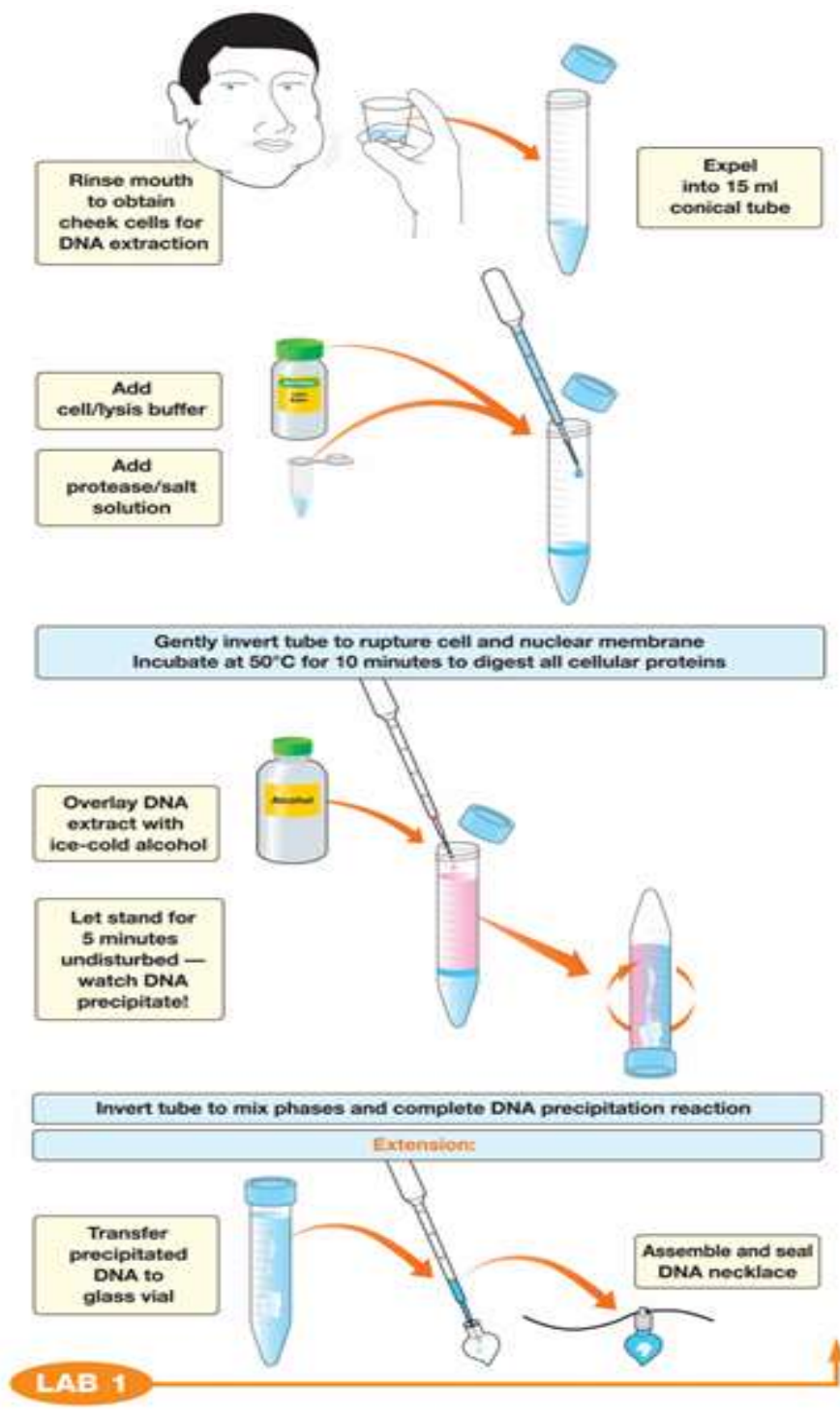
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1. Search for the meaning of the words in wordbook or translate with your mobile. Save your result on a flip chart paper. Ask the lecturers the questions occurring during the presentation.
2. Present your results shortly in front of the audience.

IMAGE 1:





Unit Title: History of Mathematics: An interactive journey from the past to the present.

