

Methodological Guide for Cross-curricular Activities



Lifelong
Learning
Programme

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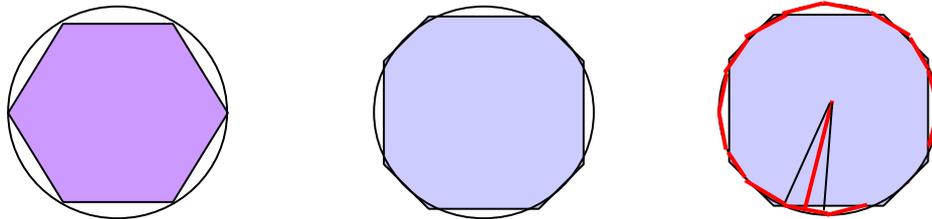
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Crosscurricular activity no.1

1. **School:** “Tudor Arghezi” High School, Craiova, Romania
2. **Teacher(s):** Mrs. Barbulescu Anca, teacher of Physics
3. **Form/No of students:** 25 IXth form students
4. **Date:** 12th of November 2013
5. **Time available:** 2 hours
6. **Topic:** *The Reality which Imitates Science*
7. **Type of lesson:** **Crosscurricular** (e.g. Physics, Maths, Geography, engineering)
8. **Necessity/ Argument:**

If we take a circle and we split it into into increasingly smaller circular arcs, we notice that those arcs are converted (to a very good approximation) in straight lines.

The figure below shows this approximation measurement being put into practice:

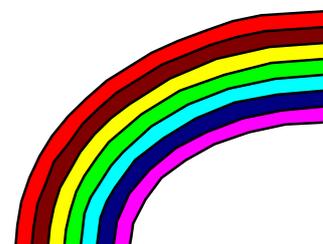
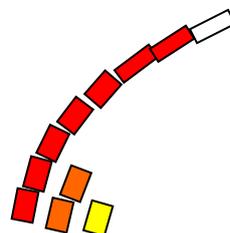


This measurement method was first used by Archimedes in the third century BC to determine the length of the circle and its radius.

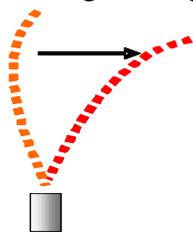
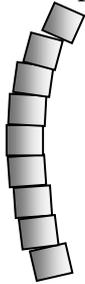
The same measurement method was used by Eratosthenes (astronomer, historian, geographer, philosopher, mathematician, poet and theater critic, III-II centuries BC) to calculate the circumference and the radius of the Earth. Eratosthenes was able to measure the circumference of the Earth appreciating it at 40,000 miles with high accuracy, using only sticks, eyes, feet and mind. Today we know that the Earth has a circumference of 40,075.017 km at the equator and the southern perimeter is of 40,007.86 km.

The method is still used to this day:

- In arts:



- In contemporary civil engineering:



9. **Aim:** to make/help students understand that our physical surroundings are governed by the laws of physics and the theoretical concepts studied are found and applied in everyday life

10. Objectives:

- to form and develop the skills of exploration / investigation of reality, using specific tools and procedures;
- to understand and use terms and concepts specific to mathematics and natural sciences;
- to read and interpret a map;
- to develop skills of team work , as well as interpersonal skills

11. Strategy:

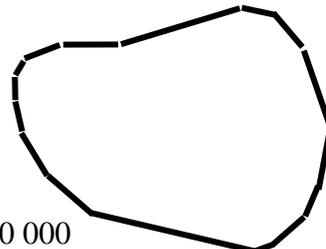
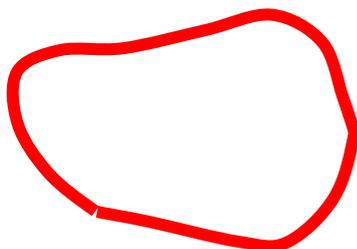
- **Studywork:**

Calculate the circumference of the lake in Central Park „Nicolae Romanescu” or any other area of the city that is of a suitable shape.

- **Methods and procedures:**

Teaching activities:

- The teacher draws the students’ attention to the map represented in the figure below, which has been fragmented through the method mentioned above.



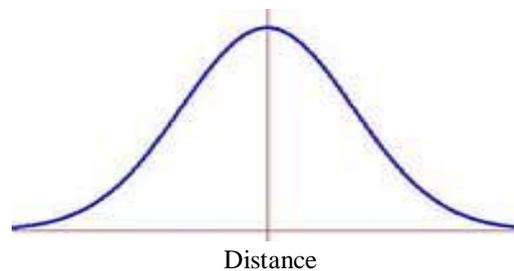
Scara 1 / 10 000

- For example: $22 + 7 + 5 + \dots = 1130\ 000\ \text{mm} = 1130\ \text{m} = 1.13\ \text{km}$

- The teacher organizes the students into groups of 4-5 students. They will go through the normal route which will be evaluated seriously. All the students will rigorously follow the same route. For example:

Student	Student 1	Student 2	Student 3	Student 4	Student 5
Distance (km)	1,04	1,20	1,12	1,17	1,09

- The teacher will ask the students to calculate the distance. This will be calculated by multiplying the number of steps with the stride length estimated for each student.
Average distance: $D_{MED} = (1.04 + 1.2 + 1.12 + 1.17 + 1.08) / 5 = 1.124$ km
- The next step is to calculate the measurement errors. The teacher will explain how students can use Gauss' curve. He/she will show the students that most of the values measured by them will be found inside this curve.



- Finally, the teacher will write the results of each group of students, centralizing the results.

Group	Group 1	Group 2	Group 3	Group 4	Group 5
Distance (km)	1.124	1.130	1.095	1.105	1.114

Average Distance: $Av\ Dist = (1.124 + 1.130 + 1.095 + 1.105 + 1.114) / 5 = 1.114$ km

- The last step is to draw feedback and conclusions. The final result obtained will be compared with the value resulting from the map. The results will be discussed.
The error will be calculated. In the case of the experiment presented, the deviation is of 0.016 km = 16 m, an error of 14.15%.

Learning activities/ Steps performed by the students:

- documentation from sources belonging to related fields: mathematics, geography, engineering, in order to properly understand the interdisciplinary links of the phenomena / topic being studied;
- Comparing information from different sources in order to verify their accuracy;
- Designing of an experiment / method of investigation to reveal the phenomena studied theoretically and to perform the necessary measurements;
- Interpretation and comparison of the experimental results with the theoretical ones;
- Establishing the principles which are necessary to achieve accurate measurements; choosing the optimal method appropriate to the precision class of the instrument used for the purposes of the experiment;
- Usage of the Internet and other multimedia elements for documentation, for example for obtaining the Romanescu park map;
- Involvement in individual and team activities, as well as in the usage of various means of communication
- Presentation and discussion of the applications / results obtained.
- **Organization and interaction:** teacher-student, student-student
- **Materials and equipment:** paper, ruler / tape, worksheets

12. Evaluation:

- ✓ *Practical evaluation through checking upon the accuracy of the results obtained ;*
- ✓ *Direct observation of the students throughout the activity;*
- ✓ *Self-evaluation*

13. Partners: teachers of Mathematics and Geography, the administration of "Nicolae Romanescu" Park, Craiova, Romania

14. Bibliography: 1. HEISENBERG Werner, Trad. PASCU Gheorghe "Imaginea naturii in fizica contemporană", Editura All, 2000.

Cross-curricular activity no.2

1. **School:** “Tudor Arghezi” High School, Craiova, Romania

2. **Teacher(s):** Mrs. Maria-Cristina-Rotaru teacher of English

3. **Form/No of students:** 10th/28

4. **Date:** 18th of October 2013

5. **Time available:** 1hour (50 minutes)

6. **Topic:** *The Past Perfect Tense*

7. **Type of lesson:** Cross-curricular – English Grammar through the Art of Movies

Necessity/ Argument: This lesson is the kind of lesson where students learn grammar in a very enjoyable way, combining the learning of English with movie watching. The students practise all the language skills, understand the use of grammar forms in real language situations and develop their collaborative abilities.

8. **Aim:** to help students understand the ways of using the Past Perfect forms in conditional sentences and subjunctive structures.

9. **Objectives:**

- to revise/learn about the different situations in which the Past perfect forms are used;
- to give practice to the listening/watching/reading/speaking skills;
- to make student produce new similar language structures by using the Past Perfect;
- to develop the conversational skills of the students, as well as their collaborative skills.

10. **Strategy:**

- **Methods and procedures:**

1. **Lead in: A beautiful woman in Paris**

Teaching activities: The teacher shows the students the below shown picture and asks the students to make any kinds of statements about it.

Learning activities/ Steps performed by the students: the students try to come up with suppositions upon the picture.

2. **Presentation-** the teacher gives further details about the



woman in Paris, by writing down the following sentence: *The woman in Paris went back to take her coat because she had forgotten it.*

Teaching activities: the teacher helps the students in analyzing the two past forms used in the example given- both the Past Perfect and the Past Tense forms are identified and the ways in which they are used are commented upon.

Learning activities: the students pay attention to the comments of the teacher and ask questions to clarify possible misunderstandings;

2. Movie watching: *The Curious Case of Benjamin Button*

Teaching activities: the teacher plays an extract from the movie, gives the while-watching tasks to the students (to pay attention to the order of the events and to fill in gaps with past perfect/past tense forms- **Appendix 1**) and checks upon the answers given by the students.

Learning activities: first, the students have to watch the movie very carefully and pay attention to the order of the events of the movie; then, the students are handed in some worksheets containing a part of the movie- script. They will watch the video again, their task being that of filling in gaps with past perfect/past tense forms.

The answers given by the students are checked and discussions on the reasons why either past perfect/past tense forms are used.



3. Past perfect in conditionals

Teaching activities: The teacher directs the students' attention to the last part of the video, which contains conditional sentences- Type 3. The teacher writes down the following sentence: "Daisy **would have crossed** the street if only one thing **had happened** differently"

The teacher reminds/ explains the rules for making conditional sentences of the third type. Then the teacher gives the students some worksheets based upon the last part of the video –

Appendix 2

Learning activities: The students must fill in the gaps with the right forms of the verbs in brackets. After filling in, they watch the video to check their answers.

4. Past perfect to express past wishes:

Teaching activities: The teacher presents the way in which regrets about past situations are expressed, by giving examples of sentences such as: “I wish the woman hadn’t forgotten her coat”. Then, the teacher asks the students to produce new statements based upon the situation presented in the video. **Appendix 3**

Learning activities: The students fill in some speech bubbles by using past perfect forms in order to express regrets.

11. Evaluation: further practice:

The students can be assessed or given further practice by solving one or both of these two tasks: In groups, the students are given some sentences which have been jumbled. Their task is to unjumble them in order to find a very interesting story. If-clauses based on text are after that filled in. (**Appendix 4**)

12. Bibliography:

Movie downloaded from: <http://www.youtube.com/watch?v=JZj1Yeb-tVg>

Picture used taken from:

https://www.google.ro/search?q=the+lady+in+paris&source=lnms&tbn=isch&sa=X&ei=ONmOUuTBI8vVsgbK1oHYAg&sqi=2&ved=0CAcQ_AUoAQ&biw=1241&bih=544#facrc=&imgdii=&imgrc=7OPrVJjDnaoD3M%3A%3BKHteT7xuKWviMM%3Bhttp%253A%252F%252Fimages.fineartamerica.com%252Fimages-medium-large%252Flady-in-paris-ma

Artist: Marianthisart Doukakis Haertel ; Title: Lady In Paris

www.elbase.com/.../20061201042133AG1_08.

Appendix 1

While watching the movie, please fill in the gaps in the text below:

A woman in Paris was on her way to go shopping, but she(1)her coat, went back to get it. When she (2)..... her coat the phone rang, so she stopped to answer it and (3)..... for a couple of minutes. While the woman is on the phone, Daisy was rehearsing for performance at the Paris Opera House. While she was rehearsing, the woman out the phone now and went outside to get a taxi. And now a taxi driver (4)a fare earlier and had stopped to get a cup of coffee. And all the while Daisy was rehearsing. This cab driver who had dropped off the earlier fare and (5).....to get a cup of coffee, had picked up the lady who was going shopping and (6)..... the earlier cab. The taxi had to stop for a man crossing the street who (7).....for work five minutes later than he normally did, because he (8)..... to set his alarm. While that man, late for work was crossing the street, Daisy (9).....rehearsing and was taking a shower. And while Daisy was showering and the taxi was waiting outside the boutique for the woman to pick up a package, which hadn't been wrapped yet, because the girl who was supposed to wrap it (10).....with her boyfriend the night before and (11).....it. The package was wrapped, the woman was back in the cab and was blocked by a delivery truck . All the while, Daisy was getting dressed. The delivery truck pulled away and the taxi was able to move, but Daisy, the last to be dressed, waited for one of her friends who had a broken shoelace. While the taxi was stopped in front of the traffic lights, Daisy and her friend came out the back of the theatre .

Appendix 2

Feel in the gaps with the right forms of the verbs in brackets.

And if only one thing had happened differently....

If that shoelace (1-to break)....., or that delivery truck (2- to move)..... moments earlier, or the pack had been packed already because the girl (3- to break up with)..... her boyfriend, or the man who hadn't set his alarm, had got up five minutes earlier, if that taxi driver (4- not to stop)..... for a cup of coffee, or that woman had remembered her coat, Daisy and her friend (5- to cross).....the street and the taxi would have driven by...

Appendix 3

Rephrase:

The woman forgot her coat. She went back to take it.

I wish the woman.....

If the woman.....

The phone rang and the woman stopped to answer it.

I wish the phone.....

If the phone.....

The taxi driver dropped off a fare and stopped to get a cup of coffee.

I wish the taxi driver.....

If the taxi driver.....

The girl broke up with her boyfriend. The girl forgot to wrap the paper.

I wish the girl.....

If the girl.....

The man forgot to set the alarm clock. The man was late.

I wish the man.....

If the man.....

A delivery truck blocked the road. The cab wasn't able to move.

I wish the delivery truck.....

If the delivery truck.....

Daisy's friend had a broken lace. Daisy waited for him.

I wish Daisy's friend.....

If Daisy's friend.....

The taxi driver was distracted. The taxi driver hit Daisy.

I wish the taxi driver.....

If the taxi driver.....

Daisy had a shower. She was late.

I wish Daisy.....

If Daisy.....

The woman didn't get her package immediately. The taxi driver had to wait.

I wish the woman.....

If the woman.....

Appendix 4

because he couldn't speak Russian.
so that he could live in Russia and be near to Ludmilla.
Last summer Tom went on holiday to Russia where
He decided to give up his well-paid job in London and sell his house
but now he can't find a job there either!
So he moved to Russia.
But unfortunately, he couldn't find a job in Russia
Then Ludmilla left him
he met a beautiful Russian girl called Ludmilla and fell in love immediately.
so he returned to London

Condition	Result
If he hadn't met Ludmilla,	None if these.....
If he.....able to speak Russian	he might have found a job in Russia.
If he.....his house	he wouldn't be homeless now.
If he.....up his job,	he wouldn't have remained unemployed.

Story in the correct order.

Last summer Tom went on holiday to Russia, where he met a beautiful Russian girl called Ludmilla and fell in love immediately.

He decided to give up his well – paid job in London and sell his house so that he could live in Russia and be near Ludmilla.

So he moved to Russia. But he couldn't find a job in Russia because he couldn't speak Russian.

Then Ludmilla left him so he returned to London but now he can't find a job there either.

Cross-curricular Activity No. 3

My Scrapbook Pages

1. **School:** “Tudor Arghezi” High School, Craiova, Romania
2. **Teacher(s):** Mrs. Rotaru Maria-Cristina
3. **Form/No of students:** 28 Xth form students, 28 IX th form students
4. **Date:** January, 2014
5. **Time available:** three weeks for documentation, three hours for presentation of the materials
6. **Topic:** My Scrapbook Pages
7. **Type of lesson:** Crosscurricular (e.g. English, Physics, History, Geography, Arts)
8. **Necessity/ Argument:**



Since our school is being involved in the multilateral project “Art and Science- The Best Ambassadors of the National Values within Europe”, we consider that a very useful activity is that of stimulating the students to find out more about all the countries involved in the project from the perspective of different school subjects. We thought it was necessary to acquire some additional information regarding the geography, history, the languages spoken, the contribution of the most important scientists and artists of all the countries involved to the enrichment of the European cultural heritage.

The lessons focused on the questions: How much do we know about these 9 countries/ How much have we learnt about them?

9. **Aim:** to enlarge the knowledge of the students with various facts/data about the partners countries;
10. **Objectives:**
 - To foster the English language skills of the students;
 - To enrich the students’ knowledge related to the lifestyle, the geography, history, language, the art and science of the partner countries (Italy, France, Poland, Portugal, Turkey, Lithuania, Bulgaria, Spain and Romania);
 - To develop the students’ skills of artistic expression;
 - to foster the sense of being European citizens;
 - to develop the teamwork spirit and the ability to have good interpersonal relationships;

- to develop the IT skills of the students;
- to develop the students' feelings of national pride.

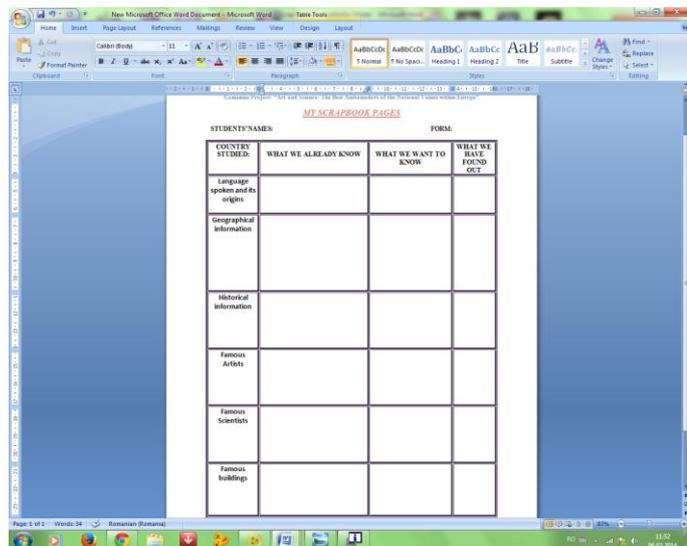
11. Strategy:

-Studywork: The task was that of studying and learning about the geography, history, other facts, important contributions to the universal art and science of all the countries involved in the project.

-Methods and procedures:

- First of all, the students were divided into groups of three/four and each group was assigned one country from the nine involved in the project. Then, the students were led into the subject matter and they were asked to fill in some K-W-L charts (see the picture below).

- After filling in the K-W-L chart (the first two columns), the students were given the task: that of preparing a scrapbook album with geographical/historical/linguistic/architectural information, plus other pieces of information regarding well-known artists/scientists and their works of art.



The students were given a week for documentation.

- After bringing the scarpbook albums, the students had to prepare themselves for making oral presentations with their findings. Another week was given to them in order to prepare themselves for these presentations.

- The next step was that of making their presentations in the English language. Pictures and video recordings of these presentations were made and later on, all these were put together into a media presentation movie.

- The last step was that of using their artistic/computer skills in order to put together all the information they managed to acquire. Some students made posters of presentation, while others made paintings illustrating the most important cultural aspects of the countries assigned.

- In the end, the pictures taken and the recordings made were put into a movie, which is presented on the web page and facebook page of the project.

- **Organization and interaction:** teacher-student, student-student

- **Materials and equipment:** computer, video-projector, paper, worksheets, glue, markers

12. Evaluation:

- ✓ Evaluation of the quality of the materials made;
- ✓ Direct observation of the students throughout the activity;
- ✓ Self-evaluation and peer-evaluation

13. Partners: Mrs. Barbulescu Anca, teacher of Physics, Mrs. Gheorghitoiu Maria, teacher of Geography, Mrs. Minea Andreea, teacher of History, Mr. Purcarea Dan, teacher of Arts

14. Webography: the materials made were taken from different sources, both on paper and from the Internet, among them the most notable being

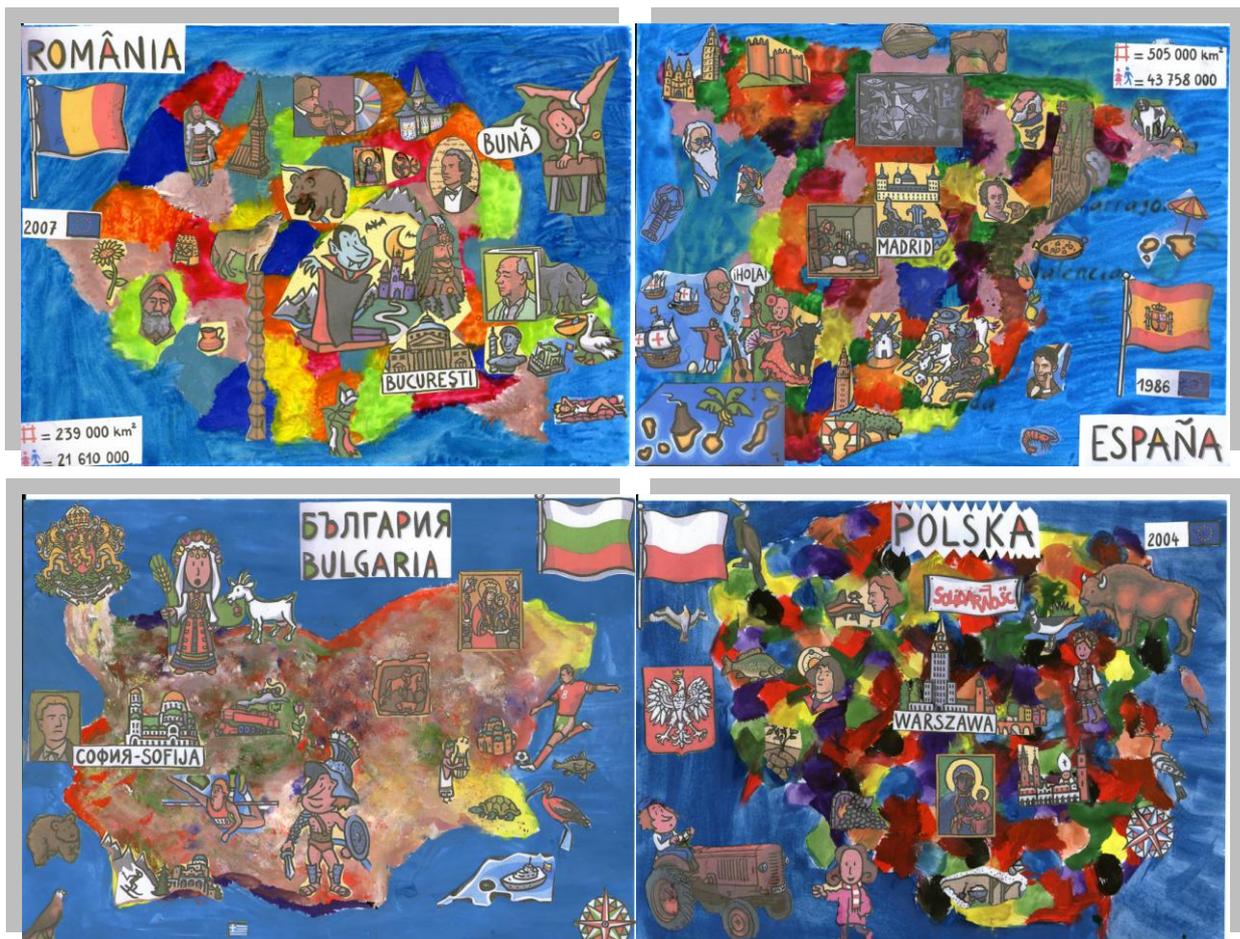
http://en.wikipedia.org/wiki/Main_Page

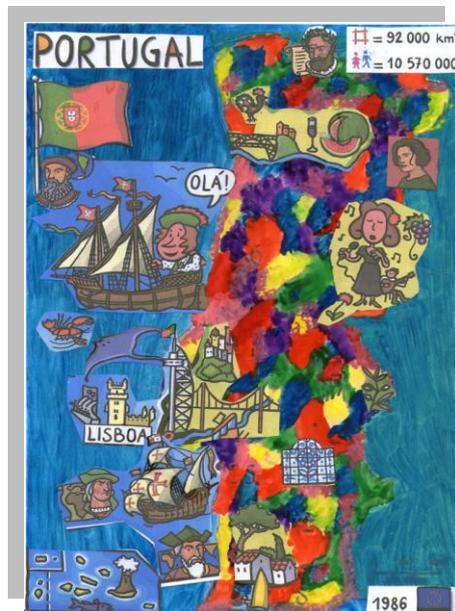
<http://www.kids-world-travel-guide.com/>

<http://www.infoplease.com/>

<http://europa.eu/>

This is the result of the students' work during the art classes in more detail:





Cross-curricular Activity no.4

1. **School:** “Tudor Arghezi” High School, Craiova, Romania

2. **Teacher(s):** Mrs. Barbulescu Anca, teacher of Physics

3. **Form/No of students:** 25 Xth form students

4. **Date:** 15th of January 2014

5. **Time available:** 1 hour (50 minutes)

6. **Topic:** *The Hidden Power Consumption which is Due to Letting Appliances in the Stand -by Mode*

7. **Type of lesson:** **Crosscurricular** (e.g. Physics, Informatics, Economy, Environmental Protection)

8. **Necessity/ Argument:**

The twentieth century has failed to solve the environmental problems which were generated by the industrial development. Climate change and the extinction of species of plants and animals are problems humanity continues to deal with. The question is: are we heading for a catastrophe or are there ways to get out of the ecological crisis of our planet?

It is clear to everyone that all countries should make significant efforts to comply with the internationally accepted environmental principles. After all, the protection of the environment is a key element in ensuring good-quality and sustainable life for the present generation and for the future generations as well.

Nowadays, the rational use of existing energy resources and the identification of renewable alternatives have become a must.

The lesson focused on the question: *How much energy can we save monthly if we eliminate the "hidden" power consumption caused by maintaining appliances on stand by?*

9. **Aim:** Evaluation of the "hidden" electricity consumption of a household (calculations regard the monthly consumption) which is due to letting appliances in the stand-by mode.

