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Innovative Teacher – Motivated Student:
Collaborative Problem Solving
2015–2017

COLLECTION OF GOOD PRACTICE



**Innovative Teacher – Motivated Student:
Collaborative Problem Solving
2015–2017**

ERASMUS + KA 2

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Project partners

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E ORDENACIÓN UNIVERSITARIA

The introduction

This collection of good practices is one of intellectual outputs developed during the lifetime of “Erasmus+” KA2 project “Innovative teacher – motivated student: collaborative problem solving”. The aim of this collection is to provide handy examples and ideas for teachers to improve their work in the classroom. And also, to make teachers work easier.

Project partners representing 8 European countries (Bulgaria, Estonia, Greece, Italy, Latvia, Lithuania, Portugal and Spain) focused on three key-topics while searching for good practices. The topics chosen for collection reflect current European education challenges. These topics are: promotion of collaborative problem solving; STEAM education; gamification. All good practices collected by partners were evaluated according to 4 key criteria chosen by partners. Each topic had criteria specifically tailored for the topic taking in mind its content peculiarities. Good practices were classified according to the covered topic¹. Good practices suggested by a partner were evaluated by 3 other partners. In result, 95 good practices – lesson, lesson cycles, and project activities – descriptions or just ideas how to organize lessons based on STEAM, gamification, collaborative problem solving were selected to be shared with teachers. These good practices represent what is working in project partner countries’ classrooms.

The sections below consist of good practices grouped into 3 topics: collaborative problem solving (54 examples); STEAM (29 examples); gamification (12 examples). Each selected example for good practice collection has a clear description of: target group, learning objectives, description of overall activity and the process, evaluation. Good practice descriptions also include information about materials and tools used in good practice. In many examples this information is enriched with links to teaching material, websites, platforms, which makes good practices a really useful source for lessons or project work.

Examples in the section “Collaborative problem solving” represent practices which includes group work and (self) assessment of work of each group member. During the whole learning process students can see a well-defined problem and there is common understanding of the problem achieved among students. They are using various methods involving elements of research to solve the problem and eventually the group manages to find a solution to the problem.

The section “STEAM” includes innovative, learning-by-doing examples which demonstrate integrated interdisciplinary approach. Moreover, these examples are more than just a technological approach. The design of learning activities includes most components of KSAVER (knowledge, skills, attitudes, values, ethics and responsibility). What is also important – selected STEM practices re-usable with other subject areas/subjects and different age groups.

“Gamification” section will be of great value for teachers, who are wondering about the value of games in lessons. Selected examples for this section are those, which aim for purposeful learning, foster critical thinking of students (think, not just play!). Activities described in good practices create favorable conditions for active engagement or active participation of students. Finally, inclusion of games are not only for fun – they allow students to learn and at a certain point of activity games or game’s elements include self-assessment or self-evaluation.

¹ If some good practice examples covered more than one topic, we evaluated according to topic criteria, which topic is dominating in suggested example.

COLLABORATIVE PROBLEM SOLVING

1. Debates “Family is the most important virtue”



Title	Debates ‘Family is the most important virtue’(can be adapted)
Content/ Subject areas	Mother tongue (Lithuanian), foreign language (English), Philosophy, Ethics
Target group: age range and size of the group	15- 18 years old students (two teams of six debate on a given resolution, three students of each group speak Lithuanian language, three students speak English) Secondary school
Learning objectives / competences	<ol style="list-style-type: none"> 1. To be aware of how to sort out and systematize the information. 2. To be aware of how to formulate statements and give arguments. 3. To develop rhetoric skills.
Description of overall activity	<p>After having done research on the topic, students either defend or defeat given motion /resolution using the method of debates.</p> <ol style="list-style-type: none"> 1. A teacher explains to the students the structure of debates http://www.sac.smm.lt/wp-content/uploads/2017/01/Mano-metodas-09_10.pdf 2. Students are divided into two groups giving different roles. 3. Students using various sources, search/gather information, statistical data, etc. 4. Five people from each group are chosen randomly to form two teams; the rest is in JURY group. 5. Debates. 6. Jury members choose the winner according to the given criteria.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Lead-in video about the importance of the family). https://www.youtube.com/watch?v=IFT9RZNowI8 2. Two teams of five will debate on a given motion (resolution): “Family is the most important value“. One side is supposed to defend the motion while the other must defeat it. 3. The first speaker of the Proposition (Prime Minister) opens the debate, followed by the first speaker of the Opposition (Shadow Prime Minister). 4. The second speaker of the Proposition provides an argument along with justifications, supporting data, etc. (2 min) followed by the second speaker of the Opposition team (2 min). 5. The third speaker of the Proposition provides an argument along with justifications, supporting data, etc. (2 min) followed by the third speaker of the Opposition team (2 min.). 6. The fourth speaker of the Proposition provides an argument along with justifications, supporting data, etc. (2 min) followed by the fourth speaker of the Opposition team (2 min). 7. Before the last speaker summaries and points out the strongest arguments of his team: <ul style="list-style-type: none"> • <i>Hot Seat Round</i> - Each side will have the opportunity to put the opponent in the —hot seat, by asking questions, which the speaker may accept or reject as he wishes (although he is supposed to accept at least 2).