By Antonios Tsigonias, MSc, GENERAL LYCEUM OF LAVRIO

Topic: History of Mathematics

Language: English

Language Level B1 / B2

Target students: Secondary school (ages from 16years)

Time: 3-4 hours

Aims:

- to improve their language competence, by learning and using new words in English, concerning Maths terminology like golden intersection, (mathematical) proof, segment, irrational, rational, e.t.c.;
- to be informed about the most significant historical facts and Mathematical figures as well as their achievements from the ancient times until today;
- take an active role in understanding the function of Pythagoras' "cup of justice" and the Golden Intersection, experiencing in that way the Ancient Greeks' mathematical knowledge and way of thinking;
- to introduce a way of organizing team work in the classroom and involving students in the learning process so that every student will be engaged in the process and be able to take initiative, while enhancing social skills and gaining new knowledge;
- to acquire knowledge of numbers, measures and structures, basic operations and mathematical presentations and an understanding of mathematical terms and concepts;
- to develop creative thinking.



Final product: A presentation of each group’s conclusions of an activity about the “Golden Intersection”.

Methodology, classroom activities:

- teacher’s speech
- group work
- multimedia

(laptops, projector, power point presentations, tape measures, Pythagoras’ cup)

Assessment tools: Conversation. Feedback.

Documents and materials : presentation, papers for taking notes or notepads.

Description of activities

Students work	Methods and resources	Assessment
First part : History of Mathematics		
The students are informed about the most significant historical facts and Mathematical figures as well as their achievements from the ancient times until today.	Teacher’s speech	Some students faced difficulties with the Mathematical terms but they all found the speech very interesting and asked many questions. But they were also asked questions like “did you enjoy the process”, “did you learn something new”, “did you come across any problems...which ones” etc.
Second part : Pythagoras’ cup and the Golden Intersection		
The students take an active role in understanding the function of Pythagoras’ “cup of justice” and the Golden Intersection. Each student is given a copy of Pythagoras’ cup and they are asked to fill it with water over the marked line inside the cup. They realize then that the water is pouring		The students participate in these activities, listening to music during the second’s part presentation. They work with their group members, asking questions, calculating, measuring and



Students work	Methods and resources	Assessment
<p>out of a hole at the bottom of the cup. The whole idea refers to the limits people should have in their lives- even in drinking!- which complies with the content of ancient Greek philosophy «moderation is best (<i>μέτρον ἄριστον</i>).</p> <p>The students are also given a tape measure to count the distance from their nose to the top of their head, from the chin to their nose, from their elbows to the beginning of their palms and so on...The write down all these numbers and by using mathematical types they get an average for each one of them. The ones that reach the Golden Intersection are thought to be more beautiful (~1,62).</p>	<p>Group work</p> <p>https://www.geogebra.org/</p>	<p>comprehended a part of the ancient Greeks' philosophy. They also find out how beauty in nature and Mathematics are related. They are also asked questions like "how well did you cooperate with your fellow students", "did you fully understand the tasks", "how difficult or easy was it for you to express your opinion in a foreign language", "did you enjoy the process", "did you learn something new", "did you come across any problems...which ones" etc.</p>

WORKSHEETS

Worksheet 1

1. Build groups of three students. Write down 10 words/expressions associated with the History of Mathematics.

word/ expression	Translation

2. Write down 10 sentences associated with Mathematics and the unit "Pythagoras' cup".

--

Worksheet 2: Listen to the following presentation and write down unknown words in a word list.



word/ expression	meaning in my language

3. Search for the meaning of the words in wordbook or translate with your mobile. Save your result on a flip chart paper. Ask the lecturers the questions occurring during the presentation.
4. Present your results shortly in front of the audience.

Unit Title: Meeting points of a line and a parabola and the car crash accident activity

By Antonios Tsigonias, MSc, GENERAL LYCEUM OF LAVRIO

Topic: Relative positions of a line and a parabola on the Euclidean plane and their meeting points

Language: English

Language Level **B1** / **B2**

Target students: Secondary school (ages from 16years)

Time: 2 hours

Aims:

- to learn and use new words in English, concerning Maths terminology like determinant, abscissa, parabola, equation, graphic representation, e.t.c.;
- to learn how to use Geogebra (a free Maths software) which connects Geometry with Algebra;
- to comprehend:
 - o the connection between the algebraic equation of a line and a parabola and their graphic representations.