10. **Objectives:**

- to form and develop the skills of exploration / investigation of reality, using specific tools and procedures;
- to understand and use terms and concepts specific to natural sciences;

- to correctly and effectively use the educational interactive site:
http://www.sotaventogalicia.com/area_divulgativa/zona_interactiva.php,
- to develop interpersonal skills

11. Strategy:

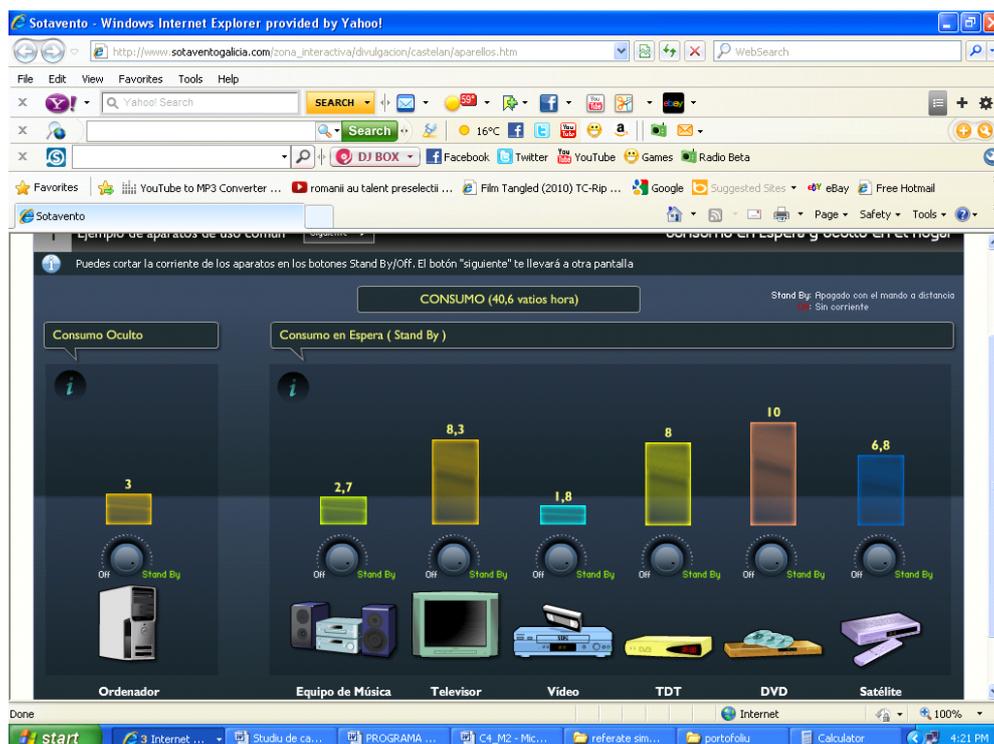
-Studywork:

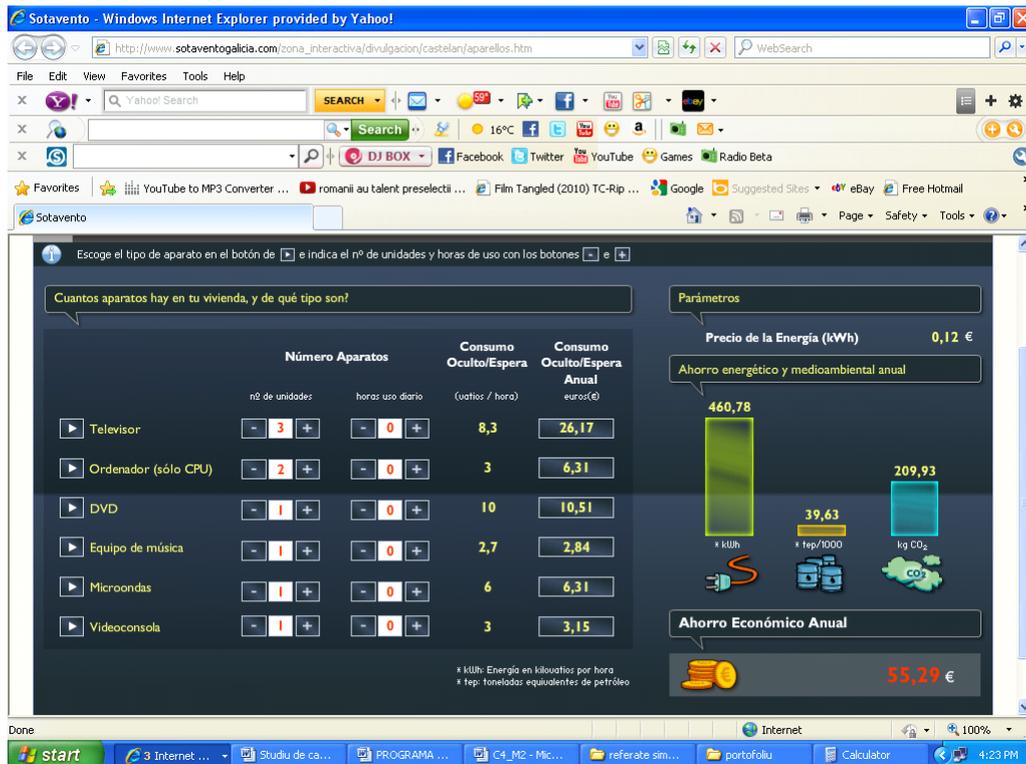
Calculation of the electricity that can be saved monthly through the elimination of the "hidden" consumption due to maintaining appliances on stand by.

-Methods and procedures:

Teaching activities:

- Students were led into the subject matter by showing them why saving electricity is so important. They were asked to objectively analyze how they use non-renewable resources such as water and electricity both within their own homes and outside.
- The students were introduced to an application by using the interactive site http://www.sotaventogalicia.com/area_divulgativa/zona_interactiva.php . By using it, each of the students involved could assess the hidden consumption generated by the appliances let on stand-by from their own homes.





Learning activities/ Steps performed by the students:

- Each student has identified the consumers in their own home and filled in the table below. Students took into account the number of consumers and their type:

This table shows the electricity consumption of different devices let in stand-by:

No.	The kind of appliance let on stand-by	Estimated Consumption* (Wh)	No of appliances	No of hours in the stand-by mode (in 30 days)	Electricity Consumption in a Month (Wh)	Electricity Consumption in a Month (KWh)
1	TV+PC Screen	8,3	3	600	14940	14,94
2	DVD	10	1	720	7200	7,2
3	Computer (without the screen)	3	1	600	1800	1,8
4	Router	6,8	1	720	4980	4,98

*conform informațiilor preluate de pe site-ul interactiv:

http://www.sotaventogalicia.com/area_divulgativa/zona_interactiva.php

- The students analyzed the estimations upon the hidden electricity consumption. The results were compared and discussed upon in an organized free debate. Different variants were ranked.

From the previous example, the "hidden" consumption can be estimated of about 30 KWh. Taking into account the price of a kWh * (for household consumption in Romania) at 0, 6 lei, we can calculate an increase of the electricity bill by about 25 lei. (Consumption is actually higher because other devices such as phone chargers, microwave, stereo, etc. also generally remain plugged in.)

• **Drawing conclusions:**

- 92.85% of the participants in the case study said they did not know that the appliances in standby still consume electricity;
- 78.5% said they would change their habits being more careful with the "hidden" consumers which they will no longer forget to unplug when not using them;
- 21.4% said that they would advise their family members and friends not to keep appliances on standby.

- **Organization and interaction:** teacher-student, student-student

- **Materials and equipment:** computer, video-projector, paper, worksheets

12. Evaluation:

- ✓ *Practical evaluation through checking upon the accuracy of the results obtained ;*
- ✓ *Direct observation of the students throughout the activity;*
- ✓ *Self-evaluation*

13. Partners: teachers of Computer Science

14. Webography:

- http://www.sotaventogalicia.com/area_divulgativa/zona_interactiva.php

Cross-curricular Activity no.5

1. **School:** Darica Servet Çambol Primary School, Darica, Tukey
2. **Teacher(s):** Miss Ayla Doğan-Teacher of English Language, Mrs. Hayat Karadeniz-Teacher of Primary Class
3. **Form/No of students:** 20 - 4th form Students
4. **Date:** 15th of November 2013
5. **Time available:** 1 hour (40 minutes)
6. **Topic:** *Measurement of Capacity and Mass*
7. **Type of lesson:** Crosscurricular (e.g. Physics, Mathematics, Engineering and Science areas)
8. **Necessity/ Argument:**

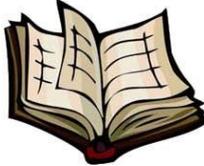
Volume is a term that matters/substances take place in a space. You can measure volume in customary or metric units. Volume is a common feature for the all matters. Two matters can not have the same volume. For example, if you put water in a pot, the air in the pot leaves the pot. Solids have a particular shape and volume, although liquids have volume, they take the shape of the pot that they are put in. Gaseous matters don't have particular shape and volume so they take the pot's shape and volume that they are put in. Volume is indicated with the symbol **V** and the unit of volume is indicated with **m³**.

1 Cup	1 Pint	1 Quart	1 Gallon
			

1Millitier	1Liter
	

Mass is the measure of how much matter there is in something (matter is anything you can touch physically) and it is measured in standard metric units. Each matter has a mass and mass is the common feature of all the matters. It is indicated with the symbol **m**. Each type of

matter (solid, liquid, gaseous) has a mass and a volume. Mass of the matter doesn't bind to gravity so it doesn't change anywhere.

1 Milligram	1 Gram	1 Kilogram
		

Mass is measured in standard customary units. Although mass of the matter is stable, weight of the matter can be changed. The reason of this event is the gravitational field. For example, weight of the matter is zero, in the center of the world.

1 Ounce	1 Pound	1 Ton
		

We use these metric units in our everyday lives during shopping etc. Also, these metric units are used in each engineering departments and other science areas. For example, chemists use various liquid chemicals and they use liter and milliliter measurement units while they are dealing with these matters of civil engineers use 'ton' the measurement unit while they are constructing a building.

9. **Aim:** Enable students to understand that things that we deal with in our everyday life such as customary units and metric units are governed by laws of physics and mathematical laws, students are going to categorize matters according to their weight, capacity and mass.

10. Objectives:

- Allow students to think in abstract way
- Allow students to make connection between physic laws and the matters exist in our world
- Enable students to understand the scientific terms and enable them to use these terms
- Developing team work, helping self-criticism and arranging argumentative atmosphere

11. Strategy

Study work: Using the examples of the customary units, choose the most appropriate unit to measure the weight, volume and mass of each item. Write the unit of measurement on the blank line.

Methods and Procedures

Teaching Activities

- The teacher gives a warm up activity firstly, students are given pictures of the matters and they are wanted to write the most appropriate unit (pound, ounce, ton, kilogram, gram, milligram, liter, milliliter, gallon, quart, pint, and cup) under the pictures by using the examples that are given above.
- Then the teacher divides students into two groups and students ask each other about the measurement units.
- After that the teacher gives quiz related with again customary measurement units. Students are going to calculate the weight, volume and mass of the matters.
- Finally the teacher gives the correct answers of the questions and explains the results, gives feedback about the current topic. Also, the teacher explains the topic (mass & volume) by demonstration (for example she uses the classroom objects in order to explain the topic).

Learning Activities/Steps Performed by the Students

- Using different materials belong to different lessons such as physics, mathematics
- Making comparison among matters that we face and use in our daily lives
- Making connection between physical laws and daily life matters by using current knowledge and given charts related with the current topic
- Making experiments to learn empirically
- Using visual materials to prove the laws that they have learnt
- Making discussion related with the current topic in order to evaluate the obtained results

Organization and Interaction

- Teacher-Student and Student-Student

Materials and Equipments

- Pictures, worksheet, charts related with the current topic

12. Evaluation

- Observation of the student's performance during the tasks.
- Self-evaluation
- Making quiz related with the topic

13. Partners: Teachers of Physics and Teachers of Mathematics from Darıca Servet Çambol Primary School

14. Bibliography/Reference:

- Aksoy, M., Bal S. (2005).
- Assistant Physics Book for grade 4 and grade 5 Students Güvender Publishing

Quiz (Mass, Volume)

1. Which is the best estimate of the mass of the car?
 - a) 200 ounces
 - b) 2,000 grams
 - c) 200 milligrams
 - d) 2,000 pounds

2. Which is the best estimate of the volume of a cup of coffee?
 - a) 250 liters
 - b) 250 gallons
 - c) 250 milliliters
 - d) 250 cups

3. Which of these units would best measure the mass of a hummingbird?
 - a) Kilograms
 - b) Millimeters
 - c) Grams
 - d) Centimeters

4. Which of the following holds about 1 liter of water?

			
a)	b)	c)	d)

5. Which of the following has a mass of about 2 grams?
 - a) A dime
 - b) A pack back
 - c) A box of cereal
 - d) A bowling ball

Answer Key

- 1- 2,000 pounds
- 2- 250 milliliters
- 3- Grams
- 4- A bowl (c)
- 5- A dime

Ounces ? Pounds ? Tons ?

Milligrams ? Grams ? Kilograms ?

Cups ? Pints ? Quarts ? Gallons ?

Milliliters ? Liters ?

Cross-curricular activity no.6

1. **School:** Darica Servet Çambol Primary School, Darica, Turkey
2. **Teacher(s):** Miss Ayla Doğan-Teacher of English Language, Mrs. Hayat Karadeniz-Teacher of Primary Class
3. **Form/No of students:** 20 - 4th form Students
4. **Date:** 4th of November 2013
5. **Time available:** 1 hour (40 minutes)
6. **Topic:** *Light and Light Sources*
7. **Type of lesson:** Crosscurricular (e.g. Physics, Geography, Painting)
8. **Necessity/ Argument:**

Light is a kind of energy source which help us to see the matters and objects around us. Each light has a light resource and the most important and the biggest light source that we take is Sun. Light sources are divided into two groups; natural light sources and artificial light sources. We need a light to see the objects in the world so we use sun light in the morning and in the afternoon but we use artificial light sources at night.

Natural Light Sources

Natural light sources are sources that produce light itself. The most important and the biggest natural light source is Sun that we take. The other natural light sources are stars, lightning, lightning bug, some sea animals that produce light under the sea etc.



Artificial Light Sources

Natural light sources are not enough for us to see everything around us at night. Because of that people use different artificial sources in order to enlighten the environment at night. For example, we use lamp, candle, television monitors, lantern, torch etc.



Some matters are transparent which allow light to pass from them and some of them are semi-transparent or some matters are non-transparent namely opaque matters which doesn't allow light to pass from them. For example, people use glass in order to take sun light.

Formation of Shadow

When the light is spreading in the environment, it comes across with opaque matter and light cannot pass the opaque matter so there appears dark shadow behind the opaque matter. The shadow of the matter resembles the matter's itself. Shadows of the big matters become big and small matters' shadows become small.

This physical law is very important factor for the painters. Light and the formation of shadow is very important factor in painting area, for example painters draw their paintings according to angle of the light.



9. Aim: Enable students to understand the formation of light, light sources and make connection between the physics and physical laws that are used in art, painting area.

10. Objectives

- Allow students to make connection between geographical knowledge, painting knowledge and current knowledge
- Allow students to think in abstract way
- Arranging argumentative atmosphere
- Allow students to create light sources by themselves by using their imagination
- Allow students to better understand the current topic with the help of visual materials

11. Strategy

Study work

Create an artificial light source by using your previous knowledge about physics lesson and the current knowledge about light.

Methods and Procedures

Teaching Activities

- First of all the teacher gives a warm up activity and students are going to reinforce their knowledge about light and sources of light by asking to each other natural and artificial light sources.(They are going to find different sources or they can create different sources for people)
- After that the teacher wants students to create an artificial light source by using their previous knowledge (They have learnt electrical energy in the previous lessons).
- Students are going to make a lamp by using the materials; wooden board, cables, small lamps, batteries.



Learning Activities/Steps Performed by the Students

- Using different subjects in order to create an example related with the current topic
- Using visual materials and projector in order to make brainstorming
- Discussion about the current topic and the geographical events
- Discussion of the results obtained
- Using different materials from different subjects in order to make comparison and create concrete example about the current topic

Organization and Interaction

- Teacher-Students and Student-Student

Materials and Equipment

- Computer, pictures, worksheet

12. Evaluation

- Observation during the classroom
- Self-evaluation
- Evaluation of students' creations

13. Partners: Teachers of Physics from Darica Servet Çambol Primary School

14. Bibliography/References:

- Aksoy, M., Bal S. (2005).
- Assistant Physics Book for grade 4 and grade 5 Students, Gündener Publishing

Crosscurricular activity no.7

- 1. School:** Darıca Servet Çambol Primary School
- 2. Teacher(s):** Miss Ayla Doğan, Mr. Kadir Tunç – Teachers of English
- 3. Form/No of students:** 25 - 4th form Students
- 4. Date:** 09.01.2014
- 5. Time available:** 40 minutes
- 6. Topic:** Can/Can't – What are the advantages of Technology-Computers?
- 7. Type of lesson:** Cross-curricular (e.g. English Language, Science and Technology-Computer Skills)
- 8. Necessity/ Argument:**

Students are going to be taught 'Can/can't' by using task based technique. It is important to use L2 in the classroom in order let them to exposure to the target language. However, students are young learners so the teacher can use L1 if they cannot understand the given instructions.

9. **Aim:** Allow students to understand the topic 'Can/can't' and let them use it in sentences and express their abilities by using 'Can/can't' and get familiar with the advantages of technology and the computers.

10. Objectives:

- Being able to use can/cannot while expressing the abilities
- Talking about other people's abilities and talking about possibilities
- Being able to use key words related with the topic
- Being able to use the lexical items in a sentence
- Enhancing speaking skills

11. **Expected Behaviours:** Students are expected to create accurate sentences related with the text; they are also expected to talk about their abilities and possibilities by using correct form.

12. Methods and Procedures:

13. Teaching Activities:

1- **Pre-Task:** The teacher tells students a story about her previous experiences. She tells the differences between life with technology and life without technology. She tells what

kinds of things she can do with the help of technology by using the grammatical structure ‘can’. (I can search everything on the internet etc.)

2- Task: The teacher asks students what kinds of things can be done with the help of technology. What they can do by using computers, what kinds of advantages do the computers have? The teacher creates a discussion atmosphere to let students to use L2.

Then the students are wanted to write their justifications by using computer in a word format and they are wanted to post their writings to the school’s common technology blog. With the help of this they can share their ideas with the other grade students and with the other teachers.

3- Post Task: The teacher gives information about the usage of ‘can’ and she tells the grammatical usage of it. (Usage-form of can in affirmative, negative and interrogative sentences.). They get familiar with the differences between –can as ability and can-as a possibility. After discussing the advantages of computers, the teachers asks about the disadvantages of them, students are going to use the same grammatical structure again then they are going to post their ideas to the blog.

Then they are given a quiz for evaluation of the current topic.

We use ‘can’ when we talk about our abilities. For example;

- I can swim.
- My sister can play the guitar.
- She can speak English.
- My students can search everything.

We use ‘can’t’ when we talk about things that we are not able to do, namely use can’t in negative sentences.

- I can’t play the guitar.
- She can’t go out.
- My brother can’t dance.

Learning Activities

- Using different examples to allow students to understand the topic easily
- Using demonstrations and body language during the tasks
- Making discussion related with the current topic in order to obtain objective results about the student’ current knowledge
- Using authentic examples related with the real life in order to draw students attention easily
- Using technology

Communicative Outcomes: Students will be able to talk about their own and other people's abilities and possibilities by using 'can' and specific lexical items related with technology.

Organization and interaction: Teacher-Student, Student-Student

Materials and equipment: Quiz, Worksheet, Computer, Website-Blog

14. Evaluation

- Direct observation during the task. (Observation on usage of 'can' and speaking skills)
- Self-evaluation
- Evaluation of students' grammatical knowledge by quiz

Bibliography/References:

- Prof. Dr. Pakkan, G. (2012). Texture English, Teacher's Book for grade 4 and 5
Doku Publishing

Crosscurricular activity no.8

1. **School:** Darica Servet Çambol Primary School
2. **Teacher(s):** Miss Ayla Doğan, Mr. Kadir Tunç – Teachers of English
3. **Form/No of students:** 25 - 4th form Students
4. **Date:** 17.01.2014
5. **Time available:** 40 minutes
6. **Topic:** *Will - Will not (Future plans- Predictions)*
7. **Type of lesson:** Cross-curricular (e.g. English Language, Biology, General Cultural Aspects)
8. **Necessity/ Argument:**

Students are going to be taught 'will/won't' future simple tense. It is important to use target language in order let them to exposure L2. However, when students have difficulty in understanding the instructions and rules of the topic, the teacher can use L1 in order not to cause accuracy problems.

9. Aim:

- Enhance students' speaking skills and let them to use future simple tense accurately and let them to use 'will/won't' in a sentence correctly by brainstorming their biology skills.

10. Objectives:

- Being able to express future plans
- Being able to understand and use lexical items related with the topic
- Being able to use specific items related with Future Tense (next year, tomorrow etc.)

- Enhancing L2 skills
- Brainstorming cultural skills and activating background knowledge about other lessons

11. Methods and Procedure:

Teaching Activities:

1- **Pre-Task:** At the beginning of the lesson the teacher tells one of her embarrassed event in order to take students' attention to the lesson. Then she gives a True/False activity about results of embarrassment before conducting the main task section. Students decide which result is true or false.

True/False Questions

1. Your body will feel stressed when you are embarrassed.
2. Stress will make your heart beat slow.
3. Your body will sweat.
4. Your palms will become wet.
5. You will feel comfortable.

2- **Task:** After that the teacher gives a passage about 'embarrassment' and she wants students to read it and underline the sentences which include 'will or won't'. After reading the passage, students are wanted to check their True/False answers by evaluating the given information about the results of embarrassment.

Everyone gets embarrassed sometimes. When you do wrong things you will feel embarrassed. You will feel bad when people look at you. When you are embarrassed your body will feel stressed. Stress will make your heart beats faster. You will get tense and hot. Then you will blush and your body will sweat. Sometimes your palms will become wet and you will feel self-conscious.

3- **Post-Task:** The teacher gives information about the form of Future Simple Tense. She tells the grammatical rules of Future Simple Tense. Then they are wanted to ask each other; what happens when we have sore throat, headache etc? They are wanted to express results of the illnesses. For example, 'What happens when we break our leg? – We will stay in bed.'

We use ‘will’ when we talk about our future plans and we use ‘will’ when we make predictions about the future actions. For example;

It will rain.

I will visit my grandparents.

She will go to school.

We use ‘will not-won’t’ when we don’t want to do something in the future.

I won’t go to the cinema.

She won’t go for a walk.

My mother won’t go shopping.

12. Learning Activities:

- Using gestures and body language
- Using different lexical items related with cultural aspects
- Using authentic – real examples which represents the current topic
- Let students to discuss about the topic
- Let them to use L2 by expressing their

13. Evaluation:

- Observation during the lesson
- Self-evaluation
- Quiz related with the topic which evaluate both accuracy and productive skills

14. Bibliography/References:

- Prof. Dr. Pakkan, G. (2012). Texture English, Teacher’s Book for grade 4 and 5
- Doku Publishing.
- Upgrade, Practice Book for grade 4 and 5. Sargın Publishing.

Crosscurricular activity no.9

1. **School:** „Zespół Szkół Ponadgimnazjalnych in Somonino” – high school, Somonimo, Poland
2. **Teacher(s):** Maria Konkel, teacher of Polish
3. **Form/No of students:** class II - 27 students
4. **Date:** 12th of November
5. **Time available:** 90 min.
6. **Topic:** Polish painting of the 2nd half of XIX century
7. **Type of lesson:** **Cross-curricular** (culture knowledge, art, history, Polish language)
8. **Necessity/ Argument:**

Trends in painting of the second half of the nineteenth century :

- **Formalism** : the artist imitating nature should extract from it only what is beautiful, perfect and harmonious , reject all that random and ugly ; apply strict rules , modeled on classical aesthetics , biblical themes , ancient , historical . Represented by Alexandre Cabanel , Henryk Siemiradzki .

- **Realism / naturalism** : the pursuit of lifelike reproduction of reality , showing the world around us in all its randomness, without any selection of photographic fidelity , contemporary themes , scenes from the life of the lower classes , rural , daily activities devoid of pathos. Representatives : Gustave Courbet and Jean Francois Millet , Joseph Chelmonski , Alexander Gierymski .

- **Historicism** : the imitation of styles of bygone eras , themes drawn from history, portrayed realistically with a large dose of pathos , with attention to detail epoch-making , paintings kept in the academic conventions . Represented by Juliusz Kossak , Jan Matejko, Arthur Grottger (reproductions of works of art - multimedia presentation). Knowledge of the conventions of artistic styles and their characteristics, and their periodization is necessary for conscious perception of art works and their fair assessment .

9. Aim: Teach students about the national heritage and shape attitudes of conscious participation in culture and cultural acceptance.

10. Objectives:

- Understanding and characterization of trends in the art of the second half of the nineteenth century (realism, naturalism, historicism, formalism);
- Knowledge of the canon of the greatest works of art of the period;

- Development of skills of critical and reflective analysis, interpretation and evaluation of a painting;
- The collection and use of information from various sources (scientific literature, socio-cultural newspaper, Internet, etc.);
- Improving the ability to work in a team.

11. Strategy:

- Study work:

Participation of students in a debate on works of art, a visit to the museum (collection of Polish paintings of nineteenth century).

- Methods and procedures:

Teaching activities:

- a) familiarize students with the aim of teaching: Preparing for a visit to the National Museum in Gdansk and learning about its collection of Polish realistic painting, and preparation for expressing an opinion on specific works.
- b) familiarize students with theoretical information on the directions in painting of the second half of the nineteenth century, and also about the representatives and examples of paintings (reproductions of works of art - multimedia presentation).
- c) Distribution of students at two - three - person teams. Analysis of selected works of art (Joseph Chelmonski, Indian Summer, Alexander Gierymski, Oranges) - worksheets (attached). Students work in groups, using various sources of information in order to complete a task, help the teacher in case of difficulty.
- d) Presentation of the results of the teams' work - selected group. Proofreading and style correction by the teacher.
- e) Teacher's information about the necessary elements to create a proper description and opinion about a painting - other tasks / commands included in the worksheets.
- f) The task for students: Analysis and opinion about a painting of Stanczyk by Jan Matejko. Students' teamwork in collecting of the materials (information about the author, the time and circumstances of the works, historical events, referred to the picture; reviews of the work of Jan Matejko). Individual work - writing the description of the work. Control of the task by the teacher, to help in solving problems; verification of the linguistic and stylistic texts.
- f) Presentation of work effects - statement to the class (a selected student). The discussion in class, evaluation of the speech.
- g) Summary of work - synthesis of knowledge and skills acquired during the course. Appointment of the term of a meeting at the Museum - the practical use of skills.

Learning activities/ Steps performed by the students:

- Systematic taking notes, selection of information.
- Expanding knowledge about the artistic and cultural heritage.
- Cooperation in the team.
- Use of a variety information sources (scientific literature, dictionaries, encyclopedias, newspapers socio-cultural, Internet, source texts); critical selection of information.
- Use of knowledge from different fields: knowledge of the culture, art, Polish, history, science).
- Analysis of a painting.
- Long-term student speech on a given topic, class forum, participation in discussion, exchange of views and opinions on art.
- Minding the correctness and the culture of a speech (spoken and written).

12. Evaluation:

- Validation of the performed tasks.
- Evaluation of the students' speeches.
- Self-evaluation by verifying the acquired skills in a real situation - a visit to the museum

13. Partners: culture knowledge teacher, history teacher, librarian, National Museum in Gdańsk

14. Bibliography:

- *Encyklopedia sztuki polskiej*, red. J. Ostrowski, Kraków 2001.
- *Historia sztuki 1000 – 2000*, red. A. Mérot, Warszawa 1998.

Worksheet - I

Aleksander Gierymski: A Jewish woman with oranges (*Pomarańczarka*)

Look at the picture and do the tasks.

1. Specify the picture's type of painting. Give reasons for your answer.

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2. Characterize the composition of the canvas and the type of applied perspectives.

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3. Describe the following elements of the woman's appearance.

a) pose –

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.....

b) face –

.....
.....

c) costume and props –

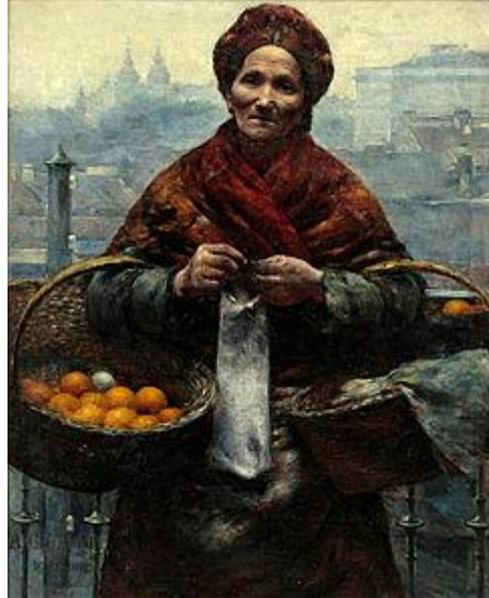
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4. Consider, who the woman in the picture could be.

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.....

5. Analyze the position of the light in the picture and used colours and specify the effect.

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Worksheet – II

Józef Chelmoński: Late summer (*Babie lato*)

Look at the picture and do the tasks.



1. Specify the picture's type of painting. Give reasons for your answer.
portrait, genre painting, weduta, landscape, nude, still life

.....

2. Describe specific work plans.

.....

3. Complete the form with the information about the person that is shown in the picture.

Elements of Description	Characteristics
face	
silhouette	
feet	
hands	
ornaments	
clothes	

4. Describe what mood dominates in the picture. Which painting techniques were used in this picture?

.....

5. Write what determines the line of symmetry of the composition.

.....