	<ul style="list-style-type: none"> • Questions from the audience and <i>the free for all round</i> - At this point in the debate the audience will be given the opportunity to ask questions of whichever side they choose. <p>9. The outcome of a debate may be decided by audience vote, by judges, or by some combination of the two. https://putinai.alytus.lm.lt/?s=debatai</p>
Evaluation/ types of assessment	<p>1. Ask students to comment on the quality of the arguments, the strength of the rhetoric, the charisma of the speaker, the ability to think on their feet, the teamwork.</p> <p>2. Students are assessed according to the given criteria (peer-assessment, self-assessment and summative are used)</p>
Materials and tools	<p>Tools needed: computer network, Internet connection.</p> <p>3. Debates Family is the most important value.pptx</p> <p>Materials and sources used: social networks www.wikipedia.com, Disney film 'The Lion King', W. Shakespeare 'Hamlet', George Orwell '1984', Homer 'Odyssey', Sofokles 'Antygona', statistical data, some books of Lithuanian writers (Jonas Biliūnas 'Liūdna pasaka', 'Žemaitė 'Marti', J.Tumas-Vaižgantas 'Dėdės ir dėdienės').</p>
Timing and learning environment	2x45 minutes
Conclusion	<p>The strongest arguments were of the team who defended the position that 'Family is the most important virtue'. They proved:</p> <p>1. Family is a provider of consolation. 2. Family members help to overcome difficulties. 3. Responsibilities and commitments develop and promote a human's altruism and humanism.</p> <p>Innovation</p> <p>1. Learning how to formulate statements and give arguments. 2. Teamwork and cooperative learning.</p>
Contacts	<p>Alytus Putinai gymnasium gimnazija@putinai.alytus.lm.lt</p>

2. E. de Bono “Six Hats of Thinking” Debates



Title	E. de Bono “Six Hats of Thinking”
Content/ Subject	All language sciences, social and natural science subjects
Target group	14-18 years old students, size of the group 25-50
Learning objectives / competences	Six hat technique is designed to help individuals deliberately adapt variety of perspectives on the same subject. It is applied in the trainings to energize and deepen the theoretical knowledge. It is a tool that can empower teachers of any grade and or subject matter to motivate students to use critical thinking and problem solving skills, while expressing inner creativity.
Description of overall activity	<p>It provides six different thinking directions (acts, emotions, kindness, prudence, creativity and thinking process control), in conjunction with the colored hats. Hat as a symbol allows students to work with the material nature.</p> <p>1. Teacher demonstrated for students 6 different colored caps (white, red, blue, green, black, yellow), http://file.scirp.org/pdf/CE_2015031710033222.pdf</p> <p>2. Symbolic meaning of each hat: <u>White</u> hat calls for - known or needed information and facts. <u>Red</u> hat signifies- feelings and intuition. <u>Black</u> hat is judgment, - criticism and doubt. <u>Yellow</u> hat symbolizes brightness and - optimism. <u>Green</u> hat -focuses on creativity, alternatives and new possibilities. <u>Blue</u> hat is used to manage the thinking process.</p> <p>3. Students are divided into groups according to the colored hats. 4. Students read / review the learning material and perform their activity by color: discussing such topics as crime the moral foundations of society and issue based on the topic.</p>
Description of the process and teaching/ learning strategies used	<p>1. Analyzing the novel by F. Dostoyevsky “Crime and punishment” and using the method of E. de Bono “Six Hats of Thinking”, will characterize the main figure of the novel-Radionov Raskolnikov.</p> <p>2. Put on a hat (the color of which is chosen by teacher) and find the episodes from the text to illustrate a certain side of the character (15 min for an individual work).</p> <p>3. Form a team of six people with different colors’ caps.</p> <p>4. Present your illustrations to the rest of the group.</p> <p>5. Create a full picture of R. Raskolnikov in writing (young, gifted, ambitious person who has a lot of attractive features such as: compassion, desire to fix world, perceptive mind, but at the same time he is unsociable, selfish, ruthless, obsessed by the idea of killing).</p> <p>6. Swap writing papers with other groups and evaluate (with comments).</p>