- the relation of the solutions of the equation (formed by the line and the parabola) and their meeting points.
- the reason why the abscissas of the meeting points of the line and the parabola are the solutions of the quadratic equation;
- to implement the knowledge obtained by the geogebra activity (including a worksheet) to the main course's task which was the car crash accident activity;
- to cooperate successfully with peers.

Final product: A presentation of each group's conclusions concerning the two activities mentioned above.

Methodology, classroom activities:

- teacher's speech
- group work
- pairwork
- individual activities
- multimedia

(laptops, projector, power point presentations, geogebra software)

Assessment tools: Conversation, back.

Documents and materials: Powerpoint presentation, worksheets.

Description of activities

Students work	Methods and resources	Assessment
First hour : Activity's implementation		
Talking about the concept of the functions and its graph.	Teacher's speech	Many students don't clearly understand the language and the math terminology and others cannot remember basic math concepts so that the intervention from the teacher is necessary.
Getting a grasp of Geogebra.	Individual activity, pair activity, group work.	



Students work	Methods and resources	Assessment
<p>Working on worksheet 1 – using Geogebra, experimenting, investigating, observing, noticing, searching, finding connections and relations, discussing, justifying answers, resolving questions.</p>	<p>Group work</p> <p>Worksheet 1: the activity</p> <p>The teacher helps when needed, providing scaffolding strategies.</p>	<p>The students find it difficult to comprehend some relations, mostly algebraic but they understand easier the graphic representations.</p>
<p>Writing conclusions, sharing of the results.</p>	<p>Class activity</p>	<p>Feedback, Conversation.</p>
<p>Second hour : Task's implementation</p>		
<p>Working on worksheet 2 –</p> <p>Using the knowledge obtained from the previous activity the students calculate, investigate and adjust the outcomes of the first hour to the data of the task, justifying their answers.</p>	<p>Group work</p> <p>Worksheet 2: the task</p> <p>The teacher helps when needed, providing scaffolding strategies.</p>	<p>Feedback</p>
<p>Checking their answers using Geogebra, writing conclusions, sharing of the results.</p>	<p>Class activity</p>	

WORKSHEETS

Worksheet 1

Activity: Meeting points of a line and a parabola

A. Open the geogebra file [meeting points of a line and a parabola+solutions.ggb](#)

B. The parabola $y = ax^2$ and the line $y = bx + c$ are given, where the sliders a, b and c can change their graphic representations when different values are set.



C1. Experiment giving various values to the sliders a, b and c and observe the meeting points of the line and the parabola. Write down your conclusions.

C2. What happens specifically, when:

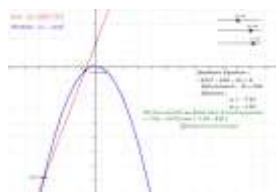
- i. $a = -0.5$, $b = 3$, $c = 4$ ii. $a = -0.4$, $b = -1.2$, $c = 0.9$ iii.
 $a = -1$, $b = 4$, $c = 5$

D. Notice the quadratic equation and its determinant that emerge each time you change the values of the sliders. Can you understand how this equation is formed?

E. What's the connection between the -equation and its determinant- and the meeting points of - the line and the parabola-? Justify your answers and click the square to check them.

F. Notice the solutions of the equation (when $D \geq 0$) and the abscissas of the meeting points. Explain why this is happening.

G. Write your conclusions concerning the connection between the determinant of the equation and the meeting points (and their abscissas) of the line and the parabola.