6. Explain the title of the canvas and show its connection with the content of the work.

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Crosscurricular activity no. 10

1. **School:** Zespół Szkół Ponadgimnazjalnych in Somonino – Vocational High School
2. **Teacher(s):** Beata Kramp, teacher of vocational subjects
3. **Form/No of students:** class IV - 11 students (group: job title – hotel technician)
4. **Date:** 11th of December 2013
5. **Time available:** 90 min.
6. **Topic:** The most valuable qualities of anthropogenic in Poland - UNESCO World Heritage Site
7. **Type of lesson: Cross-curricular** (organization of work in the hotel industry, knowledge of the culture, art, Polish language, history, geography)
8. **Necessity/ Argument:**

Anthropogenic qualities (cultural) are material objects, closely related to the human activity which is of value in terms of culture, civilization, architecture, urban planning and technology and of interest to tourists.

Cultural values can be divided into groups containing:

- Monuments of architecture and construction;
- Historical objects - military;
- Museums of martyrdom;
- Monuments of technology and industry;
- Centers of folk art;
- Contemporary cultural events;
- Places of pilgrimage;
- Museums;
- Archaeological sites;

The most valuable objects are on the list of UNESCO World Cultural and Natural Heritage (World Heritage List). The list includes items of a special protection, due to their unique cultural or natural value to humanity. The list includes (in June 2013) 981 properties in 160 countries, including 759 cultural heritage sites, 193 natural and 29 mixed. The type of the object on the list of the World Heritage Committee is decided during the annual session since 1977. Nominations are submitted by applying countries. If the request for the inclusion on the list is not taken into account, it can be made again.

9. **Aim:** To give students the most valuable examples of Polish cultural heritage, on the basis of the sites inscribed on the UNESCO list, and to shape attitudes that understand the need to protect touristic values

10. **Objectives:**

Characteristics of Polish sites inscribed on UNESCO's World Heritage List;

- the location on the map of Polish sites inscribed on UNESCO's World Heritage List;
- discussion about the benefits of enlisting an object on the UNESCO World Heritage List;
- determining the conditions that an object must meet in order to be listed as a UNESCO World Heritage Site;
- justification for choosing of sites inscribed on the List of World Heritage Sites;
- the collection and use of information from various sources (scientific literature, socio-cultural newspaper, Internet, etc.);
- improving the ability of team work.

11. Strategy:

a) Study work:

Participation of students in a debate on the most valuable man-made objects in Poland.

b) Methods and procedures:

Teaching activities:

- familiarize students with the goal of the course : understanding the need of protection of the anthropogenic values and their preferment ; learning criteria for the entry on the UNESCO World Heritage List, gain knowledge of the world-wide unique Polish qualities;
- familiarize students with theoretical information about the qualities of anthropogenic values and their division and the List of World Heritage Sites - the meaning and conditions of entry;
- familiarize students with the Polish objects already enlisted on the UNESCO World Heritage Site (multimedia presentation);
- distribution of students at two - three - person teams . Analysis of associated objects from the list - time sheet (attached) . Students work in groups, using various sources of information in order to complete a task , teacher's help in case of difficulty;
- presentation of the results of the teams - all groups. Proofreading, stylistic and substantive comments by the teacher;
- the task for students: Analysis and evaluation of criteria for the entry of objects on the UNESCO World Heritage List. Individual work - on the basis of sources available in the Internet. Control of the task by the teacher, to help solving problems; verification of fulfilling the task;
- presentation of the effects - statement to the class (a selected student) . The discussion in front of the class , evaluation of a student's speech;
- summing up - synthesis of knowledge and skills acquired during the lesson.

Learning activities / Steps performed by the students:

Systematic taking notes, selection of information.

- a) Expanding the knowledge about Polish cultural heritage values.
- b) Cooperation in the team.
- c) Using a variety of information sources (scientific literature, dictionaries, encyclopedias, newspapers, the Internet, the source texts); critical selection of information.
- d) The use of knowledge from different fields: tourism, cultural knowledge, art, Polish, history, science, geography).
- e) Characteristics of anthropogenic objects.
- f) Long-term student speech on a given topic, class forum, participation in discussion, exchange of views on lesson's topic.
- g) Minding the correctness and the style of the dialogue (spoken and written).

12. Evaluation:

- a) Validation of the performed tasks.
- b) Evaluation of students' speeches.

13. Partners:

- teacher of vocational subjects, teacher of knowledge of the culture, history teacher, teacher of geography

14. Bibliography:

- www.geotur.republika.pl
- www.poland.gov.pl
- www.unesco.pl

Worksheet - I

The Old Town in Cracow



Answer the following questions:

1. Give the names of the objects from the list of UNESCO World Heritage Site

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.....

2. Name the architectural style in which it was built:

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3. In which century were the monuments built:

.....

4. Give the reasons for entering the World List of Cultural Heritage:

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Worksheet - II

Salt mine in Wieliczka



Answer the following questions:

1. Describe the object:

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.....

2. Name the architectural style in which it was built:

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3. In which century was the monument built:

.....

4. Give the reasons for entering the World List of Cultural Heritage:

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.....
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.....

Worksheet - III

Auschwitz – Birkanau



Answer the following questions:

1. Describe the object:

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2. In which century was the monument built:

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3. Give the reasons for entering the World List of Cultural Heritage:

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Worksheet - IV

The Old Town in Warsaw



Answer the following questions:

1. Give the names of the objects from the list of UNESCO World Heritage Site

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2. Name the architectural style in which it was built:

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3. In which century was the monument built:

.....

4. Give the reasons for entering the World List of Cultural Heritage:

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Worksheet - V

The Old Town in Zamość



Answer the following questions:

1. Give the names of the objects form the list of UNESCO World Heritage Site

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2. Name the architectural style in which it was built:

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3. In which century was the monument built:

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4. Give the reasons for entering the World List of Cultural Heritage:

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Worksheet - VI

Medieval Town complex in Toruń



Answer the following questions:

1. Give the names of the objects form the list of UNESCO World Heritage Site

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2. Name the architectural style in which it was built:

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3. In which century was the monument built:

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4. Give the reasons for entering the World List of Cultural Heritage:

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Worksheet - VII

Teutonic Castle in Malbork



Answer the following questions:

1. Give the names of the objects form the list of UNESCO World Heritage Site

.....
.....
.....
.....

2. Name the architectural style in which it was built:

.....
.....

3. In which century was the monument built:

.....

4. Give the reasons for entering the World List of Cultural Heritage:

.....
.....
.....
.....

Worksheet - VIII

Churches of Peace



Answer the following questions:

1. Give the names of the objects form the list of UNESCO World Heritage Site

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.....
.....

2. Name the architectural style in which it was built:

.....
.....

3. In which century was the monument built:

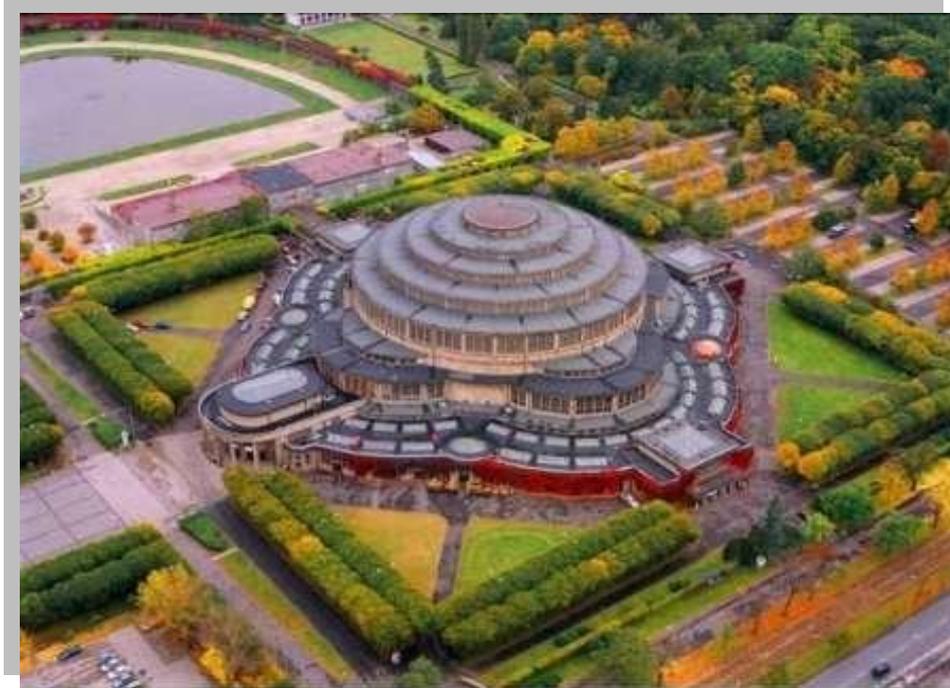
.....

4. Give the reasons for entering the World List of Cultural Heritage:

.....
.....
.....

Worksheet - IX

Centennial Hall in Wrocław



Answer the following questions:

1. Give the names of the objects form the list of UNESCO World Heritage Site

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.....
.....

2. Name the architectural style in which it was built:

.....
.....

3. In which century was the monument built:

.....

4. Give the reasons for entering the World List of Cultural Heritage:

.....
.....
.....
.....

Crosscurricular activity no.11

1. **School:** " Zespół Szkół Ponadgimnazjalnych in Somonino" – vocational high school
2. **Teacher (s):** Mariusz Kocur , a geography teacher
3. **Form / No. of students:** Class I - 27 persons
4. **Date:**
5. **Time available:** 45 min.
6. **Topic:** *Demographic diversity of societies*

7. **Type of lesson:** Cross-curricular (geography, mathematics, computer science, languages)

8. **Necessity/argument:**

The population structure is a composition of elements characteristic for the entire population - conducted professions, age groups, education, marital status, place of residence, sex, race, religion , etc. The population structure analysis are used, among others, for planning social or health policy .

9. **Aim:**

- Changes in world population ,
- Diversification of natural increase in the world and life expectancy in the world,
- Knows the most populous countries in the world and the countries with the highest and lowest birthrates,
- The effects of negative population growth,
- Demographic structure of the societies of "young" and "older", gives examples,
- Knows the phase of demographic development,

10. **Objectives:**

- Knows the basic principles of working with a computer and printer network,
- Knows the principle of using MS OFFICE package, in particular the text editor and spreadsheet.

A student can (understands):

- show on the map the most populous countries in the world,
- Is able to interpret and analyze statistical data, charts, and an age and gender pyramid, to draw correct conclusions,
- Calculate the ratios of births and deaths and natural increase,

- Is able to explain the reasons for diversification of natural increase in the world,
- Explain the causes and consequences of "demographic explosion",
- To predict the effects of high and low growth,
- Explain the reasons for diversification of life expectancy in the world,
- Analyze thematic maps and use at work already known information and work with the textbook,
- Is able to draw the correct conclusions and save them,
- Is able to work in a group , organize his work,
- Can use a text editor and spreadsheet WORD,
- Can use the Clipboard adequately,
- Can make a graphic presentation of data /graphs/,
- Can save the file on a disk,
- Use an inkjet printer.

11. Strategy:

– Study work:

Participation in working with a spreadsheet and text editor in conjunction with the development of demographic issues concerning the world's population,

Methods and procedures:

Teaching activities:

- a) Reminding the rules related to work on a computer with a text editor and spreadsheet.
- b) Reminding the basic concepts in connection with the above issues.
- c) Preparing computers for work, entry into a spreadsheet.
- d) Introduction to basic demographic expressions:
 - reminding expressions like: demography, population growth, real growth, natural growth rate, birth rate, death rate, the baby boom, the demographic decrease.
 - Preparation of atlases and textbooks.
- e) The division of students into 4 - person teams and hand in tasks for work – Annex 1
- f) Summary of work - synthesis of knowledge and skills gained during the lesson. Each group in their work is to present the data in statistical tables and graphs and present appropriate proposals. Each group shall record their work on the drive. Each group is to choose a person to present and summarize the work of the group for the rest of the students.

Learning activities/Steps performed by the students:

- Critical selection of information.
- Expand knowledge of demographic issues.
- Cooperation in the team.
- Use knowledge from different fields: geography, mathematics, computer science,
- Statement of the student on a given topic to the class, participation in discussion, exchange of views on the lesson's topic.
- Minding the correctness and the culture of the speech (spoken and written).

12. Evaluation :

- Validation of the tasks performed.
- Assessment of students.

13. Partners: geography teacher , maths teacher , science teacher

14. Bibliography: <http://www.stat.gov.pl/gus>

Annex 1

Group I

Analysis of changes in world population on the basis of statistical data.

- Changes in the population of the world by continent in millions and % in the years 1900 - 2000 (own calculations);
- Comparison of the data and drawing conclusions;
- Finding countries with the largest populations;
- The reasons for such situation, comparing data;
- The causes and consequences of "demographic explosion".

Group II

Population growth in selected countries of the world.

- Calculation of population growth in selected countries of the world on the basis of statistic data;
- Calculation of the ratio of births , deaths and natural increase in those countries;
- Comparison of data, the use of previously known information and draw of correct conclusions (when is the rate of natural increase rising, in which countries is it the

- biggest and in which is it negative, what are the effects of negative natural increase - based on the textbook);
- Demographic increase and decrease - an explanation of the phenomenon and its consequences,
- Society: " young " and " aging " - comparison of the demographic structure.

Group III

Gender and age structure of the population of the world.

- Analysis of the population of selected countries by age;
- Countries with predominance of young people (19 and younger) and the countries with the majority of older people;
- Finding the causes of such situation;
- Analysis of the average length of life and drawing conclusions (causes of differentiation);
- Analysis of the gender structure of the population of selected countries in the world - comparison of the coefficient of feminization;
- Countries with the largest and smallest factor of feminization - the cause of diversity;

Group IV

Demographic development phase .

- Analysis of the graphs showing the phase of demographic development;
- Presentation of the demographic characteristics of the phases of development;
- Examples of countries appearing in 1st, 2nd , 3rd , 4th phase of demographic development;

Crosscurricular activity no.12

1. **School :** " „Zespół Szkół Ponadgimnazjalnych in Somonino” – vocational high school
2. **Teacher (s):** Robert Zielinski , a history teacher
3. **Form / No. of students:** Class I - 27 persons
4. **Date:** November 2014
5. **Time available:** 90 min.
6. **Topic:** *Life in the medieval Gdansk*
7. **Type of lesson:** Cross - curricular (history , language, Polish , science)
8. **Necessity/argument:**

In 966, Poland, adopting Christianity , joined the world of European civilization. This event was important for forming the Polish state and decided about its cultural development. The Polan nation became a Christian state, and successfully faced the power of the Roman Empire of the German Nation , and along with the Frankish Empire, England and the Czech began to gain importance. In Gniezno archbishopric was established and in Polish cities there were built cathedrals. As Christianity began the Czech and the Roman priests, who spoke mainly Latin language, arrived. Latin becomes the first force in the Church, in the office of the duke, diplomacy and education. Gradually, there are priests of Polish origin, educated first at foreign schools, and then along with the establishment of Polish schools they were educated in Poland. Already in the twelfth century, some pupils of these schools embark abroad to Paris, Bologna and Prague in order to gain a more fundamental education.

The Piast dynasty successfully became to power in Poland. Boleslaw the Brave was crowned king and expanded the boundaries of the state. His son Mieszko II was considered to be the ruler as highly educated. Boleslaw the Bold came into conflict with the Church because of killing Bishop Stanislaus. The state is constantly at war: with the German tribes, Tatars, and finally with the Teutonic Knights. Boleslaw the Wry- with his last will divided the country into districts, Konrad Mazowiecki pulled on Polish lands of the Teutonic Knights, Wladyslaw the Short and Casimir the Great made a great act of unification of Polish lands and strengthen the forces of the state. The merit of Casimir the Great is also founding a university in Krakow. Polish-Lithuanian Union means an increase in the power of these two united states. King Wladyslaw Jagiello brings the defeat of the Teutonic Knights at the Battle of Grunwald. Queen Jadwiga rebuilds the University of Cracow.

9. Aim:

- Skillful use of various sources of knowledge;
- Pursue their own interests ;
- Skillful gathering materials and clustering around specific topics ;
- Developing knowledge about the culture of their region and its relationship with the culture of the nation ;
- Development of computer skills , handling WORD , Internet - Explorer , search engines , Internet ;
- Practical application of knowledge ;
- The effective interaction of the group.

10. Objectives:

- to use the computer as planned ;
- Transfer text files between programs , characterize the historical and cultural background of the Middle Ages ;
- List the historical figures associated with the history of the region;
- List the professions most commonly grown in the region in the Middle Ages ;
- Properly handle the definitions they met during the lesson ;
- List the Gothic style features and identify the most important monuments of Gothic architecture in the region ;
- List the names typical for the region ;
- Explain the etymology of words indicated ;
- To present the legends associated with the place of residence;
- Solve the problems creatively ;
- Skillfully take notes .

11. Strategy:

Study work:

Participation in searching of a variety of information about medieval Gdansk.

Methods and procedures:

Teaching activities:

- a) familiarize students with the goal of the lesson and the course of activities carried out .
Remind principles of working in the computer lab , the principles of information retrieval

on the Internet , the use of the information contained in the bar of relevance for web links and rules governing the transfer of information into Word .

- b) a reference to the issues discussed in the previous few lessons from the Polish language and history associated with the era of the Middle Ages.
- c) The division of students into 3 - person teams, then open a Word document, entitle it, "Life in a medieval Gdansk', familiarize themselves with the instructions, proceed to carry out specific tasks (Annex No.1). Teacher, controlling the work of the students, helps them surf the Internet or in the transmission of the selected information into Word. Then the students select their captured material that is printed for each group. Under the guidance of a teacher , students present the results of their actions. The work of individual groups are saved on the disk for the next lessons to use for developing a "Mini folder about medieval Gdansk".
- d) Summary of work - synthesis of knowledge and skills gained during the course.

Learning activities / Steps performed by the students :

- Critical selection of information.
- Expand knowledge about medieval Poland.
- Cooperation in the team.
- Use knowledge from different fields: art , language, Polish , history, science.
- Longer student speech on a given topic, forum class, participation in discussion, exchange of views on lessons.
- Ensuring the correctness and the culture of speech (spoken and written).

12. Evaluation:

- Validation of the tasks performed .
- Evaluation of students' loud speeches.

13. Partners: history teacher, Polish language teacher , science teacher

14. Bibliography:

- www.wiem.onet.pl
- www.leksykony.pl / Middle Ages
- www.historia.px.pl
- <http://historia.trojmiasto.pl/historia-gdanska.html>
- <http://www.gdansk.pl/turystyka> , 89.684 . html

Crosscurricular activity no.13

1. **School:** Kursenai Polytechnic School, Public Institution, Kursenai, LITHUANIA
2. **Teacher(s):** Mr. Linas Laureckis, the teacher of chosen sport (sport dance) and Mrs. Dijana Udavičiūtė, the teacher of mathematics.
3. **Form/No of students:** 30 students from AM-49/K-19/PK-20 groups.
4. **Date:** 18th of November, 2013.
5. **Time available:** 1 hour (45 minutes)
6. **Topic:** *Rhythm and Ways to Express the Function*
7. **Type of lesson:** Cross-curricular (sport, music, dance and math)
8. **Necessity/ Argument:**
 - First, the teacher explains - why music and dance requires rhythm? Timbre and meter for the music.
 - How to express the function?
 - Examples. Students listen to the rhythm and count the strokes, thereby creating the feature. The function is expressed in the table and in the graphics.
9. **Aim:** how the rhythm is associated with mathematics?
10. **Objectives:**
 - Recording the function according to the rhythm.
 - The linear function will be reflected in the table and graphs of functions will be drawn.
11. **Strategy:**
 - **Study work:** Students count the strokes. They print the feature, and express it in the table and graphics.
 - **Methods:** explanation, demonstration, individual work, group work.

Teaching activities:

Students are divided into groups.

Students are introduced: What is the rhythm? (Method: explanation and demonstration)

The concept of rhythm is often accepted. Rhythmically ticks the clock, the heart of the man beats also rhythmically, the day changes the night, and autumn always comes after summer: the change of seasons.

Music consists of sounds of different lengths: some are longer, others are shorter. Thus, the beat is of the same length and of the same sounds. The beat is created by the composer. In general, none of melody is possible without rhythm. Melody without rhythm - just a set of sounds, but the rhythm without melody can exist! Many Eastern and African countries have dances which are performed only by rhythmic percussion instruments!

Rhythm - an important mean of expression. It is very important to express the character of music. Timbre and meter for the music.



What is the function of bonding: (Method: Explanation and demonstration)

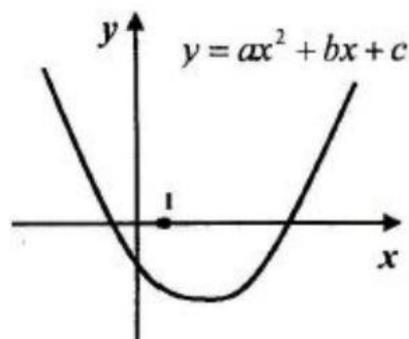
- Formula;

$$f(x) = ax^2 + bx + c$$

- Plate;

x	-2	-1	0	1	2
f(x)					

- Graphics;



- Words.

Carry out an example. Is it related to the rhythm?

While students perform the task, the teacher asks questions (Unfinished sentences and reflection questions. Students extend sentences and read them to the group or class friends):

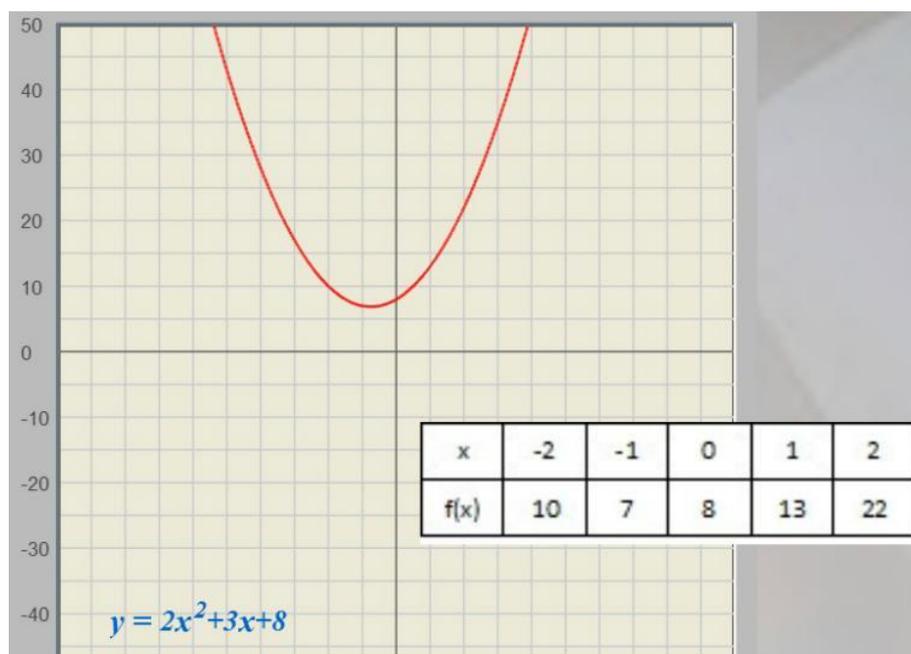
I learned that lesson ...

It was interesting ...

I would like to find out more ...

This tutorial fared ...

Music can not be without rhythm as math without numbers.



Learning activities/ Steps performed by the students:

- Students try to extract rhythm by applauding.
- Three different groups of students beat the rhythm, while the other group of students count - how many beats are included into the stroke. The resulting feature;
- Students expressed the feature table and graphics. They see how rhythm is expressed mathematically;
- **Organization and interaction:** teacher-student, student-student;
- **Materials and equipment:** paper, ruler / tape, worksheets.

12. Evaluation:

- Practical evaluation through checking upon the accuracy of the results obtained;
- Direct observation of the students throughout the activity;
- Self-evaluation.

13. Evaluators of the lesson: I. Tumėnienė, Headmistress assistant for education and S. Paulauskienė, Project manager from Kursenai Polytechnic School, Public Institution.

14. Bibliography:

1. V. Sičiūnienė, A. Mikaliauskienė “Matematika, bendrasis kursas, vadovėlis 11 klasei” 2005, Kaunas.
2. J. Knyvienė, M. Vosylienė “Matematika, bendrasis kursas, vadovėlis 11-12 klasei”, 2008, Vilnius.
3. A. Steponavičius “Matematika”, 1998, Kaunas.

Crosscurricular activity no.14

1. **School:** Kursenai Polytechnic School, Public Institution, Kursenai, LITHUANIA
2. **Teacher(s):** Mr. Nerijus Maskaliovas, teacher of Lithuanian language
3. **Form/No of students:** XI th form, 18 students
4. **Date:** 12th of October, 2013
5. **Time available:** two lessons - 90 min.
6. **Topic:** *Illustration of Vytautas Macernis' Poetry*
7. **Type of lesson:** Cross - curricular (IT, Lithuanian language, English language).
8. **Necessity/ Argument:**

Every day we talk about new teaching methods in our schools. In reality brain storming, role plays, group work are no more new methods. We need to find new methods and techniques to visualize the world of literature. Our students face difficulties to understand literature without visualization and exemplification. Students like watching films, but they are not interested in reading books. The challenge for teachers is to find the best way to transfer teaching material. Illustration of poetry is a new method which provokes pupils' imagination. It supports a more creative approach to teaching of literature using IT.

9. **Aim:** to give students new techniques for analyzing poetry using IT.

10. Objectives:

- to form and develop the skills of illustration of poetry;
- to develop the strategies for selection of information (the best websites, the most appropriate images);
- to develop skills of team work , as well as interpersonal skills;
- to develop IT using skills(internet, power-point).

11. Strategy:

Step 1 Teachers give 6 questions for students about life and poetry of V. Mačernis. Each question has 2 right answers. After that 18 students make 6 groups of 3 persons.

Step 2 The teacher of Lithuanian language presents the new poem of Vytautas Macernis and discusses the ideas, tries to illustrate the time and place.

Step 3 The teacher of English language gives 3 different translations. Students discuss all of them and they chose only one translation.

Step 4 Every line (or two lines) of the poem make a different image in the mind of students. It provokes their imagination. The task is to find the most appropriate equivalent for this imaginary picture in the internet. The teacher of IT explains the search capabilities.

Step 5 There are a lot of possibilities of choice. Students discuss and make the best choice of the picture. After that they make power point presentations in Lithuanian and in English. If is necessary, they ask for advice.

Step 6 Each group makes presentation and explains their choice.

12. Evaluation:

- ✓ *Practical evaluation through checking upon the accuracy of the results obtained;*
- ✓ *Direct observation of the students throughout the activity;*
- ✓ *Self-evaluation.*

13. Partners: teacher of Lithuanian language Nerijus Maskaliovas, teacher of English language Kristina Voitkevici, teacher of IT Rene Tamosaitiene.

14. Bibliography:

1. Cooper, Ph. 1999. Secret of Creative Visualization. Boston: Red Wheel/Weiser;
2. Webster, R. 2011. Creative Visualization for Beginners. Llewellyn e-book edition.

Crosscurricular activity no.15

- 1. School:** Kursenai Polytechnic School, Public Institution, Kursenai, LITHUANIA
- 2. Teachers:** Mrs. Dijana Udaviciute, teacher of mathematics and Mrs. Rene Tamosaitiene, teacher of informatics.
- 3. Form/No of students:** 20 students from AM-45 group.
- 4. Date:** 4th of November, 2013.
- 5. Time available:** 1 hour (45 minutes)
- 6. Topic:** *Is Math an Art?*
- 7. Type of lesson:** Crosscurricular (e.g. Mathematics, informatics)
- 8. Necessity/ Argument:**

In these technological development times mathematics is becoming popular and prestigious among all sciences. Mathematics occupies a special place – it is necessary in computer science, in physics and in chemistry. Mathematics is used in finance, insurance, statistics, as well as in medicine, astronomy, and many other diverse areas. Calculator, phone, camera, television, computer - all these things "start" with math and only later they occur in

physics and other sciences. We deal with math every day – we count money, time , measure distances ...