	7. Students in Blue hats summarizes and choose the best work done with the most interesting insights.
Evaluation/ types of assessment	Formative, reflection. When the group performs its part of the work, they are subject have to change their "hats" and evaluate each other's work according to their "hat".
Materials and tools	6 different colored hats or pictures with hats (white, red, blue, green, black, yellow). Fragment of the novel, movies episodes, theater performance directed by Gintaras Varnas.
Timing and learning environment	2x60
Conclusion	Particularly develops critical thinking and promotes creativity. Six hats thinking method allows to study different aspects of the problem or same texts and perceive an in-depth understanding of the topic.
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3. Producing a robot in team work



Title	Producing a robot in team work
Content/ Subject areas	Art and technology, physics
Target group	15-16 years old, 25 students (5 in a group)
Learning objectives / competences	<ol style="list-style-type: none"> 1. Producing a robot working in teams. 2. Learning to collaborate effectively. 3. Learning while practicing. 4. Assessing each other's works. 5. To develop a critical thinking. 6. To improve students' creativity. 7. To adapt theory with practice.
Description of overall activity	<p>Students will create a working robot made of old/broken appliances and other materials that can be easily recycled. This lesson will be divided in 3 parts:</p> <ol style="list-style-type: none"> 1. Using the computers students find information on how to create, how robot can move. 2. Student create a robot from used electric appliances (based on the collaborative work – work in group). 3. Students present made robot to classmates.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Please work in group of 5 people, find on computer or mobile phone more information, how to create a robot. http://www.delfi.lt/video/mokslas-ir-gamta/vaizdo-pamokele-kaip-namuose-pasigaminti-robota.d?id=62708315 https://www.youtube.com/watch?v=CR9xP2xV0QQ 2. Share all this information with each other. http://www.elektronika.lt/teorija/elektronika/7797/robotas-savo-rankomis-lengvai/ 3. You are given a piece of used electronic appliance and you have to find an engine in it. 4. Create a new robot using old equipment. 5. You are given an extra new battery. 6. Connect battery with an engine and check if it works. 7. Create the design for a robot. 8. Present your model to the classmates.
Evaluation/ types of assessment	<p>Formative evaluation based on the material produced and the process to achieve to the final work. Cumulative assessment. Students assess each other's works.</p>
Materials and tools	<p>http://www.elektronika.lt/teorija/elektronika/7797/robotas-savo-rankomis-lengvai/ The soldering iron and multimeter, hot glue gun. Mobile phones, computers, internet, used equipment: CD players, printers, broken appliances, batteries.</p>