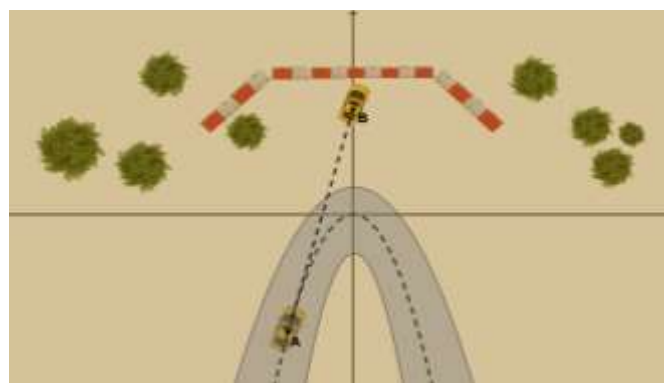
A figure of the activity

Worksheet 2

Task: The car crash accident

A car is moving on a road and its orbit
is given by the parabola $C: y = -x^2$.

At a later time, the car goes off its
course at the point A with abscissa
 $x_1 = -2$. It continues moving straight
ahead and hits the barriers as shown
at the next figure. Using the conclusions
of the previous activity,



The figure of the task

- i. Calculate the ordinate of the point A
where the car went off its course.
- ii. Find the equation of the rectilinear
orbit from A to B.
- iii. Calculate the coordinates of the
hitting point B.
- iv. In the road lies a hole at the point with coordinates $(-1.5, -1)$. Will the car fall in
the hole during its course? Justify all your answers.
You can also check your answers with Geogebra.



Unit Title: Pollution 1

By Anca Petriuc, Mircea Apahidean & Raluca Tehei, COLEGIUL TECHNIC ENERGETIC

Topic: What is Causing Global Warming?

Subject area : Science and cross-curricular: technology, chemistry, geography, ecology

Language: English

Language Level B1 / B2

Target students: Secondary school (ages 15-18)

Time: 2 hour

Aims:

- Students will identify the factors that have influenced global climate in the past.
- Students will review the greenhouse effect and its influence on climate, identify major greenhouse gases and their atmospheric percentages, and understand why carbon dioxide is considered the greenhouse gas most responsible for contemporary global warming.
- Students will identify natural and industrial sources of atmospheric carbon dioxide and understand the ways in which it cycles through systems.
- Students will define and identify different types of fossil fuels, industrial sources of carbon dioxide and changes in carbon dioxide concentrations since the industry era.
- Students will analyze and evaluate conflicting information about CO₂ and global warming.
- Students will learn strategies for evaluating scientific claims made in the media.

Final product: PPT presentation about Global Warming

Methodology, classroom activities:

- teacher's speech
- group work
- pairwork
- individual activities



- internet research
- multimedia

Assessment tools :worksheets, group portfolios

Documents and materials :

- dictionary, magazines
- worksheets
- images/movies with parts of the powerpoint
- PPT presentation
- Printer, computer, Internet connection
- Whiteboard, flipchart , paper

Description of activities

Students work	Methods and resources	Assessment
Lesson : What is Causing Global Warming?		
<p>Warming up</p> <p>Introduce the activities by using prompts from the Teacher Guide.</p> <p>Show the 1 min video commercial, CO2: They Call it Pollution, We Call it Life. Lead the decoding of the video using the prompts in the Teacher Guide.</p> <p>Nine-page Teacher Guide: What is Causing Global Warming?:http://www.ithaca.edu/looksharp/Books_Global_Warming/Lesson 4/Lesson 4 Teacher Guide.pdf</p> <p>Present the PowerPoint slide show, What is Causing Global Warming? Use the Teacher Guide to facilitate discussion (in attach ppt 1)</p> <p>Distribute the Student Worksheets</p>	<p>Conversation</p> <p>Internet</p> <p>Pair work</p> <p>Flipchart</p> <p>Markers</p>	<p>Direct observation</p>



<p>Lead the decoding of the video using the prompts in the Teacher Guide. Video clips on DVD or YouTube Channel: http://www.youtube.com/projectlooksharp</p> <p>CO2: They Call it Pollution, We Call It Life, : http://www.ithaca.edu/looksharp/Books_Global Warming/Lesson 4/L4 They Call it Pollution.mov</p> <p>Show the 5 min video excerpt from An Inconvenient Truth http://www.ithaca.edu/looksharp/Books_Global Warming/Lesson 4/L4 Inconvenient Truth.mov</p>	<p>Group work</p> <p>Conversation</p> <p>Internet</p>	<p>Direct observation</p>
<p>Feedback</p> <p>Discussion: strong/ weak points of the lesson</p> <p>Students complete the Student Worksheet Annex 1</p>		<p>Review the worksheet using the suggested</p>