But there is another niche in which mathematics takes quite an important place - it's an art. A very famous lithuanian professor E. Kutka says: "Art is inseparable from mathematics because, as they say, mathematics is a foundation for all arts." (E. Kutka, 2010)

In short, the aim of the work - relying few examples reveal the value of mathematics in art and creativity of the importance of mathematics in science.

9. Aim: Is Math an Art?

10. Objectives:

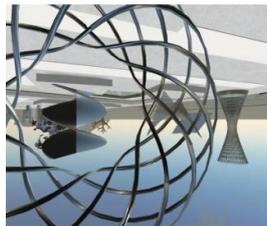
- Looking at the math differently.
- How does math relate to art?
- Write a thesis: Is mathematics an art?

11. Strategy:

- **Study work:** Students in a computer science classes online collects information about the math in art. Writing an essay about it.
- **Methods and procedures:**

Teaching activities:

The teacher explains the connection between mathematics and art existing for hundreds of years. Mathematics was used in building the gothic cathedrals, oriental rugs, mosaics and tiles. Geometric shapes inspired by cubism and expressionism. Sculptors topologies used as the basis of their works. Mathematicians and artists continues to create stunning works and still exploring the visualization of mathematics.



Fibonacci ring:

Mathematical Fibonacci (inscribed Fibonacci) sequence named after the famous 13th-century Italian mathematician name. It is when every third number is the previous sum of the two numbers. This ring – Holmes Craft attempt to embody the artist's series of ornate rings which balls arranged according to the first four Fibonacci number.



The teacher tells you to find information on the Internet: Finding Mathematics in art and in life?

And describe in writing.

Prepare presentations and present them to classmates.

Learning activities/ Steps performed by the students:

- Find information on the internet or in books.
- Students work individually or in groups.
- Prepare presentations and present them to classmates.
 - **Organization and interaction:** teacher-student, student-student.

12. Evaluation:

- Practical evaluation through checking upon the accuracy of the results obtained;
- Direct observation of the students throughout the activity;
- Self-evaluation

13. Partners: informatics teachers, Irena Tumeniene, Headmistress assistant for education and Salvinija Paulauskiene, Project manager from Kursenai Polytechnic School, Public Institution.

14. Bibliography:

- <http://www.kontroliniai.lt/matematika-menas.php>;
- http://en.wikipedia.org/wiki/Mathematics_and_art;
- <http://staff.washington.edu/rockne/math-art.pdf>.

Crosscurricular activity no.16

1. **School:** Kursenai Polytechnic School, Public Institution, LITHUANIA
2. **Teacher(s):** Mr. D. Urbietis teacher of Physics and Mrs. F. Piguleviciene teacher of ethics.
3. **Form/No of students:** 18 students from AM-49 and AM-48 groups.
4. **Date:** 12th of November, 2013.
5. **Time available:** 1 hour (45 minutes)

6. **Topic:** *The free fall of bodies from physics to philosophy*

7. **Type of lesson:** Cross-curricular (physics and ethics).

8. **Necessity/Argument:**

- One famous ancient philosopher Aristotle was also a physicist. He said that the faster the body goes down, the heavier the body becomes. The medieval philosopher-physicist Galileo Galilei denied Aristotle's theory.
- Students practiced Galileo's free fall experiment and disproved Aristotle's theory.
- Students carry out a practical task and demonstrate that feelings can be deceptive.

9. **Aim:** Discussing the law of free fall to find out how physics relates to philosophy.

10. **Objectives:**

- Learn and practice Aristotle's and Galileo's gravitational laws.
- Conclude whether it is possible to rely entirely on the senses, identifying the material objects associated with a single idea.

11. **Strategy:**

- **Study work:** Using the same shape but different mass blocks proves gravitational law.
- **Methods and procedures:** narrative, demonstration, conversation, individual work, pair work, group work, pageant, brainstorming.

Teaching activities: Teachers explain how physics is separated from philosophy. Discussing Aristotle's and Galileo Galilei's gravitational theories. Debated whether it is possible to rely on the senses.

Learning activities/Steps performed by the students:

- Students used the pads of the same shape, but of a different mass. They have proven that freely disposed blocks from the selected height fall at the same time and Galileo Galilei was right.
- Students put a spoon in a glass of water and noticed that the image shifted (breaks). Students said more examples when our senses mislead us.

12. Evaluation:

- Direct observation of the students throughout the activity.
- Self-evaluation.

13. Evaluators of the lesson: I. Tumènienė, Headmistress assistant for education, S. Paulauskienė, Project manager and A. Koveriene, career coordinator from Kursenai Polytechnic School, Public Institution.

14. Bibliography:

- P. Peciuliauskiene, Fizika 11 klasei, 2002;
- Aster Ernst von, Filosofijos istorija, 1995.

Crosscurricular activity no.17

1. **School:** Colégio Casa-Mãe
2. **Teachers involved:** Mafalda Souto, Paula Loureiro
3. **Form:** 12th Form / Classes A and B ; 22 students
4. **Date:** October 2013
5. **Time available:** 2 classes (90 minutes x 2)
6. **Topic:** *Portuguese Literature*
7. **Type of lesson:** Cross-curricular: English / Portuguese
8. **Necessity/ Argument:** Make students realize contents cross boundaries of school subjects and involve different areas of knowledge; Raise awareness regarding translation issues in poetry.
9. **Aim:** Recite Portuguese poetry translated in English
10. **Objectives:** Translate poetic / lyric texts; recite poems in English
11. **Strategy:**
 - a. Study work: poems analysed in the Portuguese class
 - b. Methods and procedures: translate the poems and prepare to recite them in English
 - c. Teaching activities: the teacher observes and clears doubts; students work as autonomously as possible
 - d. Learning activities/ Steps performed by the students: group work: students divide tasks and prepare the translations and the recitation; on Library Day, to celebrate this day, students recite poems in the school library
12. **Evaluation:** Class evaluation, formative (no grade, but comments on the areas of improvement; assessment by the teacher, the group and the other groups)

13. **Partners:** -
14. **Bibliography:** Poems in Portuguese; English dictionary

Crosscurricular activity no.18

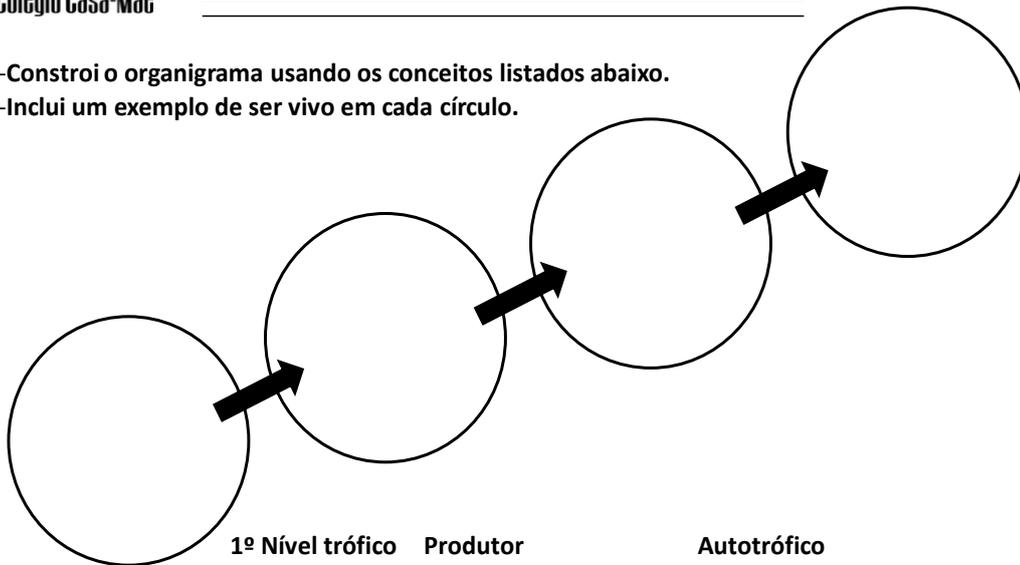
1. **School:** Colégio Casa-Mãe
2. **Teachers involved:** Edgar Fernandes, Paula Loureiro
3. **Form:** 8th Form / Class A ; 18 students
4. **Date:** October 2013
5. **Time available:** 4 classes (45 minutes x 4)
6. **Topic:** *Ecosystems + Food Chain*
7. **Type of lesson:** Cross-curricular: English / Natural Sciences
8. **Necessity/ Argument:** Make students realize contents cross boundaries of school subjects and involve different areas of knowledge; Provide students with vocabulary to deal with topics from other areas in English (preparation for upper learning levels).
9. **Aim:** Explain contents of Natural Sciences in English
10. **Objectives:** Explain in text / topics concepts presented in the form of mind map and diagram
11. **Strategy:**
 - Study work: contents taught in Natural Sciences class
 - Methods and procedures: build a mind map and a diagram with concepts and key words; rephrase these into text
 - Teaching activities: Natural Sciences – students check their knowledge of the content by applying key words to a mind map and a diagram; English – students apply their knowledge and explain the processes learnt by writing a text / topics
 - Learning activities/ Steps performed by the students: group work: students complete the schemes in the Natural Sciences class and then write the text / topics in the English class
12. **Evaluation:** Class evaluation, formative (no grade, but comments on the areas of improvement; assessment by the teacher, the group and the other groups)
13. **Partners:** -
14. **Bibliography:** Student's textbook of Natural Sciences; English dictionary

Anexa 1



FOOD CHAIN	NATURAL SCIENCES	SCHOOL YEAR 2013/2014
Students / Class	TEACHER	DATE

- Constroi o organigrama usando os conceitos listados abaixo.
- Inclui um exemplo de ser vivo em cada círculo.



- | | | |
|------------------|---------------------|--------------------------------|
| 1º Nível trófico | Produtor | Autotrófico |
| 2º Nível trófico | Consumidor 1ª ordem | Heterotrófico |
| 3º Nível Trófico | Consumidor 2ª ordem | Fluxo unidirecional de energia |
| 4º Nível Trófico | Consumidor 3ª ordem | Ciclos de matéria |

Food Chain Description

- There are different levels in the matter cycles, called trophic levels.
- In the 1st trophic level there are the producers; they use energy from the sun to produce food.
 - Example: carrot, cabbage
- In the 2nd level there are first-order consumers; they eat the producers, whose energy isn't fully transmitted to the eaters.
 - Example: rabbit
- In the 3rd level there are the second-order consumers; they eat the first-order consumers; again, not all the energy from the prey is absorbed by the predator.
 - Example: fox, boar

Crosscurricular activity no.19

1. **School:** Colégio Casa-Mãe
2. **Teachers involved:** Filipe Ferreira, Paula Loureiro
3. **Form:** 8th Form / Class A ; 18 students
4. **Date:** February and March 2014
5. **Time available:** 4 classes (45 minutes x 4)
6. **Topic:** *Natural resources / sustainability/ economic activities*
7. **Type of lesson:** Cross-curricular: Geography/ English
8. **Necessity/ Argument:** Make students realize contents cross boundaries of school subjects and involve different areas of knowledge; Provide students with vocabulary to deal with topics from other areas in English (preparation for upper learning levels).
9. **Aim:** Read and analyze/organize contents in an English article related to Geography curriculum
10. **Objectives:** Explain concepts presented in text in the form of *cornell* note taking tables, force field analysis diagrams and mind maps; prepare students for a stakeholder decision making negotiation (in collaboration with Natural Sciences)
11. **Strategy:** Study work: contents taught in Geography class. Methods and procedures: read and analyze an English article, organize information in the form of *cornell* note taking tables, force field analysis diagrams and mind maps. Teaching activities: English – students read an article and take notes through a *cornell* note taking table; Geography – based on the information collected and organized in the English class, students create a set of schemes (force field analysis diagrams and mind maps). Learning activities/ Steps performed by the students: group work: students read the article and take notes in the English class and then create the schemes in the Geography class.
12. **Evaluation:** Class evaluation, formative (no grade, but comments on the areas of improvement; assessment by the teacher, the group and the other groups)
13. **Partners:** -
14. **Bibliography:**
 - Student's book of Geography;
 - http://www.bbc.co.uk/schools/gcsebitesize/geography/energy_resources/what_resources
 - <http://www.education.nationalgeographic.com/>

Example of Cornell Note Taking model

Name Becatriz Motta

Date 4/2/2014

Cornell Note Taking

Record notes in the Notes column in brief phrases or abbreviated text. After reviewing your notes, write questions and key words in the Cues column. Briefly summarize the notes in the Summary column.

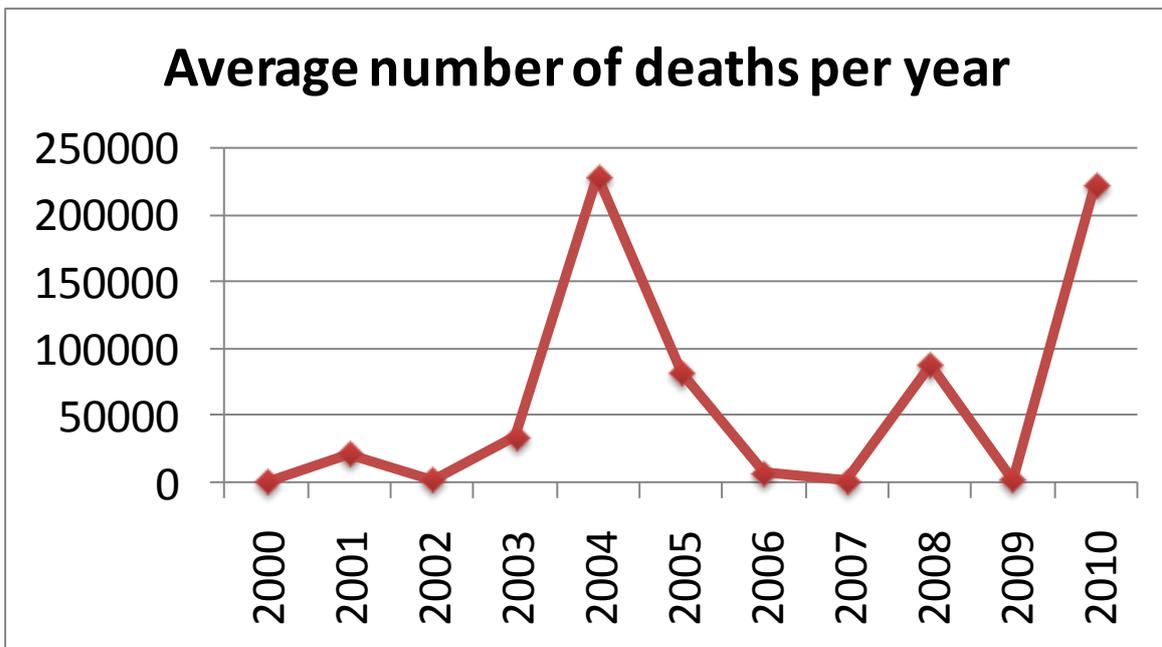
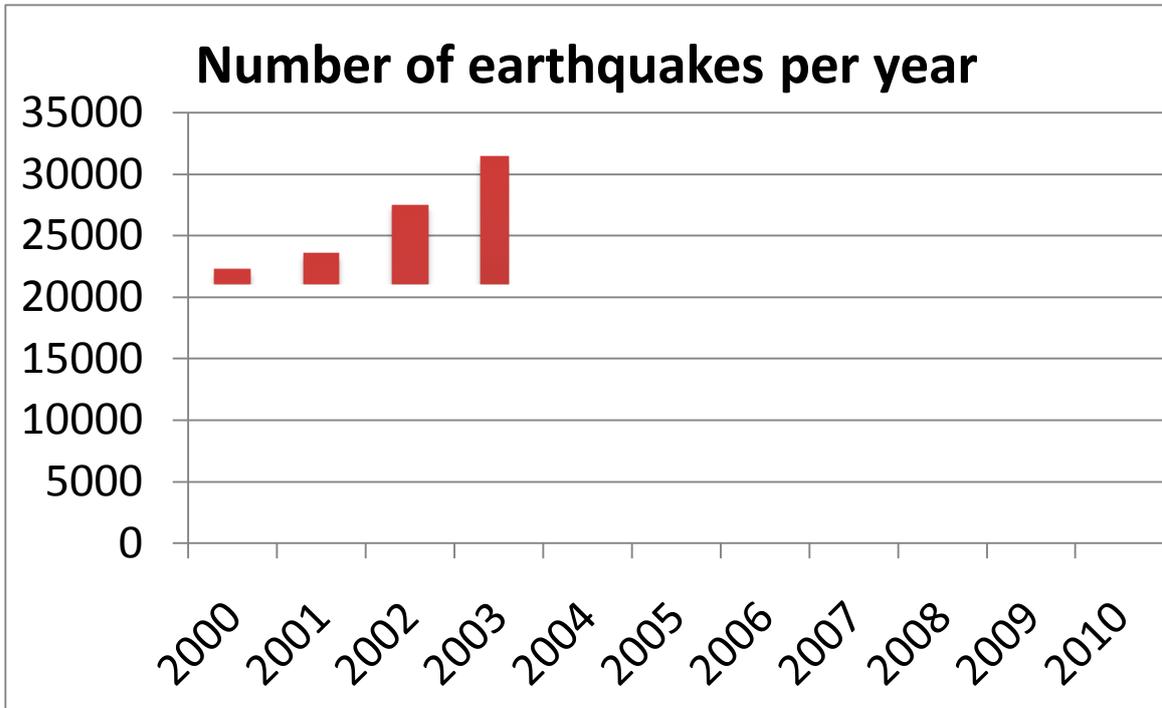
<p>Cues</p> <p>Quais são as consequências do uso dos recursos? Como são divididos os recursos? Quais as consequências do uso dos recursos? Como melhorar a escassez dos recursos? Quais os prós e contras do uso dos recursos?</p>	<p>Notes</p> <ul style="list-style-type: none"> • com o crescimento da população, há um aumento dos recursos naturais são elementos da natureza dos recursos • são aproveitados por nós economicamente • são divididos em quatro categorias: minerais e recursos energéticos, recursos do solo, da água e (de) biológicos • uso dos recursos: MEC e LEDs consequências do seu uso: <ul style="list-style-type: none"> • socio-econômicas: - energia alternativa - aumento do preço do petróleo, energia e gás - aumento dos preços da exploração e extração dos recursos • ambientais: - poluição do ar - aquecimento global - florestas em risco • políticas: - reduzir emissões de gás e carvão - políticas forçadas a mudar estilo de vida → conservar ambiente para gerações futuras e evitar o seu uso. → os recursos alternativos são finitos como melhorar a escassez de recursos sustentáveis: <ul style="list-style-type: none"> - praticar ecoturismo - reduzir - produtos reutilizáveis - limitar a emissão de carbono - não usar CFC, cumprir o protocolo de Kyoto - substituir recursos por outros menos presentes → prós e contras: - não preservar para a administração - problemas ambientais ao nível de vida - ambiente deve ser preservado - os lixo precisam de crescer - continuar a consumir para ter uma boa vida
<p>Summary Devemos consumir sem prejudicar o ambiente, preservando-o.</p> <p>Há consequências do uso de recursos naturais</p> <p>O texto trata da definição de recursos naturais, de algumas consequências positivas e negativas da sua exploração e como preveni-las. O texto refere também a importância dos recursos naturais para os países desenvolvidos e em desenvolvimento.</p>	

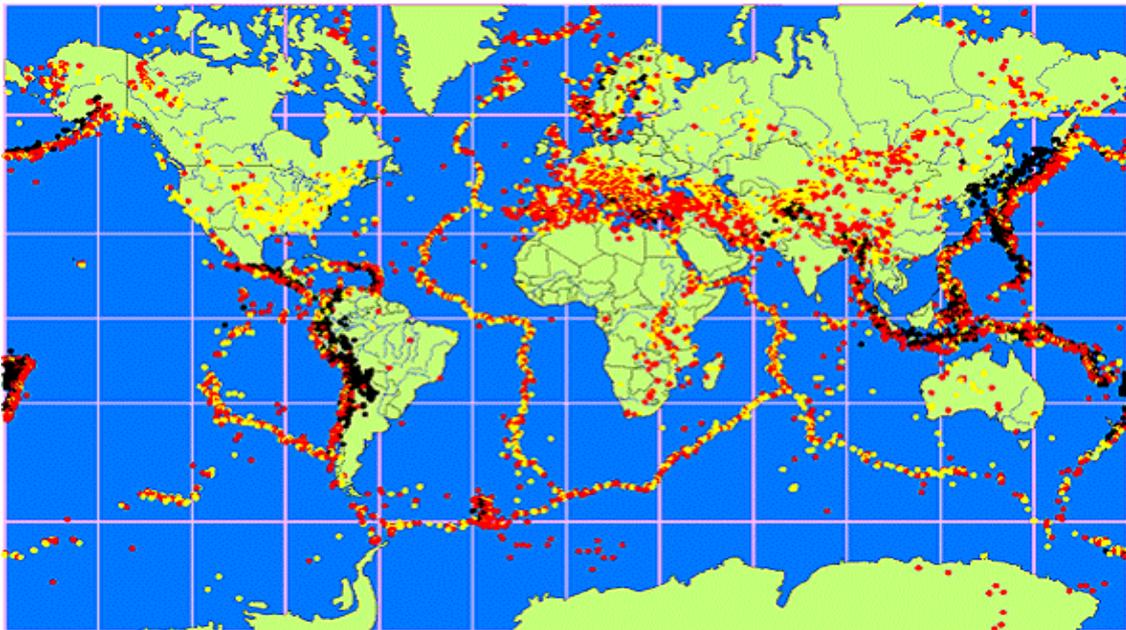
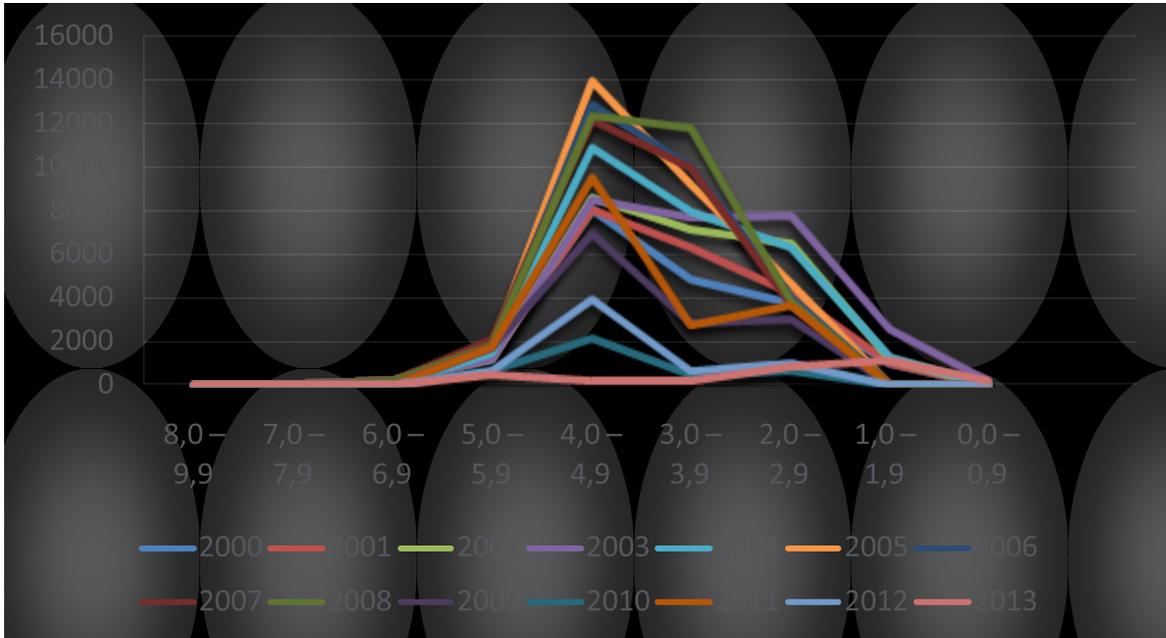
Crosscurricular activity no. 20

1. **School:** Colégio Casa-Mãe
2. **Teachers involved:** Paula Loureiro, Luís Moreira, Alfredo Silva
3. **Form:** 10th Form / Class A ; 22 students
4. **Date:** February 2014
5. **Time available:** 4 classes (90 minutes x 4)
6. **Topic:** *Earthquakes in the 21st century*
7. **Type of lesson:** Cross-curricular: English / Geology / Maths
8. **Necessity/ Argument:** Make students realize contents cross boundaries of school subjects and involve different areas of knowledge; provide students with vocabulary to deal with topics from other areas in English (preparation for upper learning levels).
9. **Aim:** Analyse phenomena of earthquakes worldwide; work the results into graphics
10. **Objectives:** Analyse and present natural phenomena in graphics and turn data into statistics; Summarize information; Present information and gathered data in English.
11. **Strategy:** Study work: contents taught in Geology class and Maths class; Methods and procedures: group work (each group works a different level of the topic related to earthquakes and epicenters worldwide in the 21st century); Teaching activities: Geology (analysis of data); Maths (statistics and graphics); English (presentation of conclusions).
12. **Evaluation:** Class evaluation, formative (no grade, but comments on the areas of improvement; assessment by the teacher, the group and the other groups).
13. **Partners:** -
14. **Bibliography:**
 - <http://www.education.nationalgeographic.com>;
 - different websites with data

Anexa 1

Examples of graphics built by the students:





Crosscurricular activity no.21

1. **School:** I.T.S. “Maria Letizia Cassata” Gubbio –(PG) Italy
2. **Teacher(s):** Cacciamani V.(teacher of Biology), Giorgi E. (teacher of Chemistry), Piccotti R. and Pierdica M.(teachers of English)
3. **Form/No of students:** classes 4 B1, 4B2, 4B3 (total 70 students-aged 17, organized in different groups)
4. **Date:** from 29th of October till 19th of November, 2013
5. **Time available:** 6/8 hours
6. **Topic:** *We are what we eat (Health education–Nutrition)*
7. **Type of lesson:** Cross-curricular (Biology,Chemistry, English Language, Maths)
8. **Necessity/ Argument:** to verify and apply the chemical principles of food respecting the biological needs of the human body
9. **Aim:** to make students aware of the importance of a balanced nutrition
10. **Objectives:**
 - to become aware of food habits
 - to learn to know the components of food
 - to learn to recognize junk food, wrong habits and consequential food disorders
 - to relate food with energetic need
11. **Strategy:** CLIL methodology
 - **Study work:**
 - **Methods and procedures:** Students work in one big circle, in groups and in pairs

1st step

Teaching activities

Learning activities

Teacher’s tasks	Students’ tasks
Asks Students to say their names and a metaphor to better describe their lifestyle /way of being;	In a big circle respond and write on a coloured sticker
Draws a big tree on a poster representing the Health Tree	Hang the stickers on the poster of the Health tree
Says out (or writes) some key words related to the food: Meals?breakfast?what? full/light?where? at school /at home?snacks?how many?	Formulate the questions orally

Soft drinks?how often?food shopping?prepares snacks? portions of fruit and vegetables ? water? vegetarian?	
Writes on board the word “ food “and make Ss convey nouns related to it	Say out words as a warming up
Asks four Students to make up the four food categories from the lexis written on the board	Make four categories (proteins, carbohydrates, vitamins and lipids)using different colours
Performs a listening activity	Listen , take notes and fill in the gaps

• **Self evaluation:**

- Teacher make students write at home as many questions as possible related to the key words activity ;
- Teacher hands out the “diary “ the students have to keep for a week.

2nd step/1st part

Teaching activities

Learning activities

<p>Leads the revision through the check of the questions assigned for homework</p> <p>Asks to analyze the data reported on their diaries as follows:</p> <p><i>How many people have breakfast</i></p> <p><i>How many handfuls of fruit and vegetables people have a day</i></p> <p><i>How many people drink at least 1,5 litre of water a day</i></p> <p><i>How many people eat fish once a week</i></p> <p><i>How many people do physical exercise for 20 mins. a day.</i></p>	<p>Answer</p> <p>Work in groups , analyze the data and tabulate them on a histogram.</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

2nd part

Warm up: Teacher asks Ss some “Old wives’ tales” both to make fun and to verify the scientific value; **Teacher** hands out a list of “food facts” and altogether complete the questionnaire.