Timing and learning environment

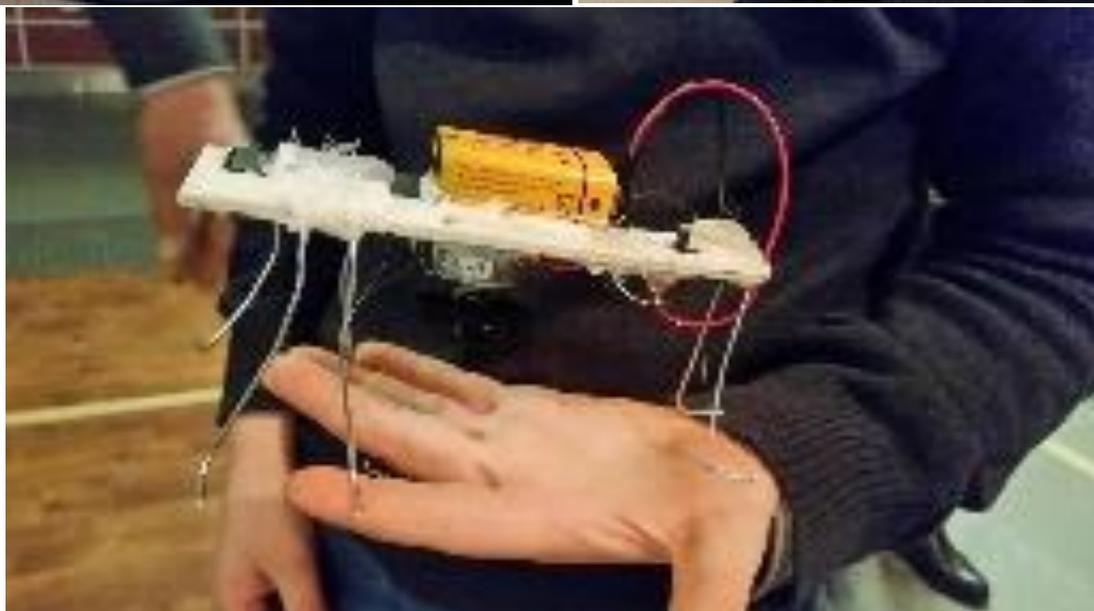
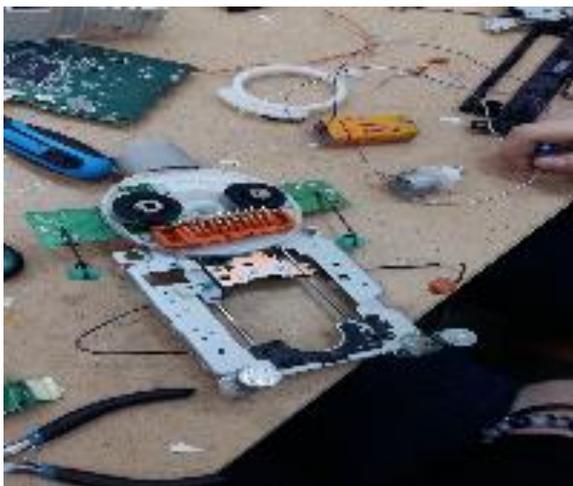
3*45min. The classroom of Art, the workshop

Conclusion

Collaborative work and collective responsibility for student learning. by practice.

Contacts

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4. Drama elements role play on the topic Courts and trials



Title	Drama elements/ role play on the topic <i>Courts and trials</i> (can be adapted on Crime (murder); Love affairs topics)
Content/ Subject areas	Mother tongue (Lithuanian), foreign language (English), Ethics
Target group: Educational level	15- 18 years old students (group of 7-16 students) Upper intermediate to advanced.
Learning objectives / competences	<ol style="list-style-type: none"> 1. To be aware of how to sort out and systematize the information. 2. To express emotions 3. To develop rhetoric skills. 4. To be able to agree and disagree
Description of overall activity	<ol style="list-style-type: none"> 1. Copy the synopsis sheet (1 per student) and the role play cards (1 of each per group of 7-16 students). (Appendix 1) 2. Cut up as indicated. 3. In the previous lesson you could teach related vocabulary: <i>defendant, jury, stand trial, plead</i>, etc. And tell how trials work. https://www.youtube.com/watch?v=6cqmPLLyzo 4. Organise the students and allocate roles: <ol style="list-style-type: none"> 4.1. Decide before the lesson who is going to play each role in the drama. 4.2. <i>Seven main roles</i>: a) Mrs Wilson, the defendant; b) Mr Carmichael, primary witness; c) prosecuting counsel; d) Defending counsel; e) Dr Simms, pathologist; f) Mrs Patel, neighbour; g) Mr Hislop, Mrs Wilson's lover. 4.3. Additional roles may be included: Two more counsels (making two lawyers on both sides); Judge (played by a student or the teacher); an optional Jury, journalist. 4.4. Make name badgets.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Read the given task (6-8 min) (copy sheets) (Appendix 2) 2. Tell the students which roles they will be playing. 3. Form Group one from Mrs Wilson, Mrs Patel and Mr Hislop, defending counsel and work together. The role cards indicate what ones should do. 4. Form Group two from Prosecuting counsel, Mr Carmichael, Dr Simms and work together. The role cards indicate what ones should do (20-30 min are given for preparation). 5. The Judge has a suggested order for events in the trial. His job is to ensure that this order is followed. 6. The Judge allocates from 30min (approx 2-3 min per stage) to 45min (3-4 min per stage) for the whole trial. 7. Make sure that the counsels know how to object. https://www.youtube.com/watch?v=tcLmnVAm4No 8. Make sure that the Judge knows how to sustain or overrule objections 9. The Judge starts by calling for <i>order in court following the stages on his/her role card</i>. 10. Students get into the roles. 11. At the end, the Judge/Jury give their <i>verdict and pass sentence</i>. Extra idea: If you have a camera and the students do not mind, record the trial. The students will enjoy watching their performances. One of the students