	<p>answers in the Teacher Guide.</p>
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ANNEX 1


Unit


Title:

AIR POLLUTION CAUSES









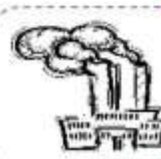


MATCH


1. MOTORS
2. SMOKE
3. PETROLEUM
4. CHEMICALS COMBUSTION
5. PESTICIDES
6. RADIOACTIVE FALLOUT
7. FERTILIZER DUST
8. MINING
9. VOLCANIC ERUPTION
10. GRILLS
11. POWER GENERATION
12. POLLEN
13. FACTORIES
14. SMOG











ELECTRICITY

















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Pollution 2

By Anca Petriuc, Mircea Apahidean & Raluca Tehei, COLEGIUL TECHNIC ENERGETIC

Topic: Causes of Pollution

Subject area : Science and cross-curricular: technology, chemistry, geography, ecology

Language: English

Language Level B1 / B2

Target students: Secondary school (ages 15-18)

Time: 2 hours

Aims:

- Identify and discuss different kinds of pollution.
- Identify and discuss sources of pollution.
- Discuss and explain why it is important to keep the environment free of pollution.

Final product: PPT presentation about “Let’s Stop Pollution”,

Methodology, classroom activities: (some examples)

- conversation
- group work
- pairwork
- individual activities
- warm up
- brainstorming

Assessment tools : worksheets, group portfolios, self-evaluation paper

Documents and materials worksheets, flipchart, coloured pencils.

Description of activities

Students work	Methods and resources	Assessment
Lesson : Causes of Pollution		



Students work	Methods and resources	Assessment
<p>Warming up</p> <p>The Teacher:</p> <ol style="list-style-type: none"> 1. Begin the activities by displaying and reviewing the lesson vocabulary. (pollution, surroundings, litter, environment) 2. Discuss the displayed pictures of water, air, and land pollution. Have students identify what is wrong in each of the pictures displayed. Write the students responses underneath each of the pictures. Remind the students that pollution is anything that harms our surroundings and that people cannot survive without clean air, water, and land. Stress that pollution is a responsibility and concern of all people in every community. 3. Ask students to “Brainstorm” to complete a list of ways that they can help to stop pollution. Examples: not put garbage into the lakes and streams, walk or ride bikes whenever possible, pick up litter). List the students responses on a poster titled “Let’s Stop Pollution”. Stress that because so many important things in the surroundings are shared by people in other communities, everyone must work to stop pollution of the air, water, and land. Students will then have a variety of activities to teach them about the causes and effects of pollution. <ol style="list-style-type: none"> 1. Provide students with a half sheet of poster board and crayons. Have them make a poster to inform others about 	<p>Conversation</p> <p>Conversation</p> <p>Brainstorming</p>	<p>Direct observation</p>



Students work	Methods and resources	Assessment
<p>pollution. Display the posters around the school.</p> <p>2. Provide students with boxes and paint. Have them make “litter boxes” with labels and decorations that state why it is important not to litter. Place the boxes in areas around the school or home.</p> <p>3. Have students wash the outside of a window that is easy to reach. A few days later, let them wipe the same window with a clean tissue. Discuss possible reasons the window became dirty.(air pollution)</p> <p>4. Provide students with materials to make replicas of bumper stickers illustrating warnings and laws concerning pollution. Suggestions: NO LITTERING, NO TRUCKS, NO DUMPING, NO BURNING.</p> <p>Feedback</p> <p>Discussion: strong/ weak points of the lesson</p> <p>Students complete the Student Worksheet Annex 2</p>	<p>Paper</p> <p>Crayons</p> <p>Boxes</p> <p>Paint</p> <p>Individual work</p> <p>Worksheets</p>	<p>Poster</p> <p>Discussions and answer to all questions</p> <p>Direct observation</p> <p>Worksheet Annex 2</p>