Teaching activities

Learning activities

Split the students into 6 different groups (as from the paragraphs presented in the passage to be read and reported by the students)	Read and translate the passage carefully focusing their attention on the definitions and content in order to be able to report in front of the class the key content
Fishes out some keywords related both to	Answer giving full explanation / a member

the passage and their knowledge such as. <i>Balanced diet/ nutrient/cell/protein/ fat/saturated/ unsaturated/ Carbohydrates/ starchy food/bacteria/ fibre/ wholemeal flour/vitamins/disease/minerals/water</i>	of the group by turn
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------

• **Self evaluation:**

- Teacher make students to write a personal report on the results of the histograms and a personal comment on the activities carried out so far.
- Teacher gives the full passage analyzed in class to all the students with a list of questions to be answered written at home.

3rd step:

Teaching activities

Learning activities

Asks two students to come to the blackboard and draw the food pyramid	Discuss and draw the food pyramid
Elicits the elements of the environmental pyramid from the Ss and asks Ss to give reasons for their opinions.	Participate , check and compare their answers
Illustrates a selection of a power point presentation made by the Barilla Center for Food and Nutrition	Participate , ask questions and take notes.
Hands out an article summarizing the main concepts of the two pyramids	Focus their attention on the information achieved

• **Self evaluation and final production:**

- Teacher make Ss write their opinions (what they liked /they didn't like) on two different colored stickers and stick them on the Health tree.
- Teacher make students (the six groups) to illustrate in a poster (six posters) the contents learned

13. Partners: teachers involved in the activities

14. Bibliography:

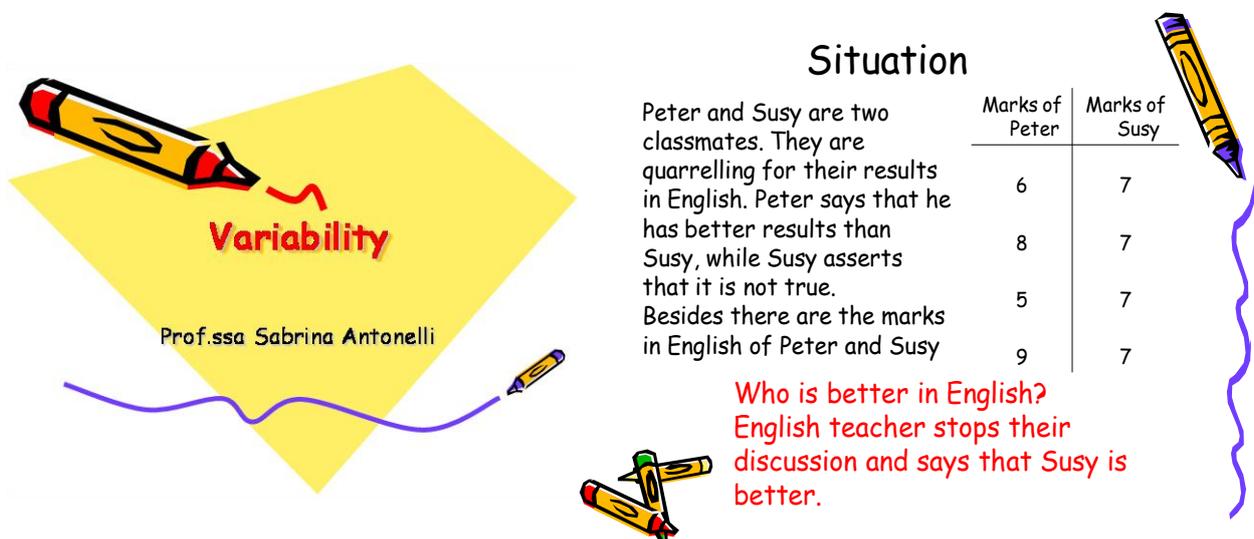
- **P.Briano, ESP-Chemistry, Microbiology & Biotechnology, Edisco;**
- *www.barillacfn.com, www.slideshare.net/barillacfn*

Crosscurricular activity no.22

1. **School:** I.T.S. “Maria Letizia Cassata” Gubbio –(PG) Italy
2. **Teacher:** Antonelli S.(teacher of Maths)
3. **Form/No of students:** class 2 Tourism (total 18 students-aged 16)
4. **Date:** 6th of November 2013
5. **Time available:** one lesson of two hours of a module concerning the” Descriptive Statistics “
6. **Topic:** *Variability*
7. **Type of lesson:** Cross-curricular (Descriptive Statistics -Maths, English Language)
8. **Necessity/ Argument:** Variability of numeric data
9. **Aim:** to make students aware of the importance of the variability to describe a phenomena
10. **Objectives:**
 - to learn to compute variability of quantitative data
 - to learn to compare variability of different data concerning the same phenomena
11. **Strategy:** CLIL methodology
 - **Study work:**
 - **Methods and procedures:** interactive lesson with PowerPoint slides, students work in pairs

1st step

Teacher presents the topic by using these slides, inviting students to make questions and reflections.



Variability

Prof.ssa Sabrina Antonelli

Situation

Peter and Susy are two classmates. They are quarrelling for their results in English. Peter says that he has better results than Susy, while Susy asserts that it is not true. Besides there are the marks in English of Peter and Susy

Marks of Peter	Marks of Susy
6	7
8	7
5	7
9	7

Who is better in English?
English teacher stops their discussion and says that Susy is better.

Slide 4

We can compute the mean!

Mean of Peter' marks

$$\mu_1 = \frac{6+8+5+9}{4} = \frac{28}{4} = 7$$

Mean of Susy' marks

$$\mu_2 = \frac{7+7+7+7}{4} = \frac{28}{4} = 7$$

The have the same mean!
But the teacher says that Susy is better! She is not right!



The Teacher says that Susy is more constant in the study!

There is not variability in marks of Susy. She has always got 7. Peter is less assiduous in the study.

How can we measure the variability of Peter's marks?

Standard deviation

Standard deviation provides an average distance for each value from the mean. We can express the standard deviation with the Greek letter sigma. Different methods are used to compute standard deviation: they depend on how data occur.

If you have a list of numbers x_1, x_2, \dots, x_n , the standard deviation is computed as follows:

$$\sigma = \sqrt{\frac{(x_1 - \mu)^2 + (x_2 - \mu)^2 + \dots + (x_n - \mu)^2}{n}}$$

The square of the standard deviation is called variance. The standard deviation of Petrer's marks 6, 8, 5, 9 is:

$$\sigma = \sqrt{\frac{(6-7)^2 + (8-7)^2 + (5-7)^2 + (9-7)^2}{4}} = \sqrt{\frac{1+1+4+4}{4}} \cong 1,58$$



When a frequency distribution is given, the computation of the standart deviation is as follows.

Variable	Absolute frequency	$(x_i - \mu)^2 \cdot n_i$
x_1	n_1	$(x_1 - \mu)^2 \cdot n_1$
x_2	n_2	$(x_2 - \mu)^2 \cdot n_2$
...
x_r	n_r	$(x_r - \mu)^2 \cdot n_r$
	N	T

$$T = (x_1 - \mu)^2 \cdot n_1 + (x_2 - \mu)^2 \cdot n_2 + \dots + (x_r - \mu)^2 \cdot n_r$$

therefore the standard deviation is

$$\sigma = \sqrt{\frac{T}{N}}$$



2nd step

Teacher provides with these exercises inviting students to work in pair.

Exercises. 1) Find the mean and the standard deviation of the following sets of data:

1,2,1,3,2,2,5,1,1;

1,2,1,3,2,2,5,1,40;

5,6,6,7,8,6,5,6,6,9.

2) Two private enterprises have three employees. These are the monthly salaries:

- salary of employees of the Enterprise A: € 1.600,00, € 1.800,00 and € 2.300,00;
- salary of employees of the Enterprise B: € 1.200,00, € 2.000,00 and € 2.500,00.

Find the mean and the standard deviation of the monthly salaries of employees in these two little private enterprises and compare the numeric results.

3) Find the mean and the standard deviation of Number of members in a family:

Number of members in a family	frequency
1	24
2	36
3	52
4	38
5	24
6	16
	190

4) Find the mean and the standard deviation of the babies' weight at birth:

Weight at birth (Kg)	Babies
40 - 1,5	3
1,5 - 2,5	8
2,5 - 2,8	5
2,8 - 3,6	19
3,6 - 4,2	8
4,2 - 5,5	7
	50

3rd step

Teacher provides solutions of exercises and clarifications.

12. Evaluation:

- *Direct observation of the students throughout the activity;*
- *Self-evaluation*

13. Partners: teachers involved in the activities

14. Bibliography:

- P.Briano, ESP-Chemistry, Microbiology & Biotechnology, Edisco;
- www.barillacfn.com, www.slideshare.net/barillacfn

Crosscurricular activity no.23

1. **School:** I.T.S. “Maria Letizia Cassata” Gubbio –(PG) Italy
2. **Teacher(s):** Carletti M.(teacher of Religious Education), Pallucca P. (teacher of Italian Literature),Piccotti R.(teacher of English) Giombetti G (teacher of InformationTechnology)
3. **Form/No of students:** class 3 I, (total 14 students-aged 16)
4. **Date:** from 3 March to 31 March ,2013
5. **Time available:** 11/12 hours
6. **Topic:** *Italian Literature: “The Canticle of the Creatures” by San Francis of Assisi*
7. **Type of lesson:** Cross-curricular (Italian, Religious Education, English, ICT)
8. **Necessity/ Argument:**
Making literature student-friendly
9. **Aim:** To approach, analyze and appreciate one of the first poems of the Italian Literature
10. **Objectives:**
 - To link literature to other forms of artistic expression
 - To express the feeling of the poem through a video made by the students
 - To learn about imagery and stylistic features of poetry
 - To encourage creativity
 - To improve L2communicative skills
 - To develop IT skills

11. Strategy: CLIL methodology

Study work: literary language historical and social background(Middle Ages)

- **Method and procedures:**

Teaching activities	Learning activities	Timing
<p>Ist step</p> <p>Teacher of Religious education</p> <p>Introduces San Francis' life and his philosophy through visual material</p> <p>Asks questions</p> <p>Gives further information about the historical background to help the students to contextualise</p>	<p>Students watch the visual aids and answer the questions</p> <p>Students take notes</p> <p>Students search for more information at home and write a report</p>	1 h
<p>2nd step</p> <p>Teacher of Italian Literature</p> <p>Guides the students through the poem</p> <p>Makes students familiarize with the language of poetry (metrical forms, rethorical devices, metaphor, simili, assonance etc. lexis</p>	<p>Analysis of the poem</p> <p>Students are guided to reflect about the general meaning of the poem.</p> <p>They are asked to identify and find out specific elements in the text (poetic form, rhyme scheme, images, rhetorical devices, figures of speech, use of personifications, stylistic features, musicality etc.) and to complete tables</p>	2h
<p>3rd step</p> <p>Teacher of English</p> <p>Divides the text of the poem into small sections</p> <p>Encourages students to allow the text to have an effect on them and to express their own feelings and reactions</p>	<p>Students work in pairs (each pair translates a short section of the text from Italian into English and makes a slide containing the translated text and a picture to illustrate it.)</p> <p>Dictionary work</p> <p>Use of powerpoint</p> <p>All slides are collected and reordered in the right sequence to make a presentation giving the English version of the poem and the essential information about it</p>	2h
<p>4th step</p> <p>Teacher of ICT</p> <p>Records student's voices</p> <p>Splits the class into 2 groups</p> <p>Encourages students to develop research skills and autonomy</p> <p>Guides the assembling of the material.</p>	<p>Students read aloud the text they have translated in order to be recorded. Students (divided into 2 groups) surf the net to search for visual and audio material which may be linked to the message and the mood of the poem</p> <p>Group one is concerned with visual material; group 2 has the task to find music and sounds</p> <p>The two groups now work together, compare ideas and select the material (scenes from films, self-made videos, music.)</p> <p>They work in the ICT laboratory to assemble the visual material and the recording of their voices.</p> <p>They produce a video</p>	4 h

12. Evaluation

No grades but informal assessment (collecting information under normal class circumstances)

1) Throughout the activity:

Teachers observe and evaluate students' involvement in the project, and their abilities of :

- planning
- selecting and using aids
- problem-solving
- working in pairs and in groups
- suggesting original solutions
- taking responsibilities
- keeping documentation

2) At the end of the activity

In a workshop with the students and all the teachers involved

Teachers evaluate:

- The quality and the accuracy of the finished product
- The linguistic performance of the students

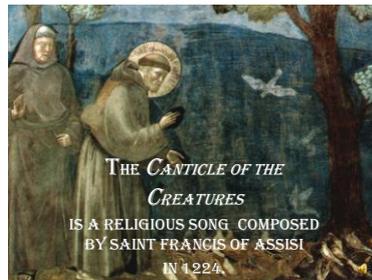
Students self-evaluate: what has worked and what hasn't, if the product is successful, if they would make any adjustments, what they have learnt in different areas of knowledge

13. Partners The teachers involved in the activity

14. Bibliography: Italian literature textbook:

- Baldi / Giusso / Razzetti – Zaccaria “Attualita' Della Letteratura 1 con Divina Commedia” Paravia
- AA.VV Active English Dictionary Longman

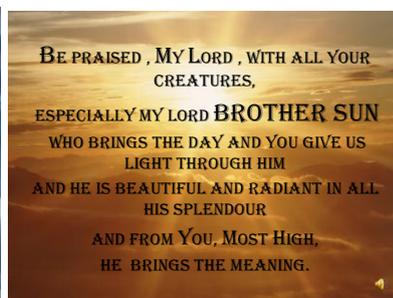
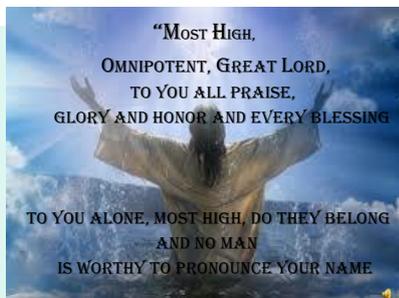
POWERPOINT PRESENTATION USED

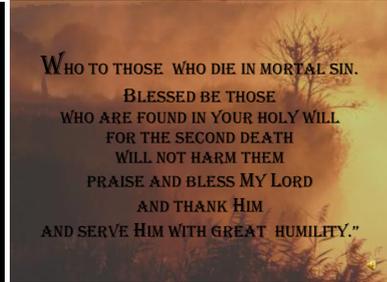
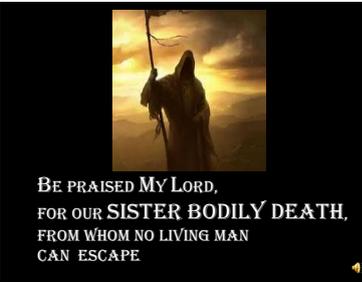
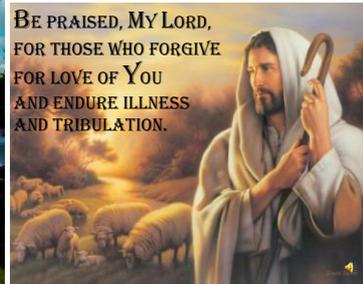
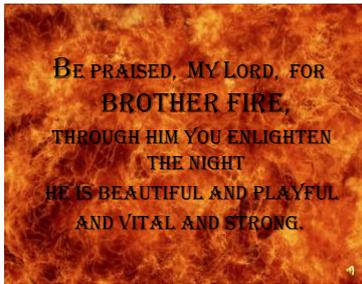


IT IS DIVIDED INTO THREE SECTIONS:
1) A PRAISE TO GOD FOR THE CREATURES (SUN, MOON, STARS, WIND, WATER, FIRE AND EARTH)
2) A PRAISE FOR THOSE WHO FORGIVE FOR THE LOVE OF GOD
3) A PRAISE FOR BODILY DEATH.

IT IS A PRAYER PERMEATED BY A POSITIVE VISION OF NATURE AS NATURE REFLECTS THE IMAGE OF THE CREATOR.

IT EXPRESSES THE SENSE OF BROTHERHOOD AND HARMONY BETWEEN MANKIND AND NATURE BECOMING ALSO A HYMN TO LIFE.





Crosscurricular activity no.24

1.School name: I.T.S. "M. L. Cassata" di Gubbio

2.Teachers : Laura Zampagli, Paola Pallucca

3.Number of students:20

4.Form : IV I Computer Science Course

5.N.° of hours: 10

6.Topic: *The Industrial Revolution in England*

7.Language level: B1

8.Type of lesson : cross -curricular activity (Clil); History and English

9. Objectives:

- To pick out the main features of the historical period when the Industrial revolution took place
- To find causes and consequences of the phenomenon
- To understand its economic, social and political aspects
- To improve the communication in English

10.Content/topics:

The causes of the Industrial Revolution, new fuel, new machines and methods of production, factories and factory work, social and economic consequences, the rise of the middle class, the Poor Law, the Charter of Rights, the Trade Unions.

Competences:

- to be able to recognize and to compare the main features of the historical and economic background;
- to be able to outline the historical and cultural context by reading or describing authentic material(Historic documents, photos and pictures) and reading History texts.

11.Material and equipment: selected passages from the history texts "Understanding Britain, by John Randle, ed.lingual House, "The Victorians, by Tim Wood, ed. Ladybird, "An illustrated History of Britain", by David Mcdowall. ed. Longman; photos and pictures from the web.

12.Strategies: cooperative learning, group presentation of multimedia products

13. Teaching activities/Learning activities:

Phases	Teachers/ students involved	Methodology/ strategy	Tools	Timing
1st phase	Teachers students	Warm up Brainstorming	Interactive board, slides, key words Key questions	1h
2nd phase	Students, teachers as tutors and facilitators	Guided text analysis Group work Skimming and scanning reading techniques	Passages from History texts, photos and pictures Bilingual dictionary	2h
3rd phase	Students Teachers as tutors and facilitators	Preparation of Power Point presentations Group work	Multimedia laboratory	2h
4th fase	students	Presentation of group work and discussion	Media room	3h
5th phase	Teachers Students	Feedback questionnaire	Classroom	1h
6th phase Test and evaluation	Students Teachers as monitors	Open questions, multiple choice questions, guided written production	Classroom	1h

14.Evaluation: multi task test(multiple choice, open questions)

15.Bibliography: selected passages from the history texts "Understanding Britain, by John Randle, ed.lingual House, "The Victorians, by Tim Wood, ed. Ladybird, "An illustrated History of Britain", by David Mcdowall. ed. Longman; photos and pictures from the web.

Enclosures:

1)An example of test:

1.The industrial revolution changed all aspects of life in Britain: illustrate in 50-60 words the changes which took place in:

- a.The countryside; b.Transport ; c. Cities

2. Which social categories did the middle class include? (30 words)

3. Where did most factory workers live ?

- a. In big blocks of flats
- b. In small uncomfortable houses
- c. In the country

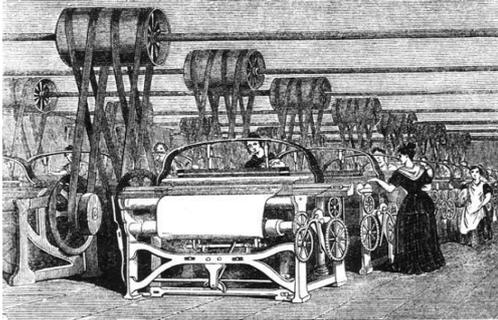
4. Which was the most important of these changes?

- a. Railways replacing roads
- b. Coal replacing wood as fuel
- c. Railways replacing canals

5. What were the working conditions in factories at the beginning of the 19th century? (30 words)

6.What was the Poor Law?(30 words)

7. Describe these pictures:



- a. _____

- b. _____

An Example of test

1)The industrial revolution changed all aspects of life in Britain: illustrate in 50-60 words the changes which took place in:

- a.Production of goods; b.Economy ; c.Society

2. Which factors allowed Britain to become the first industrial country in the world? (30 words)

3. Which industry saw the first benefits of innovations ?

- a. The canal transportation industry
- b. The textile industry
- c. The agricultural industry
- d. The railways

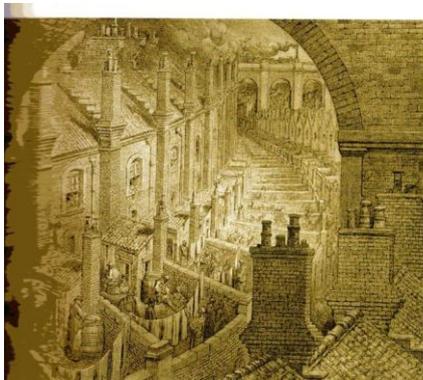
4. Which was the most important development?

- d. Railways replacing roads
- e. Steam engine replacing water power
- f. Machinery replacing people

5. Which actions and instruments did the working class use to improve their working conditions and to obtain more civil rights? (30 words)

6. What were workhouses? (30 words)

7. Describe one of these pictures:



19th-century print of Victorian housing for the poor.

afford them.



The urban poor continued to live in conditions of abject poverty. *Cold, Misery and Want Destroy their Youngest Child* (1847) by George Cruikshank. Victoria and Albert Museum, London.

a.

b.

POWERPOINT PRESENTATION USED:

<p>Industrial revolution</p> <ul style="list-style-type: none"> -The crisis -The poor law -Workhouses 	<p>The Crisis</p>  <p>After the Napoleonic wars peace came in 1815; suddenly, there was no longer such a need for factory-made goods, and many people lost their jobs.</p>	 <ul style="list-style-type: none"> • The general misery began to cause trouble in 1830: farmworkers were starving • Poor farmworkers without food tried to hunt animals for their families, but a new law came to prohibit this activity. • Consequently, many had to choose between watching their family go hungry or risking their freedom.
<p>The poor law</p> <ul style="list-style-type: none"> • A poor law in 1834 was intended to improve the help given to the needy. • During Victoria's reign, most poor people were helped by private charity. <p>It was meant to save money and to encourage people to look for work</p> 	<p>Workhouses</p>  <ul style="list-style-type: none"> • All those who needed help, such as orphans, the old, the sick and the unemployed, had to go into a workhouse. • Workhouses were feared and hated. • They were crowded and dirty, with barely enough food to keep people alive. 	

Crosscurricular activity no.25

1. **School: DON BOSCO , Wittenheim, France**

2. **TEACHER(S):** Mrs GERARD (English Teacher) Mrs MOTA-MARQUEZ (English and French Teacher), Mrs DEWISPELARE Communication, Mrs MANA (German)

3. **FORM/NO OF STUDENTS:** 3 classes: 21+ 17+13= 52

4. **DATE:** September-October 2013

5. **TIME AVAILABLE:** 14 Hours

6. **TOPIC:** *Communication and Telephone skills*

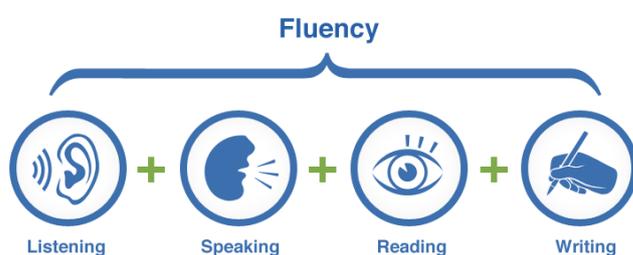
7. **TYPE OF LESSON:** Cross-curricular

8. **NECESSITY/ ARGUMENT:**

The world of modern business demands that students have the skills, both verbal and written, to effectively communicate in an ever-changing global business environment. Now, more than ever, effective communication is of paramount importance to all matters of international business in our region. Alsace is located on France's eastern border and on the west bank of the upper Rhine adjacent to Germany and Switzerland.

9. **Aim:** Therefore, if our pupils hope to have a successful business career, they have to:

- Be able to communicate clearly and concisely.
- Develop 4 skills activities: Reading, Writing, Speaking and Listening



10. **Objectives:**

In France, and particularly in our region, the secretarial and business world is becoming more specialized. Secretaries are responsible for coordinating the business lives of their employers. They must be able to speak several languages (French, German and English)

Executive secretaries and sales persons respond to telephone requests, process both email and regular mail, arrange the calendar of their employers, and represent the executive when he or she is out of the office. Medical secretaries keep doctor's offices running, performing many of the same duties as the executive secretary, but with additional medical knowledge necessary for the job.



Secretaries and administrators need to be computer savvy, have good people skills, and know how to handle the daily tasks of running an office in French, German and English.

11. Strategy:

- **Study work:** COMMUNICATION (Telephone and emailing)
- Texting
- Leaving a message/ Answering the phone/ Take an appointment in 3 languages
- Emailing
- **Methods and procedures:**

Teaching activities: 5 subjects: Communication/Business/French/English/German

A. Subject: Communication and Secretary (Mrs Dewispelaere)

Students who enroll Mrs Dewispelaere class learn practical communication. More specifically, this program is divided into two areas of concentration: **Business Writing and Telephone Skills.**

- **Business Writing** - In order to be effective in business, writing must be complete, concise, and accurate. Students will learn how to write professional business emails in an effective and concise manner.
- **Telephone Skills** - Students will learn how to focus on listening, making and receiving telephone calls effectively, leaving professional business messages, and managing unexpected situations.

B. Subject: French (Mrs Mota-Marquez)

Develop students writing and oral skills (writing personal letters, business letters, dialogues, taking notes)

C. Subjects: English and German (Mrs Gerard, Mrs Mota-Marquez, Mrs Mana)

When we make use of activities that have been specially designed to incorporate several language skills simultaneously (such as reading, writing, listening, and writing), we provide our students with situations that allow for well-rounded development and progress in all areas

of language learning. We refer to activities that make use of 'the four skills, in this section "Communication" we will discuss the 'four skills' as well some activities that can be used in our classroom to promote all four.

- Writing: emails, cover letters, create a blog
- Reading: Business situation
- Speaking: Practice with teachers and other students their telephone skills with role plays.
- Listening: CDs, Book activities and Youtube.

Learning activities/ Steps performed by the students:

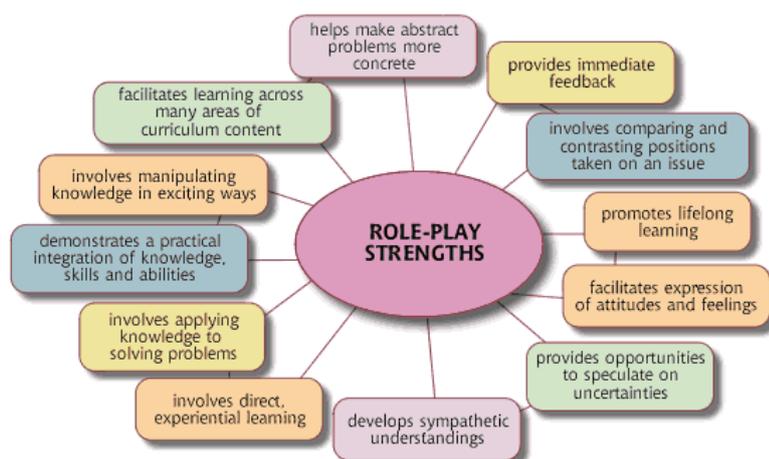
✓ **Step 1: Select two activities in relationship with our student professional interests** and that can be practice during their internship in December. This multi-disciplinary curriculum Implicate 4 teachers of different subject areas who agree to address the same theme with a common project. It was interesting to know what our colleagues were teaching and to try to find a project together. We decide that Communication was a perfect subject because our student really need to practice this skills before the next internship. We try all together to find a way to involve our student in the project and prove them how efficient it can be. This type of integration requires a high degree of teacher commitment which works great when there is high enthusiasm for the project.