	may take a role of a newspaper journalist and write either an article or make a video reportage.
Evaluation/ types of assessment	<ol style="list-style-type: none"> 1. Ask students to comment on the quality of the strength of the rhetoric, the charisma of the speakers, the ability to think on their feet, the teamwork. 2. Students are assessed according to the given criteria (peer-assessment, self-assessment and summative are used)
Materials and tools	Appendix 1, Appendix 2 (role cards). https://drive.google.com/drive/folders/0BwyaXT5fnR7UNTNRZ3NrSkd1NXM
Timing and learning environment	2x45 minutes
Conclusion	Responsibilities and commitments develop and promote a human's altruism and humanism. Innovation <ol style="list-style-type: none"> 1. Critical thinking 2. Applying theory into practice 3. Teamwork and cooperative learning.
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5. Portrait of Raskolnikov “Glasses”



Portrait of Raskolnikov “Glasses”	
Title	Portrait of Raskolnikov “Glasses”
Content/ Subject areas	Mother tongue, foreign languages
Target group	15-17 years old students, at least 6 students in a group
Learning objectives / competences	To acquire and develop particular social skills. To teach how to solve problems. To provide an opportunity for the participants to evaluate the situation from another perspective. To motivate behavior. To improve communication.
Description of overall activity	After having introduced the method ‘Glasses’, will analyze the character of Raskolnikov from a different perspective. Students realize how different people can interpret the same situation differently.
Description of the process and teaching/ learning strategies used	<p>1. Ask students to form 4 groups and take roles, e.g. Raskolnikov wearing glasses of beloved Sonya, Raskolnikov wearing a cinic Marmeladov’s glasses, Raskolnikov wearing glasses of intellectual Razumichin, Raskolnikov wearing his sister Dunia’s glasses.</p> <div style="text-align: center;"> <pre> graph TD R((Raskolnikov)) --- S((Glasses of beloved Sonya)) R --- M((Glasses of cinic Marmeladov)) R --- I((Glasses of intellectual Razumichi)) R --- D((Sister Dunia's glasses)) </pre> </div> <p>2. Give 20 min to find some information in the novel, in the text provided or the Internet, along with some quotations. Annex 1.Character Analysis Rodion Romanovitch Raskolnikov (1).doc</p> <p>3. Each group presents a different side of Raskolnikov.</p> <p>4. Write a paragraph on the topic ‘Is Raskolnikov a weak or a strong person?’</p>
Evaluation/ types of assessment	Students will be assessed for their reflection on the topic Annex 2. Raskolnikov - weak person (2).doc Raskolnikov is a strong person (2).doc
Materials and tools	Tools needed: computer network, Internet connection, Annex 3. Raskolnikov (2).ppt https://ebooks.adelaide.edu.au/d/dostoyevsky/d72c/chapter1.html
Timing	2x45 minutes
Conclusion	Learning to evaluate the phenomena in various aspects according to social status, age and profession Cooperative learning
Contacts	Alytus Putinai gymnasium gimnazija@putinai.alytus.lm.lt