Worksheet Annex 2

I. Choose the suitable word:

1) A _____ is an ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism.

a) moisture; b) habitat; c) stream; d) butterfly



2) In a street, park, or public building, we put rubbish in a _____.

a) litter bin; b) hole; c) river; d) washing machine

3) Ecology is the _____ of Biology dealing with the relations and interactions between organisms and their environment.

a) leaf; b) universe; c) surface; d) branch

4) The action of making land, water, air, etc., dirty and not safe or suitable to use is called _____.

a) review; b) pollution; c) exposure; d) spreading

5) Let's keep the _____ and make new plants grow.

a) seeds; b) gloves; c) stems; d) arrows.

6) We know that _____ studies the composition, structure, properties and change of matter.

a) History; b) Drawing; c) Chemistry; d) Music.

(6 x 5 points = 30 points)

II. True or False?

1) Electrons are larger than molecules.

2) The chemical makeup food often changes when you cook it. _____

3) Filtration separates mixtures based upon their particle size.

4) Conductors have low resistance.

5) Water is an example of a chemical element.



6) The study of plants is known as botany.

(6 x 5 points = 30 points)

III. Which word is different? Underline it:

- 1) aero plane, bird, rocket, balloon, cat, jet
- 2) onion, celery, lettuce, pineapple, turnip, leek
- 3) elephant, panda, pig, tiger, goat, sheep, snake
- 4) nose, badger, mouse, lips, neck, finger, ears, legs
- 5) sky, forest, lake, sea, factory, sun, cloud, moon
- 6) ham, bread, beer, sausage, chicken, cake, cabbage
- 7) play, listen, see, hear, feel, look, taste, smell, touch
- 8) apricot, plum, banana, orange, lemon, carrot, peach
- 9) shoe, dress, trousers, hat, scarf, socks, jacket, bag
- 10) blue, yellow, rose, purple, red, pink, green, black

(10 x 2 points = 20 points)

IV. Give the antonyms of these verbs:

- 1) to waste / _____;
- 2) to win / _____;
- 3) to empty / _____;
- 4) to deflate/ _____;
- 5) to request/ _____;



(5 x 2 points = 10 points)

10 granted point

Maximum score: 100 points

Promotion score of assessment: 70-100 points

SCORE

100

Unit Title: Pollution 3

By Anca Petriuc, Mircea Apahidean & Raluca Tehei, COLEGIUL TECHNIC ENERGETIC

Topic: Pollution Solutions

By Anca Petriuc, Raluca Tehei, Mircea Apahidean & Bayram Gökbulut, Dr.

Subject area: Science and cross-curricular: technology, chemistry, geography, ecology

Language: English

Language Level **B1** / **B2**

Target students: Secondary school (ages 15-18)

Time: 2 hours

Aims:

Students will understand the following:

-The threat to water ecosystems is a complex problem because many factors contribute to their pollution and destruction.

-The following factors all play major roles in the pollution and destruction of water ecosystems: PCBs, DDT, methylmercury chloride, sewer sludge, thermal effluents, radioactive wastes, destruction of marshlands, and beach erosion.

-Methods to combat the above factors exist.



Final product: PPT presentation about Pollution Solutions

Methodology, classroom activities:

- conversation, brainstorming
- group work
- individual activities
- internet research
- warm up

Assessment tools: worksheets

Documents and materials:

- dictionary
- worksheets
- movies with Pollution Solutions
- PPT presentation with Pollution Solutions
- Printer, computer, Internet connection
- Whiteboard, flipchart , paper
- worksheets, flipchart, crayons, internet



Description of activities

Students work	Methods and resources	Assessment
<p>Ask students to name some water ecosystems. (They might mention oceans, rivers, ponds, lakes, marshlands.)</p>	<p>Conversation</p>	<p>Discussions and answer to all questions</p>
<p>Now ask them to mention any factors they know of that contribute to the pollution and destruction of water ecosystems. List their suggestions on the chalkboard, including the following: PCBs, DDT, methylmercury</p>	<p>Conversation Pair work</p>	