✓ **Step 2: Start with a funny activity: Texting**

Text messaging is becoming an increasingly popular form of communication worldwide and around the world, especially amongst young people. We can use text messaging as a form of communication in many different situations (personal, business...) Our students send hundreds of texts every day, so they felt interested and they really enjoyed this classroom. We organize as well different quiz in English, German and French.

✓ **Step 3: Using role play in Communication, French, German and English class**

a. After our introduction: we give a few students some pieces of paper with instructions



to 'call' the teacher. You can use a cell phone if you have one, or you can just use your hand and say, "Bring! Bring!" When the students ask for you, say, "Sorry. he's not here right now. Can I take a message?" and see what kind of response this gets. After trying this a few

times, you can write some expressions on the board, focusing on the function of taking messages and the grammar of reported speech.

b. Class Set-up: The class is divided into two groups: callers and receivers. Callers get an activity A sheet and a role card. Receivers get an activity B sheet, a will-be-back note and a name tag. Receivers sit facing the wall and callers sit behind the receivers as in the picture to the right. When a caller wants to make a call, they tap the receiver on the shoulder and say, "Bring! Bring!" Receivers put the name tag on the back of their chair so that the callers know who they are calling.

❖ Class Activity Part I (Student-Student):

Callers sit down behind the receivers, tap them on the shoulders and the conversation begins. Callers ask to talk to their friend. Receivers tell them that the friend is out and gives them the details in the 'Will Be Back' note. The receivers then ask if they can take a message. The callers leave a message. When they are finished, the callers get up to call another friend on the list.

❖ Class Activity Part II (Student-Teacher):

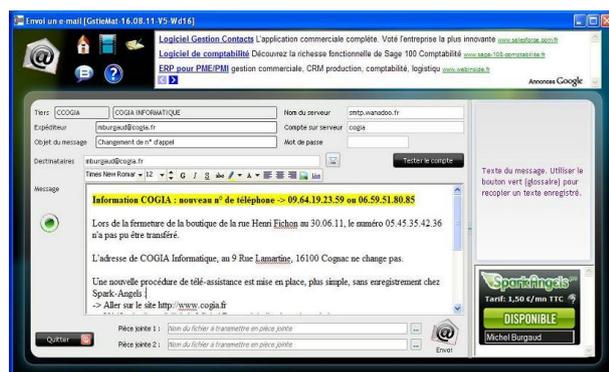
Roleplay with the teacher. We give them papers with different work situations (hotels, shop, firm) and they tried to answer (as secretary) or call a firm in order to have some informations or to talk with someone)

✓ **Step 4: Writing skills: How to write an effective business email?**

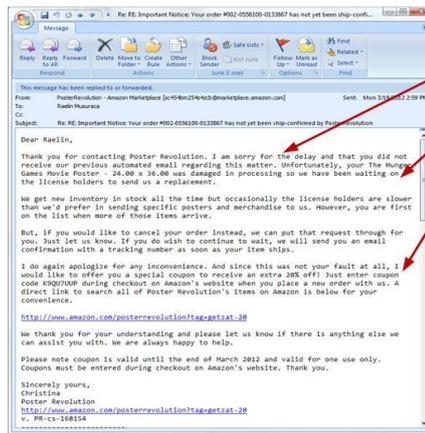
Students need to be personally involved in writing exercises in order to make the learning experience of lasting value. Encouraging student participation in the exercise in all these subjects, while at the same time refining and expanding writing skills, requires a certain pragmatic approach.

The four teachers had to be clear on what skills we were trying to develop. Why are the students learning Communication, English and German? Are there any specific future intentions for the writing (i.e. school tests or job application letters etc.). We decided that the most important part was emailing because our student are really used to this kind of tasks during their internship.

→ **In French/ Communication**



→ In English and German



In contrast to Keurig, this much smaller company does so many things right!

#1: While both companies apologize, this is sincere because the email is from a person. Keurig's email was from "Keurig, Incorporated."

#2: The email is detailed and specifically addresses my problem – and no the poster is not for me but my 11-year-old.

#3: Not only do they give me two alternatives to the problem, they also offer a coupon for my inconvenience.

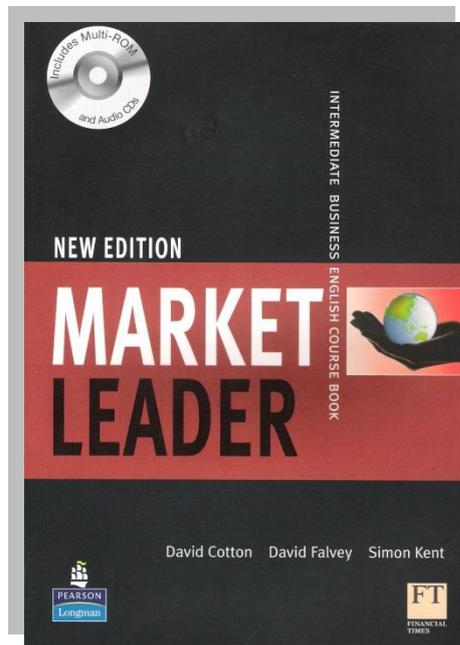
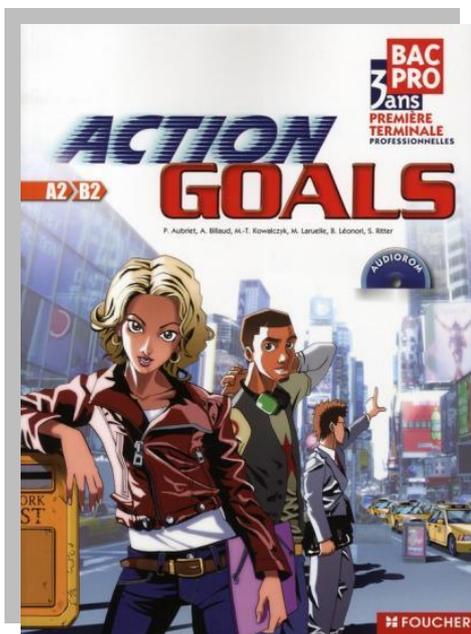
If a small company like Poster Revolution can do this right, why can't a large one like Keurig?

12. Evaluation: Oral and writing

13. Partners: Mrs GERARD (English Teacher) Mrs MOTA-MARQUEZ (English and French Teacher), Mrs DEWISPELAERE Communication, Mrs MANA (German)

14. Bibliography:

- Books: Goals (Terminales Bac pro), Be Pro, Take action, Market Leader, Total Business)
- ESL Worksheet, Programs and Internet: BBC (Learning English Program), Youtube



Crosscurricular activity no.26

1. **School:** DON BOSCO , Wittenheim, France
2. **TEACHER(S):** Mrs GERARD (English Teacher) Mrs MOTA-MARQUEZ (English and French Teacher), Mrs DEWISPELARE Communication, Mrs MANA (German)
3. **FORM/NO OF STUDENTS:** 3 classes
4. **DATE:** November/ December 2013
5. **TIME AVAILABLE:** 14 Hours
6. **TOPIC:** MY FIRST WORK EXPERIENCE/ MY INTERNSHIP
7. **TYPE OF LESSON:** Cross-curricular
8. **NECESSITY/ ARGUMENT:**

Internships will provide students the opportunity to test their interest in a particular career before permanent commitments are made.

Our necessities as teachers are to:

- Make students' internship a success
- Help them to find interesting **internships** that offer fantastic experience and lead to permanent jobs



9. **AIM:**Therefore, if our pupils hope to have a successful business career, we (teachers) have to:
 - develop their skills in the application of theory to practical work situations.
 - test their aptitude for a particular career before permanent commitments are made.
 - develop skills and techniques directly applicable to their careers.
 - help them adjusting from college to full-time employment.
 - Prepare them to enter into full-time employment in their area of specialization upon graduation
 - develop attitudes conducive to effective interpersonal relationships
 - motivate students to continue their education.



10. OBJECTIVES:

Work experience abroad becomes **more and more important**. Working in a German company

or International company in Switzerland allows our students to practice the language while gaining experience in a professional environment. As teachers we must train them to feel at ease with languages. This makes them more professional in negotiations and other business contacts, we are sure that it is an important advantage on the job market. We have to convince them to invest in better language skills in order to have new opportunities.

11. STRATEGY:

- **Study work: MY FIRST WORK EXPERIENCE**
- Analysis of different work experiences in several countries
- Describing an office
- Discussing business activities
- Random business situations
- Problems in the office

Methods and procedures:

Teaching activities: 5 subjects: Communication/Business/French/English/German



A. SUBJECT: BUSINESS/ COMMUNICATION AND SECRETARY (Mrs Dewispelaere)

- Coverletters and CV
- Professional behaviour

B. SUBJECT: FRENCH (MRS MOTA-MARQUEZ)

Develop students writing and oral skills (writing personal letters, business letters, dialogues, taking notes)

C. SUBJECTS: ENGLISH AND GERMAN (Mrs. GERARD, Mrs. MOTA-MARQUEZ, Mrs. MANA)

When we make use of activities that have been specially designed to incorporate several language skills simultaneously (such as reading, writing, listening, and speaking), we provide our students with professional situations that allow for well-rounded development and progress in all areas of language learning.

- *Writing:* Internship report, cover letters, CV

- *Reading*: International work experience situation
- *Speaking*: Role plays (In a shop/ At the hotel/ in an international firm)
- *Listening*: Our books/ Youtube.
- **We use videos to show our students what is wrong in their behavior and to improve their speaking skills in several languages**

LEARNING ACTIVITIES/ STEPS PERFORMED BY THE STUDENTS:

Step 1: Select two activities in relationship with our student professional interests and that can be practiced during their internship in December. We decided that “**INTERNSHIP**” was a perfect subject because our students really needed to practice these skills before the next internship. We all together tried to find a way to involve our student in the project and prove them how efficient it can be.

Step 2: Start with a interaction activity: “My first experience”

We tried to implicate students talking about their previous experience, it was important for us to review their last report (in French/ German and English)

Step 3: Using role play in Communication, French, German and English class

- a. After our introduction: We explain our students how ENGLISH AND GERMAN ARE PREDOMINANT LANGUAGES OF INTERNATIONAL BUSINESS IN OUR REGION. THAT’S THE REASON WHY, OUR BUSINESS ENGLISH AND GERMAN COURSES TRY TO PROVIDE THEM WITH THE LANGUAGE SKILLS NECESSARY FOR THE WORKPLACE. OUR LESSON WILL HELP THEM TO IMPROVE THEIR CONVERSATION, VOCABULARY AND FORMAL WRITING SKILLS.
- b. Practice: The activities listed below should not be approached as a class unit that can be completed within a prescribed period of time. It **takes time to identify, explore and pursue potential internships**. So, it's important to start these activities early (in October) and work on them, during two months.

Classroom activities that help students obtain internships include:

- identifying possible internships
- writing a CV
- writing a cover letter
- practicing an interview
- writing a thank you letter
- completing paperwork (pre-report)



- **Finding an internship opportunity is primarily the responsibility of the student.**

Class Activity Part I (Student): WRITING A CV AND A COVER LETTER

Although it's up to each student to find an internship, we provide them with introductions to help them connect with organizations that our **professional teachers** think are likely to benefit from student interns.

Before students start working on their **individual CV**, we want to have them fill out a job application as a classroom exercise. Use a job application form from a local business or organization that is familiar to our students. This gets students thinking about what kind of information organizations want to know about them.

As the students work on their resumes, we chat with them about their experience. We usually discover things they did not mention in their resume drafts. Highschool students have not had time to accumulate extensive job experience (because they are between 15 and 18 years old) For example, they may not realize that their languages or volunteer work should be emphasized on their resumes.

Class Activity Part II (Student-Teacher):

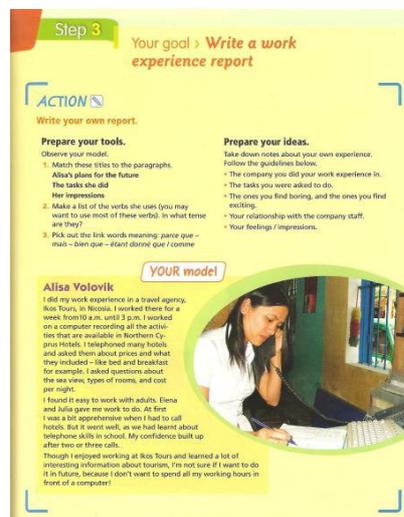
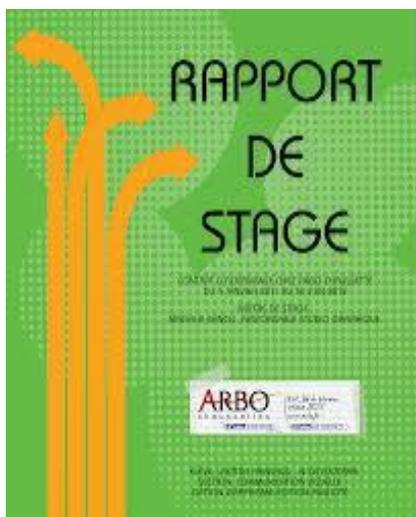
- Roleplay with the teacher. We give them papers with different work situations (hotels, shop, firm) and they try to answer (as secretary) or call a firm in order to have some information or to talk with someone)
- Interviewing

Step 4: Writing their report and make an oral presentation (5 minutes)

With Power point (In French/ German and English)

- **In French/ Communication**

- **In English and German**



12. Evaluation: Oral and writing

13. Partners: Mrs GERARD (English Teacher) Mrs MOTA-MARQUEZ (English and French Teacher), Mrs DEWISPELAERE Communication, Mrs MANA (German)

14. Bibliography:

- Books: Goals (Terminales Bac pro), Be Pro, Take action, Market Leader, Total Business) ESL Worksheet,
- Programs and Internet: BBC (Learning English Program), Youtube



OUR BLOG:



Crosscurricular activity no.27

1. **School:** Don Bosco Vocational School
2. **Teacher(s):** English / French / History
3. **Form/No of students:** 15 students - second year in vocational school studies Office clerk, salesforce and customer service sections
4. **Date:** January / February 2014
5. **Time available:** 16 hours
6. **Topic:** *Nelson Mandela and the apartheid*
7. **Type of lesson:** **Cross-curricular** including
 - French lessons : study of the poem “Invictus “,
 - History lessons : the apartheid in South Africa and comparison with the segregation in the USA and
 - English : study of apartheid and one of the main actors : Nelson Mandela.
8. **Necessity/ Argument:** the apartheid laws in South Africa and the struggle by Nelson Mandela for their abolition is seen as a historical event. The same happened in the USA. Understanding of the historical and political context of the country ;information about the different actors and their influence , leading to the abolition and the resulting consequences, awareness of present context , opportunities and difficulties.
9. **Aim:** discovering who was Nelson Mandela, what the apartheid and the segregation of races was, where and when it took place and the consequences of abolition.
10. **Objectives:**
 - in French class: study of the poem that helped Nelson Mandela in jail, find the original form and the author, study of the circumstances of the writing and the meaning.
 - In history class : study of the political origin of apartheid in South Africa and the different political parties , study of the parallel in USA with Rosa Parks example.
 - In English class : knowledge of the struggle against apartheid laws and the main actors, learning vocabulary about freedom and human rights.
11. **Strategy:**
 - **Studywork:** participation of students in a team speech concerning each point studied in class that seemed particularly relevant to them.
 - **Methods and procedures:**

Teaching activities:

- Brainstorming around Nelson Mandela based on the song of Simple Minds and Johnny Clegg.
- Looking at main steps of Nelson Mandela's life through several videos, listening and observing his main speeches, studying the poem and the film about his life, taking out the most important dates.
- Focus on key words and transparent words by listening carefully to a video or a film
- Answering basic questions about the topic and being able to re-use main elements for the final team speech.
- Giving main vocabulary about freedom and human rights.

Learning activities/ Steps performed by the students:

- Learning interrogative questions and their answers.
- Learning how to listen to a video focusing on key words .
- Learning the historical and political atmosphere of South Africa .
- Learning how to get important points out of an entire subject , being able to use them in a team speech.
- Learning specific vocabulary .
- Learning how to sum up numerous information.

12. Evaluation:

- Intermediate writing evaluation on a text with blanks to fill in
- final oral evaluation as a team speech.

13. Partners: French and history teachers, cinema

Materials used:

Appendix 1: Black People in English speaking Countries



Appendix 2:

Nelson Mandela :

Cloze Activity

Fill in the blanks below using the word bank

Word Bank:

arrested	Africa	laws	years
inspired	resolution	second	racial
civil	chief	South	grandfather
elected	statesmen	illness	President

Nelson Rolihlahla Mandela was a great leader who spent his entire adult life working for equality and justice in South _____. Mandela has _____ people around the world to work non-violently for a better life.

Mandela was born on January 18, 1918, in _____ Africa. He was named Rolihlahla, which means "troublemaker" in the Xhosa language. Mandela's _____ was the ruler of the Thembu people and his father was a local _____.

Mandela fought against apartheid, the laws that established _____ separation and oppression in South Africa. He was _____ for this and sentenced to life in prison in 1964. After spending 27 _____ in prison, he was released and was later _____ President of South Africa.

Mandela served as _____ of South Africa from 1996 until 1999 (he refused a _____ term). He championed reconciliation, the peaceful _____ of grievances after decades of repressive _____ against black South Africans. Without Mandela's leadership, South Africa might well have lapsed into a bloody _____ war.

Mandela died on December 5, 2013, at the age of 95. He died of natural causes after a long _____. He will be remembered as one of the greatest peace-makers and _____ of all time.

Crosscurricular activity no.28

1. **School:** Institution Don Bosco Wittenheim
2. **Teacher:** Aurore Landmann
3. **Form/N° of students:** 2nde GT/ 15 students
4. **Date:** from the 6 november 2013 to the 19 december 2013
5. **Time available:** 2 hours per week
6. **Topic:** discovering the history of art and write a short story in English and in French about architecture and architects in the French culture
7. **Type of lesson:** Cross-Curricular (culture knowledge, art, history, French language)
8. **Necessity/argument:** develop the personal culture of the student, smart search on internet
9. **Aim:** Do an exhibition in French and English at the school library with a fun story to make the exhibition easy to understand by all the students
10. **Objectives:** Understanding and characterization of architecture and work on the past in French and in English with the students.
11. **Strategy:**
 - Step 1: discovering architects
 - The students have to choose some French architects
 - They go on a search to the library and multimedia room to find information about what the chosen architects and architectural masterpieces.
 - Search in French

list of groups and works		
Monuments	Architects	Students
Louvre Pyramid	Le préfet Haussmann	Johanna/Théo
Sacré-cœur	Paul Abadie	Antoine/cécile
Versaille Castle	Le Vau Louis	Marie-lou/Céline
Notre-Dame	Jean Nouvel	Floriane/Chloé
Eiffel Tower	Le Corbusier	Salimata/ Myriam
Arc de Triomphe	Emile Aillaud	Marion/Laurine
	Vauban	Océane/Sarah

Step 2: French lesson : story writing

The students have a lesson on the rules of how to write a story in French and follow the steps here :

- presenting the situation: characters, the beginning of the story and the place where takes place the story
- find a trouble making event which devastates the situation at the beginning
- the characters try to resolve the problems with at least two actions
- then the outcome with finally the end of the story
- a final situation

These steps are meant to help the students base their stories on real facts and making them fun to discover by other students.

Once they found there stories in French they presented them to the French teacher who suggested appropriate corrections and attributed a mark.

Step 3: English lesson

They use their story and try to find the useful vocabulary

They have a lesson on the preterit which will help them write the story

They work on the different elements of the story in English with the teacher

They finish their stories and find related pictures

They make an exhibition at school.

Step 4: movie

Each group of student present their work by preparing what they would say

Making of a little movie presenting the exhibition

Evaluation:

First evaluation: the story in french					
the writing of the story		work accomplished in class		respect of the french writing rules	
degree 1: the student wrote a little without any details or relevance or respecting the rules	2pts	the students was not present and did the less to do,	1 pt	a lot of writings errors	2 pt
degree 2: the student make efforts to respect the rules but what he wrote was not relevant enough or out of the context	4 pts	the students was most innattentive but did a little to help his partner	2 to 3pts	the writing is good but there is some big mistakes in grammar	4 pts
degree 3: the students respect the rules and wrote a great story, with a great presentation of the monument/architects	6 to 8 points	the sudents was present, and work well with his partner , it is an equal work and a good investments	5 pts	good writing with some mistakes that don't disturb the compréhension	5 pts
degree 4: the student respect the rules and make a great story including the discoverings element	10 pts	Name:			
		Comments and mark:			

Second evaluation: the exhibition in english					
the writing of the story		work accomplished in class		respect of the english writing rules	
degree 1: the student wrote a little without any details or relevance or respecting the rules	2pts	the students was not present and did the less to do, he didn't participate to the making of the poster	1 pt	a lot of writings errors	2 pt
degree 2: the student make efforts to respect the rules but what he wrote was not relevant enough or out of the context	4 pts	the sudents was present, and work well with his partner , it is an equal work and a good investments, the making of the poster is ok	2 to 3pts	the writing is good but there is some big mistakes in grammar	4 pts
degree 3: the students respect the rules and wrote a great story, with a great presentation of the monument/architects	6 to 8 points	the sudents was present, and work well with his partner , it is an equal work and a good investments in the poster and in the story	5 pts	good writing with some mistakes that don't disturb to understand	5 pts
degree 4: the student respect the rules and make a great story including the discoverings element	10 pts	Name:			
		Comments and mark:			

Partners : English Teacher, French Teacher, History Teacher

Crosscurricular activity no.29

1. School : " I.E.S. La Vega de S. José " Secondary School, Las Palmas, Gran Canaria, Spain

2 . Teachers: Teachers from the areas of Math, Spanish, English, History, Art and Technology, plus a coordinating teacher to help bring all the areas together.

3. Form / No of students: The target group will be a selection of students from the first years of the lower secondary courses (1st - 4th) to the 1st year of the higher levels of study.

4 . Date: January, 2014

5 . Time available: From January to April 2014

6 . Topic : *"A MURAL ON JORGE ORAMAS' PAINTINGS"* Learning about the Life and Works of Jorge Oramas a painter born in Gran Canaria and who liked to reflect his town and people in his art.

7 . Type of lesson: Interdisciplinary (Math, Language, History, English, Drawing, Technology)

8. Necessity / Argument: Taking into account the fact that nowadays students are just interested in the new technological world; mobiles, internet (facebook, tuenti and so on) and art (painting sculpture) for them isn't trendy from their point of view, a group of teachers in an entertaining way want to show them how art represents their surroundings, culture and way of life. In this case their near past and perhaps the way of life of their relatives as well as making them proud of their origins in the sense of having their neighbourhood represented in valuable pieces of art. At the same time and making use of the presence of the Comenius Project itself, as the maximum example of team work and good practices, it is an excellent opportunity of collaborative work among students of different levels and ages which have never worked together in a same project.

- The idea is to produce a large mural on a Canarian painter made by different level students and various materials. The mural can be made by choosing one of Jorge Orama's paintings (shown below) or by a collage of his most representative pieces of work. As previously mentioned this great Canarian and indigenous pre - Cubist artist represents, among others, the physical environment of the neighborhood of S. Nicholas built into the side of the mountain, as well as the neighborhood of S. Jose where our High School is located. Therefore the paintings of Jorge Oramas show the landscape of Gran Canaria as well as the physical aspects of its inhabitants.

- The students not only would they be doing this, but they would be creating a short report on Jorge Oramas and his time through the different subjects.

9. Aim : To explore and promote the life and work of the Canarian painter as an important part of our cultural identity and the importance of his work. To promote the crosscurricular collaborative work in which students can feel part of this project as well as transmitting them the importance of being capable of achieving the target among the work of all and of each one of them.

10 . Objectives :

- To get each student to paint a section of the mural.
- To design the piece of work, with the use of the different means necessary and learning how to use them.
- To measure and establish the proportions of the mural.
- To research and learn about the life of Jorge Oramas, his period of time (performing a chronological axis on his life or historical context), and about his work especially on the location of them (reading and interpreting maps) and to write a report on it.
- To coordinate the work among the different subjects
- To translate the information into English.
- To write a final report on the project.

11. Strategy

StudyWorks

- To accomplish a large mural and devise a brief dossier on the Gran Canarian painter Jorge Oramas

Methods and Routines :

- The departments of Art and Technology . Will be responsible of the design and of the dimensions of the drawing , that is, how to raise it to be a large mural.
- The department of Mathematics . Will propose the measures of the mural and will divide it into smaller parts so that each student can do their own share of the great wall painting .
- The department of Spanish and Literature. Will gather information on his life and work.
- The department of Social Sciences. Will guide and help the students to seek for information about the period of time, the historical context and the location (map) of the landscapes of the paintings of Jorge Oramas
- The department of English will translate the brief information into English and any other information which could be needed.
- The departments of Physical Education and Art. Would organise a hike and would take pictures of the neighbourhood of San José and San Nicolás. Which could be used as part of

the wall painting, or could be used to make a study case of comparison between the neighbourhoods now and then according to how they were represented on the canvas. They will also be included into the Project Report. During the whole duration of the crosscurricular project the students will be photographed throughout the different phases.

Teaching activities:

- The process of construction of the Project - mural would be initiated by the Art and Technology Department who would decide the type of design to be made
- The students would draw pictures of the mural on the subject of Art and Technology.
- Following the Department of Mathematics would continue setting the size of the mural.
- In the meanwhile the other subjects would go working on their assignments.
- Each teacher in each subject will be in charge of sequencing the tasks and adapting them to the different students' levels and to the project itself. All this work will be included in the programme of each subject. As an example of what could be done we could mention what the Social Science Department would make. They would take a map of Gran Canaria, and would get the students to set the Districts of S. Nicolás and S. José in the capital as well as on the street plan of Las Palmas de Gran Canaria.
- Information on the period of time (early 1900) of Jorge Oramas from a political, economical, social and cultural point of view will be collected.
- Brief conclusions would be collected from each subject.

Learning activities / Steps performed by the students: The students will have to complete the following tasks in order to achieve the goal of this project:

- Follow the indications of the teachers.
- Control the mathematical operations necessary for the measurements.
- Control the different means to search for information: books, internet...
- Control the reading of maps.
- Knowledge of English.
- Comparison of the different eras, landscapes and neighbourhoods.
- Working cooperatively.
- Being creative

Organization and interaction: Interaction between teachers of the different departments , teacher-student , student-teacher, student-student.

12. Evaluation

- Students will be assessed according to the key competences dealt in the projects: Mathematical, Foreign languages, Learning to learn, digital, Social and Civic, sense of initiative and Cultural awareness Competences. All adapted to the levels of the students.
- They will also be evaluated checking upon the accuracy of the results Obtained: the Mural and the information on Jorge Oramas in both languages.
- Direct observation of the students THROUGHOUT the activity
- Self evaluation

13.Partners : Teachers of the Department of Art and Technology, Mathematics, Languages, Social studies, and Physical Education.

14. Bibliography:

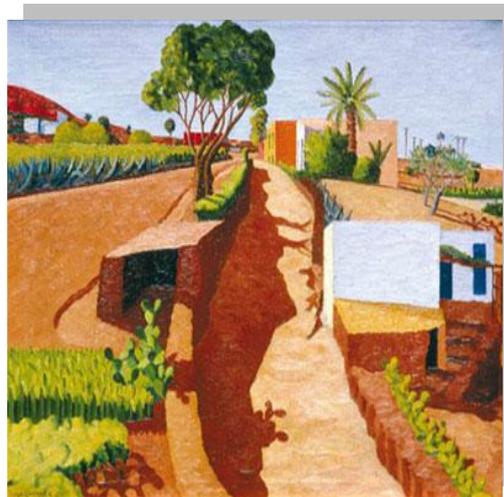
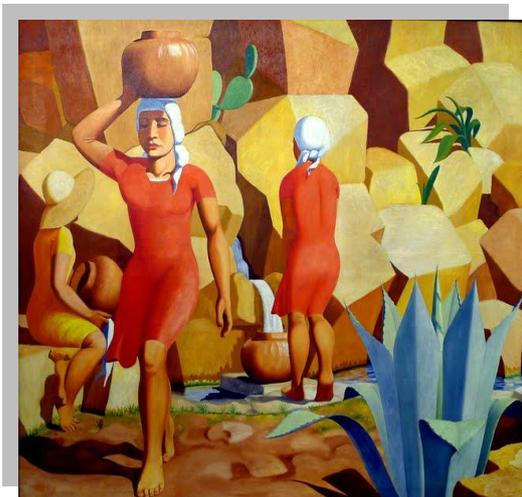
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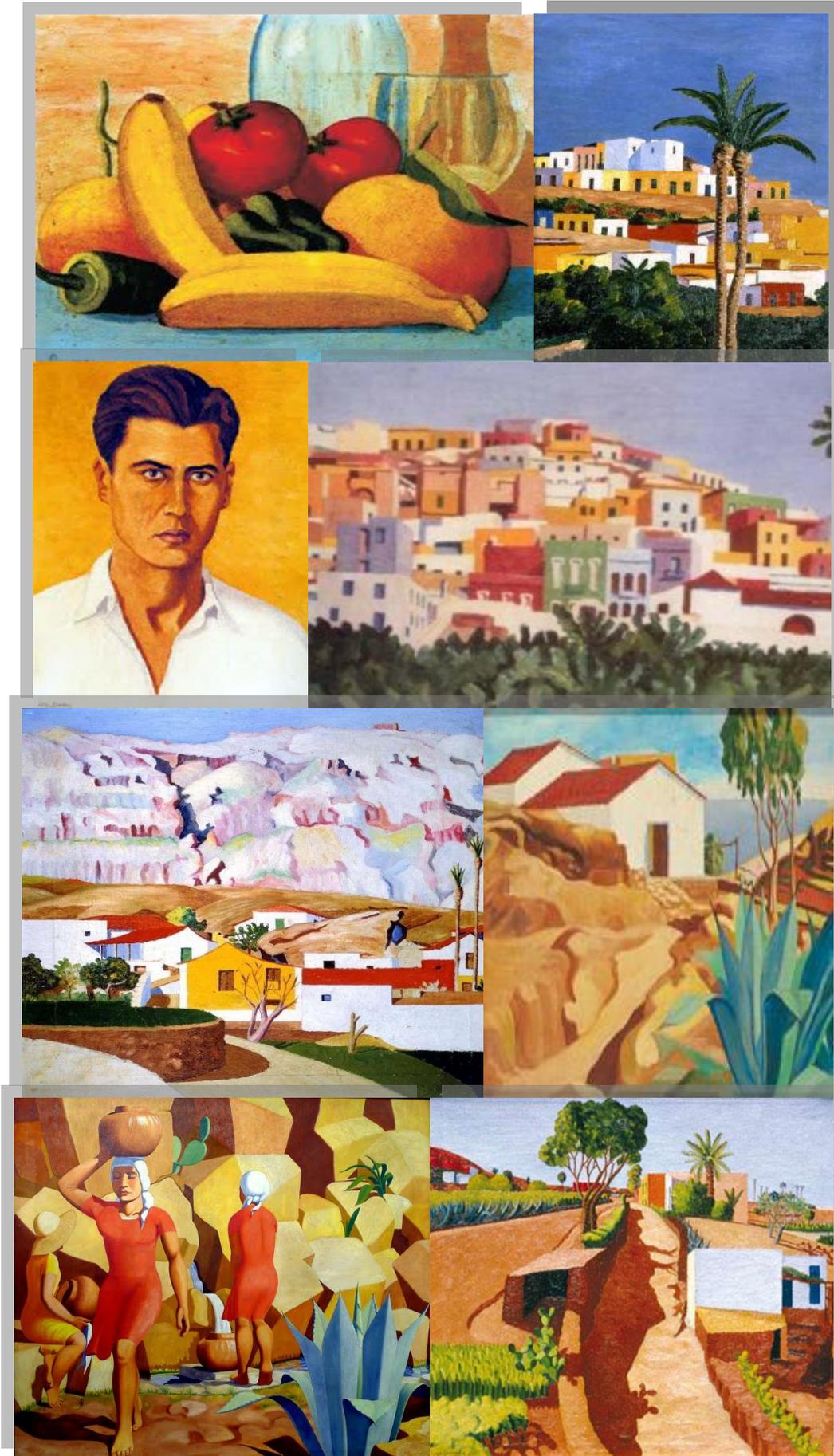
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EXAMPLES OF PAINTINGS

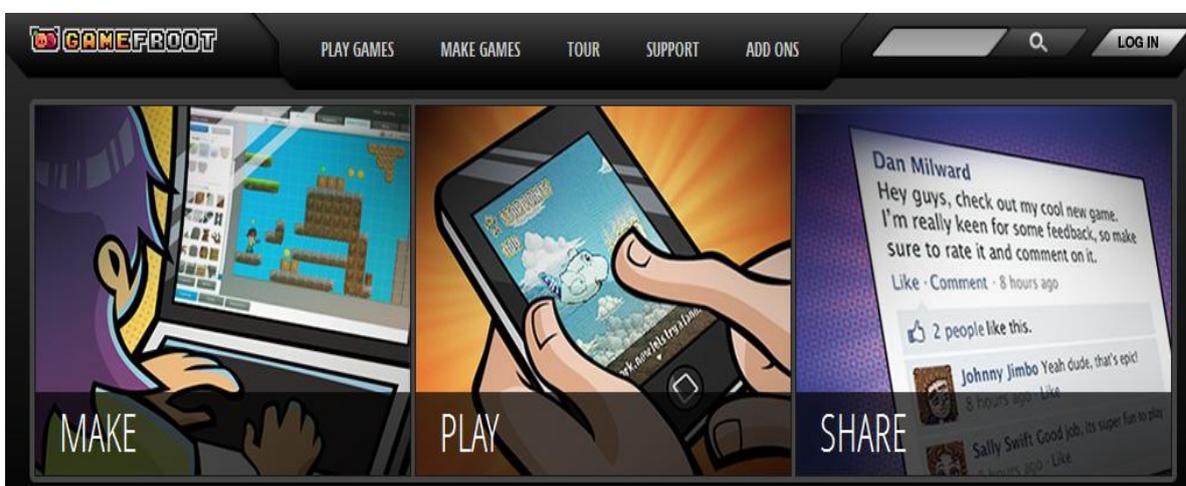




Crosscurricular activity no.30

1. **School:** IES LA VEGA DE SAN JOSÉ, Las Palmas, Gran Canaria, Spain
2. **Teacher(s):** Carlos Ueno / Jerónimo / Margarita
3. **Form/N. of students:** Up to 12, from different levels
4. **Date:** Nov 15th 2013 – March 15th 2013
5. **Time available:** 4 months
6. **Topic:** *INTRODUCTION TO VIDEOGAME DESIGN*
7. **Type of lesson:** Cross-Curricular (Computer Science, Design and Graphic arts, Technology, Mathematics)
8. **Necessity/Argument:**

Videogames are becoming a new form of art. Videogames integrate knowledge coming from diverse fields: Technology, Design and Graphic arts, Computer Science, Mathematics. This form of artistic and technical expression is familiar for our students, and can increase their motivation in order to accomplish non-trivial tasks involving various tools and curricular topics.



www.gamefroot.com

Even though programming videogames is a complex task, new platforms have appeared in recent times that facilitate the introduction into this exciting field. In particular, the Gamefroot Platform offers one of the easiest ways to introduce students to the world of videogame creation. This tool includes:

- Easy introduction to videogame design.
- Ready made scripts, sprites and backgrounds to start videogame creation in a fast way.

- Possibility of incorporating own graphic materials (sprites, characters, backgrounds).
 - Introduction to programming languages via visual scripts, which can be applied to objects.
9. **Aim:** Introduce students to the world of videogames and teach them how Mathematics, Graphic Design and Technology interact in order to bring life to games.
10. **Objectives:**
- Teach the basics of videogame creation
 - Develop graphic and artistic skills
 - Introduce students to programming languages
 - Show the interplay between programming, mathematics, language and logic.
11. **Strategy:**
- *Study work:* Creation of a simple videogame
 - *Methods and procedures:* Most of the work will be based on gamefroot videogame platform. Extra software required is The Gimp.
 - *Teaching activities:*
 - Selection of students to participate in the project.
 - Design of the workplan.
 - Feedback and assessment of the creative process.
 - Help to coordinate the members of each team.
 - Test of the of the videogames produced by the student teams.
 - *Learning activities/Steps performed by the students:* The students will have to complete the following tasks in order to achieve the goal of this project:
 - *Character Design:* The main characters of the videogame have to be designed and described.
 - *Level Design:* The scene where the action of the videogame is going to take place have to be meaningful. Own artistic creations will be positively evaluated.
 - *Story:* A videogame needs a good story. Where the action will take place? Which is the background story? What is the goal to be achieved?
 - *Playability:* A videogame has to be fun to play. Is the game well designed? It is clear what the player has to do? Is the difficulty of the level well adjusted to be feasible and at the same time challenging?
12. **Evaluation:** The evaluation will take into account the following aspects:
- Engagement in the project
 - Creation of own materials
 - Cooperation with team-mates

- Tasks performed by the student
- Quality of the product

The teacher will observe directly the involvement and performance of the students. There will also be a final self-evaluation to improve this curricular activity in future implementations.

13. **Partners:** Teachers from the Arts Department, and the Technology Department.

14. **Bibliography:**

Resources related to the Gamefroot Platform

- <http://gamefroot.com/for-teachers/>
- <https://gamefroot.zendesk.com/categories/20052076-knowledgebase>

Resources on the contribution of videogames to learning

- <http://www.jamespaulgee.com/>

Crosscurricular activity no. 31

1. **School:** IES LA VEGA DE SAN JOSÉ, Las Palmas, Gran Canaria, Spain
2. **Teacher(s):** Special needs teachers Margarita Matos and Pilar Ravelo
3. **Form/No of students:** 1º ESO and 2º ESO special needs students-20 students.
4. **Date:** January 2014
5. **Time available:** 15 sessions
6. **Topic:** *Peace day*
7. **Type of lesson:** Cross-curricular
8. **Necessity/ Argument:** These students are following special needs tutoring due to several reasons: learning disabilities, developmental delays and social, economic or family problems. To motivate and improve their learning capacity, they follow a specific learning methodology based on tasks and projects. Our syllabus tries to keep up with the curriculum, working all the fields of knowledge and key competences.
9. **Aim:** We want our students to show an interest in developing and experiencing PEACE, learning how to adopt attitudes of respect, assistance to others, tolerance, humility, pacifism... We want our students to become aware of the importance of PEACE starting by what they have near their environment: their school, home, and neighborhood.

10. **Objectives:** Besides the aforementioned aim, they will know about those who fought for the PEACE like: Gandhi, Nelson Mandela and other PEACE Nobel Prize winners. Concepts like respect, tolerance and solidarity... concepts that will make our students responsible and pacific citizens who will hopefully be against all type of violence.

11. **Strategy:**

Study work: The different sessions are aimed to know, investigate and develop the established activities. We want our students to learn to recognize the value of the NO-VIOLENCE and pacific activism through different techniques.

Involved subjects: Spanish Language, Social Studies, Art and Mathematics.

Methods and procedures:

Teaching activities: Students will work individually, in pairs, in small groups and all the class. Many resources will be used like: the cd-player, the projector, camera, short stories, colors and felt tips...

Learning activities/ Steps performed by the students:

- We start by analyzing the previous knowledge of the students about the topic PEACE. She shall make a concept map around the questions “*What do we know about PEACE?*”, “*What do I want to know, learn and investigate?*” and “*How can I know it?*” In the end, between all of us, it was decided to decorate the hall with a mural formed by shapes of the students’ hands under the slogan “*Together we can*”.
- Students read stories about the main PEACE characters who have been awarded the Nobel Prize for PEACE. The stories / biographies are handed out to the students who will read them loud, followed by a debate. In a map we shall identify and situate the different places of birth of each of these characters.
- Students are given “*The commandments for PEACE*”. Each student chooses a sentence and explains it to the rest. Each one gives their own opinion about them. Afterwards, students will select those sentences they like the most to add them to the mural.
- The teacher reads the short story “*The turtle Vicky*” that deals with the resolution of conflicts in the classroom in a pacific way.
- From the stories read and other short stories about PEACE students will learn how to make summaries following a procedure:
 - We count the number of paragraphs.
 - We read the first paragraph several times until we understand it.
 - We say to the rest the main ideas and write them in our notebooks.

- We follow these last two steps for the rest of the paragraphs and at the end we complete the summary.
- Students choose and describe photos that produce peace of mind, self-awareness and relaxation.
- For all the main PEACE characters studied we compute their ages nowadays if they were still alive, their ages when they died, we compare between them to see who was the youngest when died...
- 7. We continue decorating the hall, photos/ drawings of the PEACE characters, birds of peace, mandalas...

12.Evaluation:

The evaluation criteria are the following:

- The student is capable of paying attention and listening while the conceptual map is being made.
- The student respects the right to speak of others when participating.
- The student participates in the creation of the concept map.
- The student reads, selects, copies and pastes the concept map document in his/her pen drive.
- The student is capable of reading aloud with the appropriate rhythm and intonation.
- The student understands easy texts on the topic.
- The student is capable of identifying some countries as well as continents.
- The student writes summaries about texts already read following a guideline.
- The student is capable of listening to the story, understanding it and following its details.
- The student can argue about the stories that have been read.

Evaluation

- The student can describe photographs.
- The student can solve mathematical questions from details taken out of the stories.
- The student is capable of solving sums, subtractions and multiplications correctly.
- The student participates eagerly on the decoration of the hall

Key Competences:

Communication in the mother tongue, mathematical competence, digital competence, social and civic competence and cultural awareness and expression.



Crosscurricular activity no.32

1. **School:** IES LA VEGA DE SAN JOSÉ, Las Palmas, Gran Canaria, Spain
2. **Teachers:** Delia Rodriguez, Maria Jose
3. **Form/No of students:** 2º ESO, 3º B, 3º DIVER, 4º DIVER. 160 students
4. **Date:** February-March 2014
5. **Time available:** 8 – 10 lessons
6. **Topic:** *Carnival*
7. **Type of lesson:** Cross-curricular
8. **Necessity/ Argument:** The students of our islands live the celebration of the Carnival as spectators or as members of a *Comparsa*¹ or *Murga*². So, this activity becomes one that belongs to their daily life and to their culture in a certain moment of the year. Besides, it is an opportunity to have a critical view to the different shows that take place in the Carnival of Las Palmas (the carnival celebration itself, election of the queen, drag queen competition,...) as well as how it is celebrated in the rest of the world.
9. **Aim:** To be able to interpret a song correctly as a group all dressed the same.

10. Objectives:

- To write a poem following the rule of poetry taking into account a specific topic and the music chosen.
- To work the patterns of intonation, rhythm, vocalization, body expression in the interpretation of a song.
- To strengthen social behaviors such as compromise, solidarity, respect to oneself and to each other, listening to other proposals, to discussion and to reach agreements.
- To make a costume.
- To investigate a specific custom of our island and its history (carnival) and to make a comparison between our custom and that in other places like Brazil, Venice or Cádiz.
- To interpret a song.

11. Strategy:

Study work: To form a Murga and be able to create their own lyric composition on a popular tune.

Methods and procedures:

Teaching activities: The teacher becomes the guide of the activity because the students have to make it theirs. It must be their creation. The teacher explains at the beginning of each activity the specific procedures and rules and guides the student's work. Students will have to decide on the music-tune and on the topic of their song (about teachers and school usually). They must reach an agreement on what to sing about and who to sing about, what to say, how to say it and so on.

Learning activities/ Steps performed by the students:

First: The writing of the lyrics looking up for creativity and humor following the patterns of poetry. First with the teacher they agree upon the theme of the lyrics. It may be dedicated to several teachers, to the rules of our high school or to something that is happening in our society and they want to complain about.

They work in small groups, there are also students that work the lyrics at home and, in the end, all the proposals are added. (first step done in both Spanish and Music class)

Second: The finding of the appropriate music following specific music characteristics like rhythm and easy intonation. This part is worked with the whole group (Music class)

Third: Taking decisions about the name of the Murga and the costume. These decisions must take into account the use of recycled objects or clothing. (Art class)

Fourth: The rehearsing of the song where social behaviors like compromise, respect, to be a part of a group and effort are worked upon. As well as the musical aspects that are related: intonation, vocalization, taking care of our vocal chords, choreography and body expression to

enhance what is being said. Besides, it is important that the students become their own judges. So, some rehearsals are recorded to evaluate themselves and make the corrections required. At the same time the students are preparing the Murga, they are designing their costumes in the Drawing class and investigating about Carnival in the History class.

Fifth: The interpretation of the Murga in the Show.

12. Evaluation:

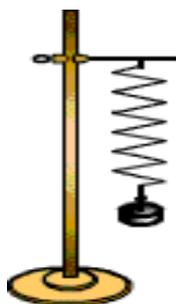
- Each activity or step is evaluated on its own. The teacher watches each day how the students work and evaluates them.
- The procedure and the result are evaluated.
- The result will be evaluated according to how they perform as a group and the quality of it as well as that of their costumes.

Partners: Spanish Language and History departments.



Crosscurricular Crosscurricular activity no. 33

1. **School:** Secondary School of Economics & Management “Elias Canetti”, Ruse, Bulgaria
2. **Teacher(s):** Mr. Stefka Dilyanova, teacher of Physics
3. **Form/No of students:** 26 students, Xth form students
4. **Date:** January 2014
5. **Time available:** 50 minutes
6. **Topic:** *Research of a spring pendulum*
7. **Type of lesson:** Crosscurricular (e.g. Physics, Maths, ICT)
8. **Necessity/ Argument:**



Everywhere in our life we are faced with different types of springs. Spring pendulum is called a device consisting of a spring attached at one end to a stationary and on other end is attached body with mass **m**. We assume that the system can be moved by ignoring friction. We will examine the dependence on the square of the period of the pendulum spring by mass of the pendulum.

9. **Aim:** To explore the dependence of the square of the period of the pendulum spring by mass of the pendulum.

10. Objectives:

- to form and develop the skills of exploration / investigation of reality, using specific tools and procedures;
- to understand and use terms and concepts specific to physics, mathematics and natural sciences;
- to develop skills to work with specific computer programs;
- to learn how to build a charts.
- to develop skills of team work , as well as interpersonal skills

11. Strategy:

- **Studywork:** Spring pendulum is a ball of mass **m** hanging on a spring with elasticity coefficient **k**. Provided that the mass of the ball is much larger than the mass of the spring, the period **T** of such a pendulum is a valid formula

$$T = 2\pi\sqrt{\frac{m}{k}}$$

Since both sides of a raised square obtain the formula:

$$T^2 = \frac{4\pi^2}{k} \cdot m = bm$$

From this formula it can be seen that the square of the period of the pendulum is a linear function of its mass.

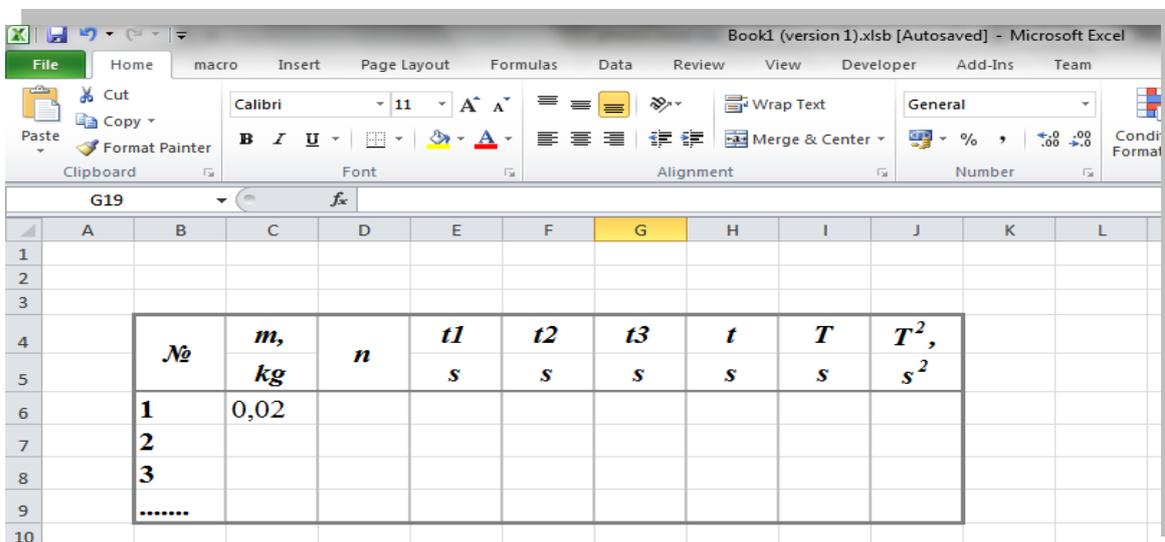
Methods and procedures:

Teaching activities:

- Teacher outlined, on the black board, in advance table:

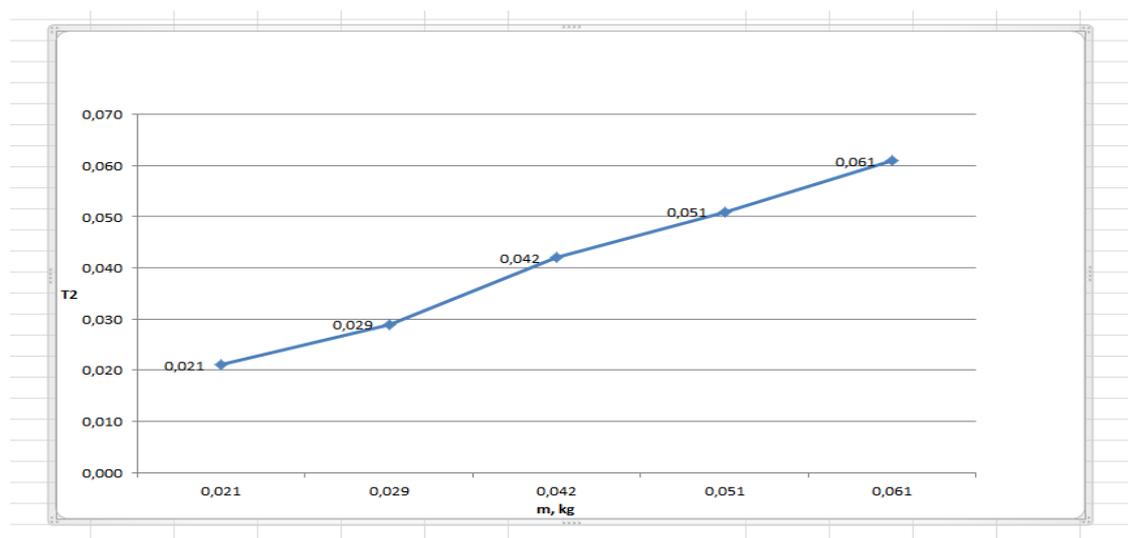
<i>Nº</i>	<i>m,</i> <i>[kg]</i>	<i>n</i>	<i>t1</i> <i>[s]</i>	<i>t2</i> <i>[s]</i>	<i>t3</i> <i>[s]</i>	<i>t</i> <i>[s]</i>	<i>T</i> <i>[s]</i>	<i>T²,</i> <i>[s²]</i>
1.								
2.								
3.								
...								

- The teacher divide the students into six groups of 4-5 students. He give one transformation of each group.
- Each group makes the experience - Attach the spring to the stand, and the free end attached weights of 20 g. Divert the weight a small distance from the equilibrium position and and drop it so that flickers around this situation. With the stopwatch measuring time for which the pendulum performed **n** number of complete oscillations (e.g. 10). Repeat this three times and find the arithmetic mean of the time **t**. Record the results in a table. Then repeat the experience with 4 different weights.
- Then students create the table in Excel sheet and then fill with the results of the trials;



- Then they have to build the chart on the computer;
- Finally, the teacher will ask the students to make some conclusions.
 - What is the relationship between the mass and the square of the period?

Learning activities/ Steps performed by the students:



- documentation from sources belonging to related fields: Maths, ICT;
- Comparing information;
- Building formulas in Excel;
- Making charts in Excel;
- to explain information from charts;
- Involvement in individual and team activities, as well as in the usage of various means of communication;
- Presentation and discussion of the topics.
- **Organization and interaction:** teacher-student, student-student
- **Materials and equipment:** paper, ruler, circle, stopwatch, stands, springs, balls with different mass, computers, workbook;

12. Evaluation:

- ✓ *Practical evaluation through checking upon the accuracy of the results obtained ;*
- ✓ *Direct observation of the students throughout the activity;*
- ✓ *Self-evaluation*

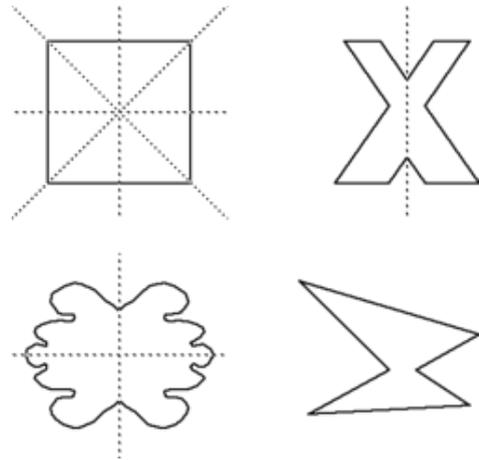
13. Partners: teachers of Mathematics, Physics and ICT.

14. Bibliography: 1. Physics and Astronomy for 10 grade- Publishing house “Bulvest 2000”, Sofia

Crosscurricular activity no. 34

- 1. School:** Secondary School of Economics & Management “Elias Canetti”, Ruse, Bulgaria
- 2. Teacher(s):** Mr. Nikolay Lyaskovski, teacher of Math and ICT
- 3. Form/No of students:** 26 VIIIth form students
- 4. Date:** February 2014
- 5. Time available:** 50 minutes
- 6. Topic:** *Geometric transformation in a real world*
- 7. Type of lesson:** **Crosscurricular** (e.g. Maths, Physics, Biology, Art, engineering)
- 8. Necessity/ Argument:**

You will be able to define and recognize transformations. You will also be able to apply your knowledge of transformations to real world situations. Find various types of transformations (symmetry, rotation, translation) in the real world. To show where they can be found in the plant and animal world. How people used them in construction, art and engineering. Where found in these transformations in physics.



9. Aim: Recognize and apply mathematics in contexts

outside of mathematics. To make/help students understand that Geometric transformation can be found everywhere in the world.