Description of activities

Students work	Methods and resources	Assessment
chloride, sewer sludge, thermal effluents, radioactive wastes, destruction of marshlands, and beach erosion.		
Divide your class into groups, and have each group research one of the factors you have listed. Groups should focus their research on how their factor affects water ecosystems, particularly those in your area, if applicable, and the methods that are being employed to counter it.	Conversation Pair work	Discussions and answer to the questions
<p>When their research is complete, each group should choose one water ecosystem that has been affected by the factor they have been assigned and prepare an environmental-impact statement about it. Each statement should include four elements:</p> <ul style="list-style-type: none"> • a description of the current environmental status of the ecosystem • a description of the way or ways in which the factor affects the ecosystem • a description of the existing methods that are being used to combat the factor • suggestions for future methods of combating the factor. 	Conversation	



Description of activities

Students work	Methods and resources	Assessment
<p>When the statements are complete, invite groups to share their findings with the class.</p> <ul style="list-style-type: none"> You can evaluate your students on their assignments using the following three-point rubric: <p>Three points: complete description of the current status of the ecosystem, accurate description of the way or ways in which the factor affects the ecosystem, clear description of methods being used to combat the factor, reasonable suggestions for future methods</p> <p>Two points: adequate description of the current status of the ecosystem, acceptable description of the way or ways in which the factor affects the ecosystem, vague description of methods being used to combat the factor, unrealistic suggestions for future methods</p> <p>One point: vague description of the current status of the ecosystem, unsatisfactory description of the way or ways in which the factor affects the</p>	<p>Conversation</p> <p>Description</p> <p>Description</p>	



Description of activities

Students work	Methods and resources	Assessment
<p>ecosystem, inadequate description of methods being used to combat the factor, no suggestions for future methods</p> <p>You can ask your students to contribute to the assessment rubric by determining how many suggestions for future methods should be included.</p> <p>Feedback</p> <p>Discussion: strong/ weak points of the lesson</p> <p>Students complete the Student Worksheet Annex 3</p>		<p>Worksheet Annex 3</p>

Worksheet Annex 3

Discover Pollution

Read the sentences below. Visit our Easy Geography for Kids page [All about Pollution](#) to find the missing words.

Write them in the empty spaces and find these hidden words in the puzzle!

[Words might be hidden horizontally, vertically and perhaps even back to front...!]

1. Today, _____ is a bigger problem than ever.
2. _____ from car fumes and factory smoke can cover cities, making it hard to breathe.
3. When _____ rigs in the ocean hit rocks, they spill oil into the sea. The oil _____ sea animals and pollutes beaches.
4. Raw _____ runs into the rivers and seas. This sewage can spread disease. It also causes _____ to grow in the water. The algae use up the _____ in the water so other aquatic plants and animals die.
5. _____ is useful in many ways, but it doesn't break down or biodegrade. Anything made with plastic piles up in landfills or pollutes the ocean, where it kills _____.
6. Plastic can be _____ — made into other things.
7. _____ from cooking fires filled the air. The villages and cities became polluted.
8. This waste is sometimes dumped into rivers, where it pollutes the _____ and kills animals and plants. The _____ water can also hurt humans.

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



Participating Schools/Organizations



BFI Oberösterreich: <http://www.bfi-ooe.at/bfiweb/>



Podřipská škola

SPSOS, Roudnice: <http://www.podripskaskola.cz/>



WEQUA GmbH: <http://www.wequa.de/>



Verein der Freunde und Förderer des Oberstufenzentrums Lausitz e.V.:

<http://www.oszlausitz.de/>



IHK- Projektgesellschaft: <https://www.ihk-projekt.de/>



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Υπουργείο Παιδείας και Θρησκευμάτων, Πολιτισμού και Αθλητισμού

General Lyceum of Lavrio: <http://blogs.sch.gr/lyklavri/author/lyklavri/>



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Formaorienta: <http://www.formaorienta.org/>



Escola Profissional Aveiro: <http://www.epa.edu.pt/>



Colegiul Teknik Energetic: <http://www.energetic-cluj.ro/>



Iskilip Vocational High School: <http://iskilipeml.meb.k12.tr/>