10. Objectives:

- to form and develop the skills of exploration / investigation of reality, using specific tools and procedures;
- to understand and use terms and concepts specific to mathematics and natural sciences;
- to find necessary information in the Internet
- to develop skills of team work , as well as interpersonal skills

11. Strategy:

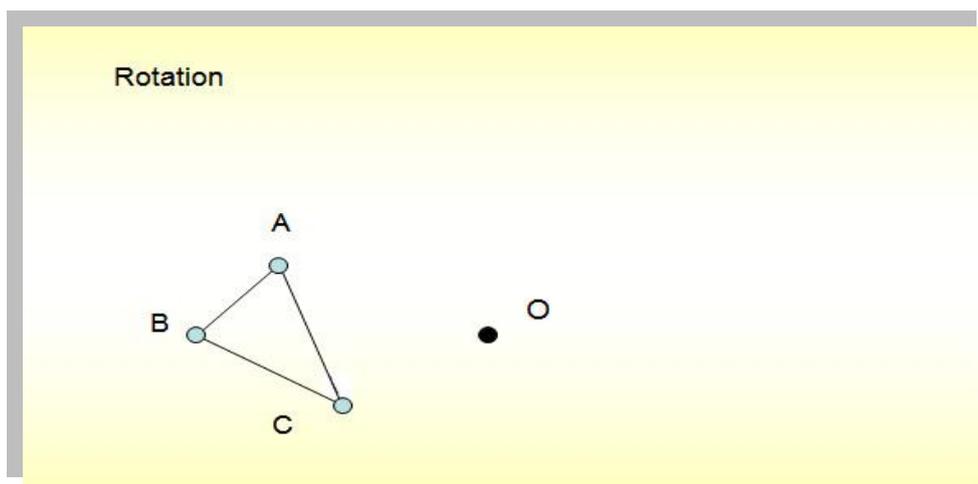
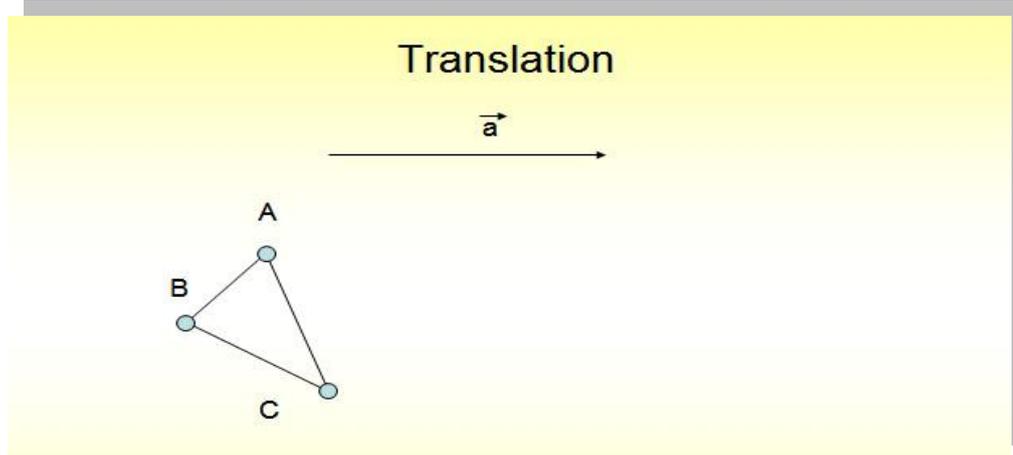
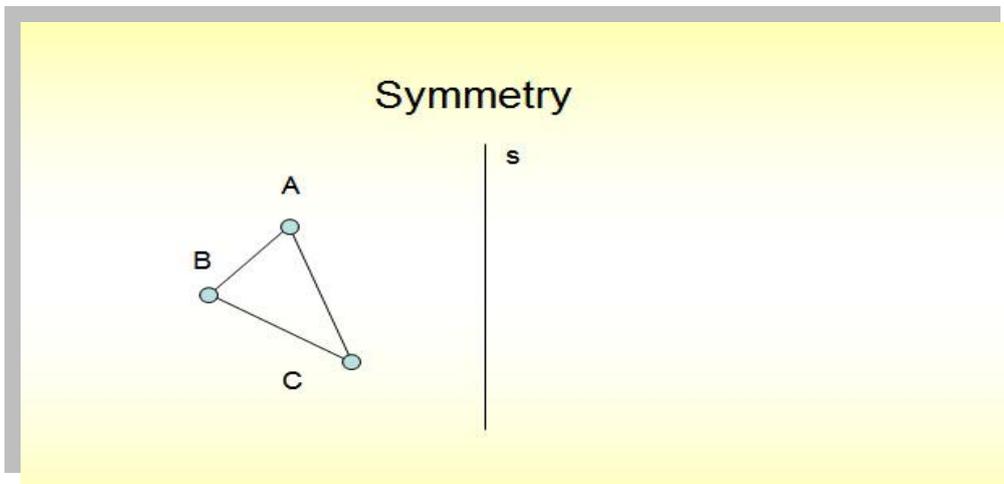
-Studywork:

To explain and find the Geometric transformation in the nature, architecture, construction, art and engineering.

- **Methods and procedures:**

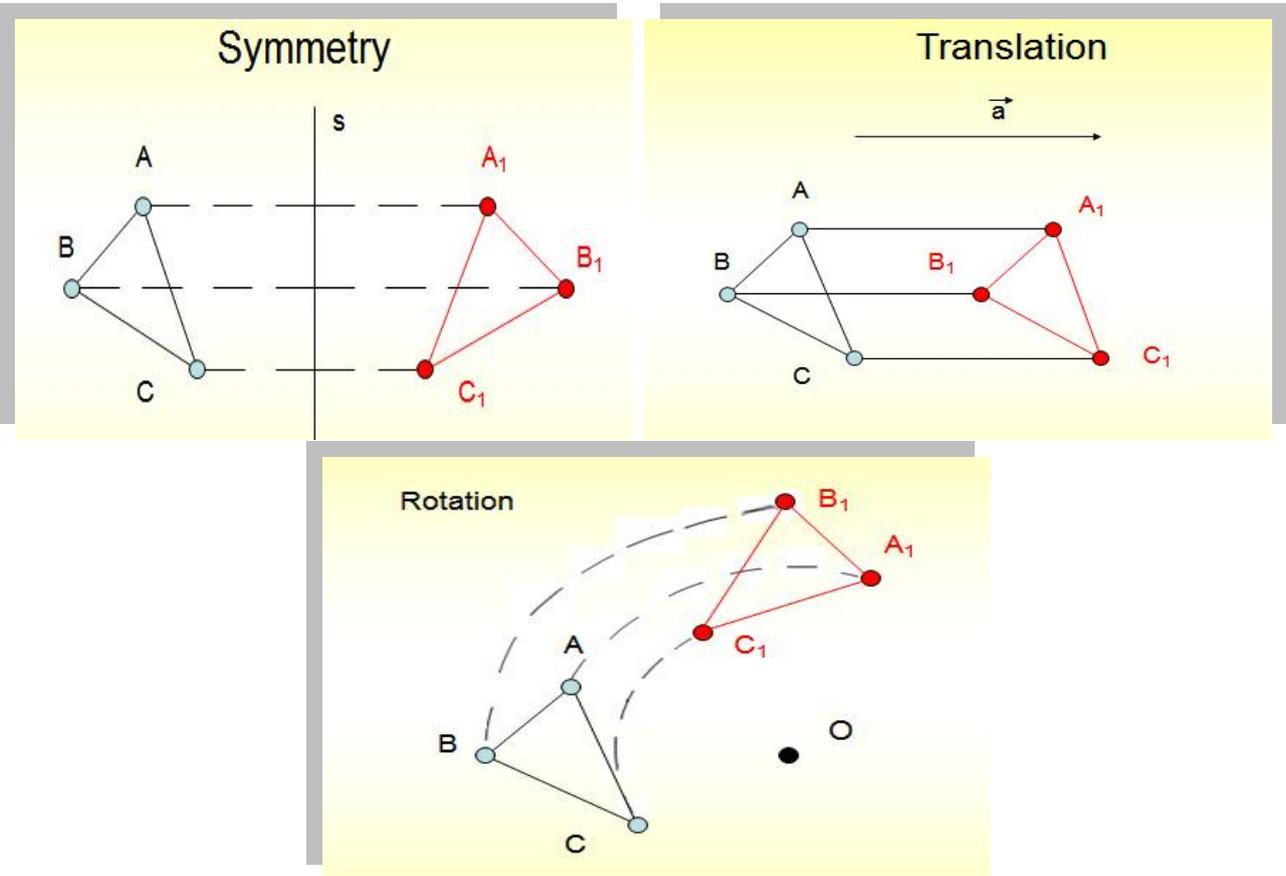
Teaching activities:

- a) The teacher draws the students' attention the pictures below:



- b) The teacher divide the students into six groups of 4-5 students. He give one transformation of each group.
- c) The teacher will ask the students from each group to explain the transformation that they have.
- d) The next step is: the students of each group will draw the transformation that they have in their workbooks.

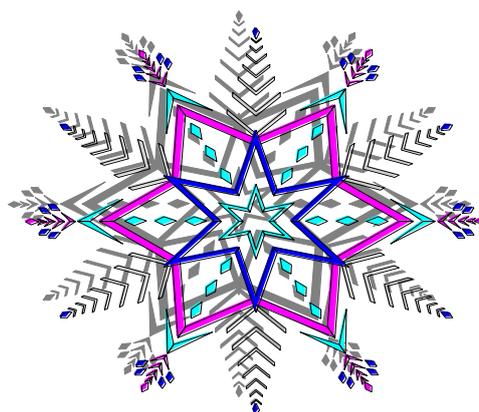
- e) Three of the students will draw the transformation on the blackboard. They have to complete the transformation:



- f) Before lesson the teacher have to prepare some examples of transformation. He will show the pictures and ask the students which transformation they will find on the picture



- g) Finally, the teacher will ask the students to find at least two geometrical transformation in plants and animals and to show examples for them in physics, construction, art and engineering. (The students have to use the Internet in these activities).
- h) For homework the students have to prepare a presentation with examples of transformations that have been given to another two groups.



Learning activities/ Steps performed by the students:

- documentation from sources belonging to related fields: Physics, Biology, engineering;
 - Comparing information from different sources in order to verify their accuracy;
 - to explain geometrical transformations;
 - To find transformations in different ways;
 - To draw the different transformation with a circle, ruler and pencil;
 - to use the internet and find the specific information from there;
 - Involvement in individual and team activities, as well as in the usage of various means of communication
 - Presentation and discussion of the topics.
 - **Organization and interaction:** teacher-student, student-student
 - **Materials and equipment:** paper, ruler, circle, workbook;
12. **Evaluation:**
- ✓ *Practical evaluation through checking upon the accuracy of the results obtained ;*
 - ✓ *Direct observation of the students throughout the activity;*
 - ✓ *Self-evaluation*
13. **Partners:** teachers of Mathematics, Physics and Biology.
14. **Bibliography:**
- “Mathematics” for 8 grade- Chavdar Lozanov, Ani Ivanova Publishing house “Anubis” , Sofia, 1998

Crosseurricular activity no. 35

1. **Secondary school of economics and management “Elias Canetti”**
2. **Teacher(s):** Mr. Nikolay Lyaskovski, teacher of Math and ICT
3. **Form/No of students:** 26, XI form students
4. **Date:** January 2014
5. **Time available:** 1 hour
6. **Topic:** JOVKOV'S CHARACTERS TO THE WAY OF SEEKING HARMONY
7. **Type of lesson:** Crosscurricular(e.g. Maths, Physics, Biology, Art, engineering)
8. **Necessity/ Argument:**
9. Work based on the stories “Last joy”, “Serafim”, The song of the wheels”, “Albena”, “Trough the plague”
10. **Purpose of the lesson:** To be made a summary of the problems and the motives from the Jovkov's stories.
11. **Objectives:**
 - to form and develop the skills of exploration / investigation of reality, using specific tools and procedures;
 - to find necessary information in the Internet
 - to work with different dictionaries
 - to develop skills of team work , as well as interpersonal skills

11. Strategy:

- Studywork:

Finding good and evil, virtues and vices, beauty and ugliness in Jovkov's characters which are always striving to harmony

- Methods and procedures:

Teaching activities:

Update of old knowledge- a summary of issues and motifs from Yovkovstories:

- The world of Jovkov is full of beauty, love and harmony. His characters, no matter whether good or evil, virtuous or vicious, beautiful or ugly are real human beings striving to harmony. In his stories life is full of variegation – good, evil, vices, virtues, beauty, love and passion. Standing on humanistic positions the creator searches the reflections of the beauty – the beauty of a man's thoughts and actions, weaknesses and nobility, stoicism and magnanimity.

They are criminals and sages but always people which are granted with the moment of reaching the truth and beauty. Having this moment they reach out unknown spheres of spiritual, overcome evil and sins and finding salvation in the forgiveness and mercy and always succeed in recovering the harmony.

- Clarifying the concept of path and harmony – 10 mins

1 Path – brain attack – spider web – filling at the moment (What associations cause the word "time")

2. Harmony from the internet-various meanings

From dictionary articles-Encyclopedic, synonyms phraseologic,

Harmony-from Latin and from the city first. Both pleasant sound of several tones, accord; 2. Otdel of music theory, which deals with entities associated and alternating chords and the interaction between tonality 3. Slender coherence between parts of a whole 4. Nice ending on a combination of colors, color 5. Agreed unanimously Understanding (dictionary of foreign words in WAS, ed. BAND993g.)

Harmony –Thesaurus

Euphony, harmony, chord melody proportionality ratio, compliance, symmetry Consent understanding, consensus, consensus 3. Clarification and understanding of pupils' harmony'

A cut from the movie "Shibil"

Summary of the seen:

Yovkov characters in searching - succeed or fail to reach it , restore or disturb the harmony . Already proved that Shibil from " terrible rebel " became a regular person who realized the need for a purely human tenderness, affection and love. Ince from bloodthirsty killer became popular protector. Travels long road of sins and izkuplenieto. Proliva first tear caused by folk love and appreciation obtained retribution supreme moment of his life (" Many mothers have wept , came my turn ") . Dying at the hands of his son , restores disrupted harmony in the world. But Ince and Shibil are extraordinary heroes , heroes elements - highly idealized , unusual personalities. Today we will try to trace the path that travelled ,the few people in search of harmony - Sally Yasar , Lyutskan , Seraphim , Albena and Quiet .

The classis divided into groups-each group will complete a task connected with a particular character. For this task, students will have 25 minutes.

First Tasks: (each group is given one of the following tasks)

- Follow the path that travel the hero- (Sally Yasar, Lyutskan, Seraphim, Albena, Silent) in the search of harmony. Does the hero find and reach the harmony with himself and the rest of the world. Define the hero with a single word (and by its characteristic sound, color, a symbol that

most accurately determine his nature) Present your answers on the poster, using the most suitable strategy.

Task Circular Writing -5 minutes

Circular writing in groups: (each group continues the given sentence)

1. With torment and misery this world is full, but there is something good that stands above everything else- love between people...
2. Doing good to people, to relief their suffering without expecting reward from this world..
3. To give in stant happiness and forget fulness to people and bring the minto the white wonderland of harmony...
4. The magical power of beauty is over whelming,changing human souls, but the crime must be punished, but sin redeemed, because ...
5. In the sacrifice and death, love is realized-stronger and mate rnal love-such loveis blessed because ...

Homework – 10min essay – I live/don't live in harmony with myself and the rest, because

Summary of the teacher's lesson : - loving the people , the ability to appreciate even the smallest things in this world , because even the smallest thing can bring us great pleasure and satisfaction , to be lush and forever seeking , to strive to perfection , and to know happiness and misery . What will be the price of happiness if we suffer, if we overcome the difficulties, if we have not won with hard work and battles? But if we passed the thorny path of suffering and misery and have reached the happy moment of insight , then indeed we lived , we experienced the ultimate pleasure of satisfaction we achieved harmony with ourselves , and it naturally leads to harmony in the world.

There are things that never die , which are endless . This is love for people , the desire to do good, to bestow happiness to restore harmony . People who aspire to that are usually freaks in the eyes of the others. But in this world we have a growing need for such eccentrics .

Assess of the class' work

Learning activities/ Steps performed by the students:

- Comparing information from different sources in order to verify their accuracy;
- To find information in dictionary;
- to use the internet and find the specific information from there;
- Involvement in individual and team activities, as well as in the usage of various means of communication
- Presentation and discussion of the topics.
- **Organization and interaction:** teacher-student, student-student
- **Materials and equipment:** books, notebook, workbook, studentsbook, computers;

12. Evaluation:

- ✓ *Practical evaluation through checking upon the accuracy of the results obtained ;*
- ✓ *Direct observation of the students throughout the activity;*
- ✓ *Self-evaluation*

13. Partners: teachers of Literature and ICT .

14. Bibliography:

Crosseurricular activity no. 36

1. Secondary school of economics and management “Elias Canetti”

2. Teacher(s): Mrs. Rositsa Ivanova, teacher of Chemistry

3. Form/No of students: 26 IX g form students

4. Date: February 2014

5. Time available: 1 hour

6. Topic: *Natural sources of hydrocarbons. Environmental problems*

7. Type of lesson: Crosscurricular (e.g. Physics, Biology, ICT)

8. Necessity/ Argument: Prepared presentations for finite and infinite sources of energy.

9. Aim of the lesson: Exploring the natural energy sources.

10. Objectives:

- to form and develop the skills of exploration / investigation of reality, using specific tools and procedures;
- to find necessary information in the Internet
- to develop skills of team work , as well as interpersonal skills

11. Strategy:

- **Studywork:** To explain which are the natural sources of hydrocarbons. To find more about finite and infinite sources of energy.

- **Methods and procedures:**

Teaching activities:

Update knowledge - renewable and nonrenewable energy sources.

In today's world energy sector occupies a key place. It is the foundation of overall economic development. Without it, life is practically impossible. The energy sector is related to the use of renewable and non-renewable energy resources. And since this sector is the most significant direct consumer of non-renewable natural resources, it is a source of damage to the natural and

living environment. The energy sector has a very serious domestic and foreign political and economic changes and is one of the main factors for the development trends of the parties. It accounted for a significant financial interests that influence the direction of its development. Important for the economy are the import and export of energy resources as they exist in different geographical areas. Their presence in different countries is different and it depends on the geographical location of a country. In accordance with the current requirements should meet the energy needs of fuels and energy with minimal public expenditure , subject to the requirements of environmental protection .

Electricity production depends on its consumption. It is not a product that can be held in stock. The advantage of electricity is that it can quickly be transported over long distances easily transformed from one form of energy into another heat, light, mechanical, etc.. Environmentally friendly resource, although production and sometimes pollutes the environment (eg TPP).

Therefore, it is important to have energy resources.

➤ **Students present short presentations for non-renewable energy sources:**

Oil: It represents a mixture of gaseous, liquid and solid hydrocarbons having different densities and to light yellow to black, which is formed under the surface of the natural ground. Money oil are flammable when mixed with air.

In Bulgarian language to denote used two borrowings used respectively in the East and the West.? Petroleum - the Greek $\nu\alpha\phi\theta\alpha$, oil, or in the Turkish oil from the Persian *neft*, comes from the Akkadian *napatum* - flash, inflame.



Most experts believe that oil is formed over the last 600 million years of part-decomposed plant and animal residues, buried under thick and heavy layers of rock. It is believed that the oil occurs naturally under the influence of heat and relatively high pressure in the rock layers of the remains of these organisms.

In North America, oil in the past been used by indigenous peoples in magic, medicine and the paint maker. Settlers buying it by the locals as a medicine and call it "Seneca Oil" and "genezovo oil." In Europe it was scooped from streams or wells, and in the early 19th century began production of small amounts of oil shale. In 1815 several streets in Prague are lit by oil.

A curious fact is that the territory of Azerbaijan in the area of naphthalene was built resort for the treatment of skin diseases by oil. Today from this oil prepared medicine for internal and nervous diseases, for surgical purposes, for the treatment of domestic animals.

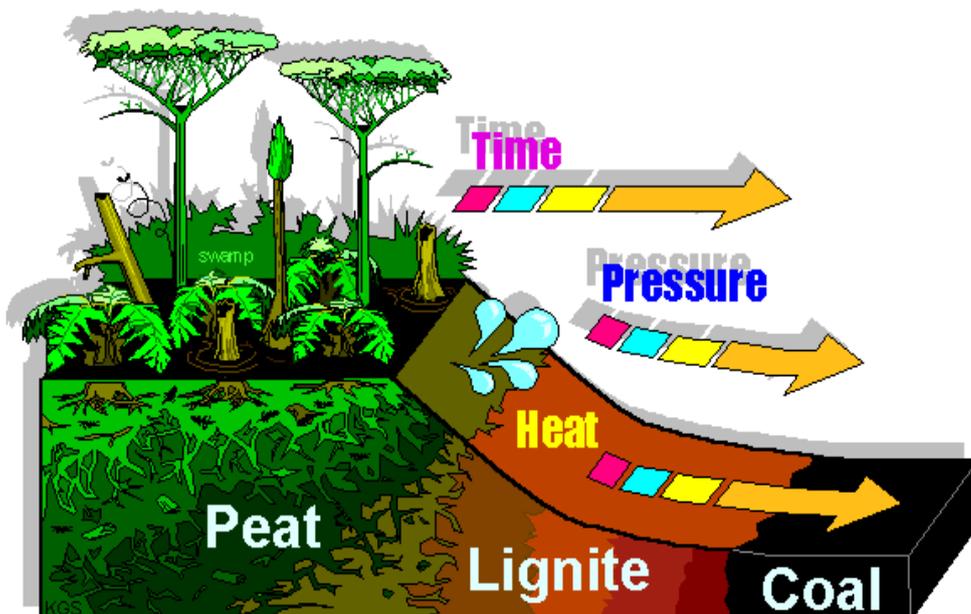
- **Coal:**
- **Pit coal**

Coal is fossil fuel extracted from the ground by coal mining. They are combustible black or brownish-black sedimentary rock. It consists primarily of hydrocarbons and carbon-50% by weight and 70% of their capacity are composed of them.

Formation

Coal is formed from plant remains that have been compacted, hardened, chemically altered and metamorphirali heat and pressure over geologic history.

It is believed that coal is formed from ancient plants of marsh ecosystems. After their deaths their biomass is deposited in anaerobic aquatic environments where low oxygen prevents decay and their oxidation.



Lignite coal

Lignite is a low carbon / 55 - 65% shall / low calorific value and / 1500-2200 kcal / kg /. They are young-age tertiary / 74 million years / and are situated at a shallow depth with thick layers.

Characterized by high moisture and ash, making it difficult combustion and air pollution. Due to the high humidity they are hard-transportirue me.



Anthracite coal

Anthracite coal with the highest degree of carbonization / 90% carbon / and calorific value - 6000 kcal / kg. They are solid black, with a brilliant luster. Used in jewelery. Their deposits are typically thin layers deep in the bowels of the earth. Hard coal are the old-about 300 million years



Black coal

Black coal are high calorie / 5000-7000 kcal / kg /. The reserves amount to 22 million tons / 0.5% of the stock in kind /. The carbon content is 80-85%. Characterized by low moisture content - 3-6% and an ash content - 30%. They are Mesozoic age. Bituminous and subbituminous are.



Coal and oil are the most important carbon sinks on the planet. They are the most mined minerals. A relative of carbon in the Earth's crust is negligible-less than 0.2%.

➤ Natural gas:

Natural gas is a gas produced by the anaerobic digestion of organic material. It is an important energy resource. The origin of hydrocarbon gases is mainly associated with biochemical processes as a result of which give a decomposition and transformation of organic matter consisting of the remains of dead organisms and animal species.

At the outset of the formation of natural gas from the sludge of liquid or gaseous fuel process had anaerobic (oxygen-free) character. Oxidation processes are proceeded only at the expense of oxygen contained in the organic substance itself.

Leak under the overwhelming influence of the bacterial world, intense decomposition of organic matter, which had already started during the accumulation of sediments constitutes the first stage of its transformation called biochemistry.

The second stage corresponds to the overload and the sinking of the organic sludge, when the process of their transformation to begin influencing the elevated temperature and pressure. During this period, the oil is formed, and the resulting decomposition and conversion of organic material, liquid and gaseous products were not able to be separated from the sludge.

The third and final stage of the conversion of organic sludges - metamorphic corresponds to the period when they are affected under conditions of still higher temperatures and pressures, and when the entire process is carried out preferably under the influence of these 2 factors. This step is carried out thermal decomposition of liquid hydrocarbons in the formation of gas and carbonaceous residue.

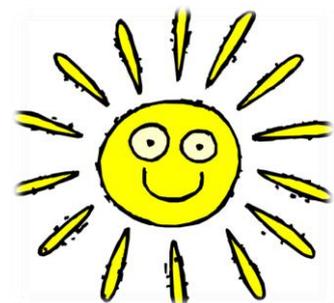
Formed in different parts of the crust hydrocarbons under favorable conditions have moved under the influence of different (geological and geophysical) factors forming accumulations of oil and gas reserves and called fields. Oil and gas reservoirs are generally not coincide with the locations of the accumulation of the organic material, resulting in the accumulation of which they were received.

- **Students present short presentations for non-renewable energy sources:**

Ecologically clean or environmentally-friendly source of energy, which doesn't increase thermal pollution of the atmosphere . For example : The Sun, the wind, the hydro energy and the geothermal energy.

- **Energy from the sun:**

The sun energy can be transformed directly into electricity by solar panels. Their efficiency of conversion of the sun energy into electrical is between 10 and 20 %. A solar panel with area of 1 m² exposed to maximum illumination from the Sun brought electricity between 100 and 200W. The price of the electro energy collected by the photovoltaic elements significantly decreased over the past 20 years.



➤ **Wind energy**

Wind energy contained in wind power.

Wind power plants allow the conversion of wind into electricity.

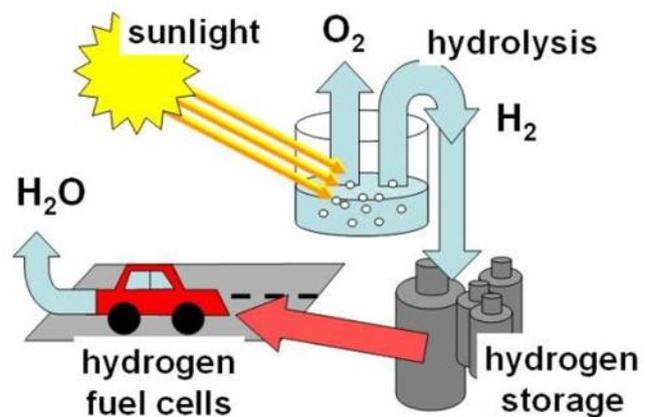


➤ **Hydro energy**

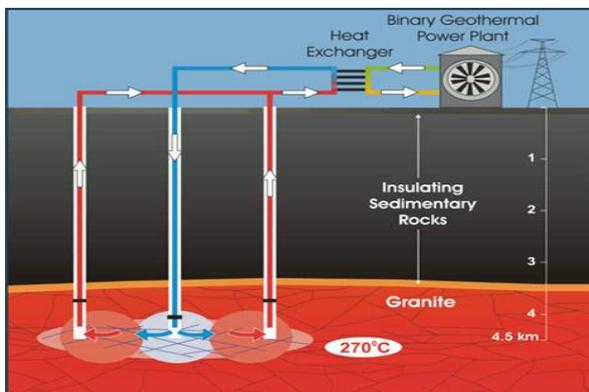
Flowing water has energy that can be transformed into mechanical or electrical. This water mostly accumulates in reservoirs. Water released from these runs and spins a turbine, which in turn can activate the generator, which produces electricity.

➤ **Energy of the hydrogen**

Hydrogen is the simplest chemical element; its atom consists of only one proton and one electron. Hydrogen can be obtained at Electrolysis when the water breaks down to its components: oxygen and hydrogen.



➤ **Geothermal energy**



Geothermal energy is heat coming from Earth. It is environmentally-friendly and constant.

- **Role Play Game** - On the world map we put different types of non-renewable sources of energy in the form of various sweets. Divide students into three groups - one group (grandparents), second group (mothers and fathers) and third groups children. Consistently released the first, second and third group for 5 seconds to take the energy stocks (candy). Resultatat is that students in the third group remained with the least energy reserves.

- Then the teacher ask the students from each group to make a conclusions from the game.
- Summary of the game: trough the game students reached the conclusion that we need to save non-renewable sources of energy as much as possible. In future we need to increase the use of renewable energy sources that are environmentally friendly and do not pollute.
- **Finally, the teacher concludes:**
- **The conclusion of this lesson was to address the third group (children) to previous generations**
"Please save for us and our children non-renewable sources of energy."



Learning activities/ Steps performed by the students:

- Comparing information from different sources in order to verify their accuracy;
- Get to know the hydrocarbons in nature;
- Get to know renewable energy sources;
- Learning to spend frugally natural sources of hydrocarbons.
- To learn how to present information to the public;to use the internet and find the specific information from there;
- Involvement in individual and team activities, as well as in the usage of various means of communication
- Presentation and discussion of the topics.
- **Organization and interaction:** teacher-student, student-student
- **Materials and equipment:** books, notebook, workbook, studentsbook, computers;

12. Evaluation:

- ✓ **Practical evaluation through checking upon the accuracy of the results obtained ;**
- ✓ **Direct observation of the students throughout the activity;**
- ✓ **Self-evaluation**

13. Partners: teachers of Chemistry and ICT .

14. Bibliography: Students book.

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