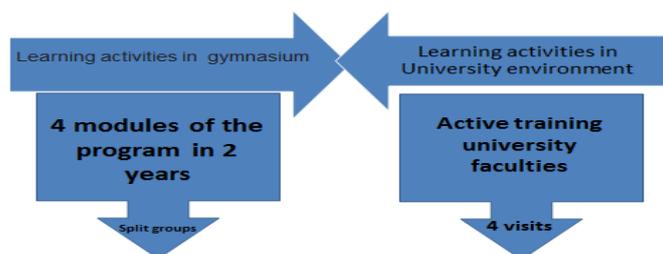
6. Learning Without Walls. Class of Kaunas University of technology



Title Learning Without Walls: class of Kaunas University of technology

Content/ Subject areas	Students involved in the model, have two extra hours per week during which they are taught to four subjects. Module 1 year : one hour for Processing programming environment and robotics; one hour for Planimetry and finances. 2 year: one hour for Researchers of Physics Laboratory and robotics; one hour for Chemical technology and Biotechnology.
Target Group: age range and size of the group,	Age range 15-16, Age range 16-17 size of group 12-15
Learning objectives / competences	<ol style="list-style-type: none"> 1. Widen students' globalized vision in an outside-classroom context. 2. Provide Life-wide Learning (LWL) and Other Learning Experience (OLE) opportunities for students. 3. Extend students' perspective towards learning through integration of multiple learning skills and different subject knowledge. 4. The ability to calculate, science skills, ICT, financial literacy, critical thinking and problem solving, cooperation skills. 5. Will learn to plan properly, organize and manage one's own and family's finances. 6. Develop students Entrepreneurial; practical and creative work skills. 7. Learn how to work using independent working methods; systemize; summarize and apply the knowledge gained in ones 'daily life. 8. Will develop a critical, non-standard thinking and teamwork skills, simulating the real challenges of the present day robotics; 9. Will be able to use IKT skillfully, lawfully and purposefully.
Description of overall activity	<ol style="list-style-type: none"> 1. Experiential-learning model. 2. Multi-disciplinary / Cross-subjects' integration. 3. Cross-forms participation and collaboration. 4. Activity-based tasks. 5. Authentic learning contexts.

The plan of action



Description of the process and teaching/ learning strategies used

I. Two extra split hours in Gymnasium KTU Technologies class:

1. Module (17 hours) Programming with Processing

Objective: Create programs to solve tasks: select, adapt, create algorithms tasks, write them in Processing programming language, to make the computer test, summarize the results.

Result/ outcome: Will create one computer game per one group of three students.

Material: <https://processing.org/>

<http://vaizdopamokos.lt/?s=Vygandas+Bani%C5%A1auskas>

Assessment: Created computer game will be assessed by either giving Credit or no (PASS or FAIL).

2.Module (17hours) Robotics.

The objective: According to the children's educational program 4C (interact, design, think and continue) created with LEGO, children will develop teamwork skills, learning robotics and programming framework.

Material:

<https://education.lego.com/en-us/?domainredir=legoeducation.com>

<https://www.google.lt/search?q=Lego+education+EV3+programing&sa>

Outcome: working in a group, will design and program the robot in EV3 graphical programming environment (Running straight forward and back again. Driving with rotation. Cargo's pickups. Stop at the line. Stop at/near the object).

Assessment: CREDIT

3.Module (17 Hours): Plane geometry

Objective: To help students expand cognitive powers of creativity and mathematical decision problems based on theoretical models and logical reasoning.

Material:

<http://www.spauda.lt/science/math/pythagorean-theorem.htm>

With the material given, students will analyze/explore triangles tasks.

<http://web.vu.lt/mif/v.stakenas/a+o/2003-1/2003-1-34-42.pdf>

By studying the material, will solve the triangle inequality theorems:

<http://vaizdopamokos.lt/matematika/trikampiai-trikampio-vidurio-linija/>

Derivation of Area Formula and their application:

https://lt.wikibooks.org/wiki/Herono_formul%C4%97

The result: the students will learn to use a variety of learning resources, strengthen mathematical thinking, problem solving theoretical competencies.

4. Module (17 hours): Finances

Aim: To provide the theoretical framework of personal financial management and, based on concrete examples, to reveal their practical application of methods and techniques.

Working in groups, will complete a personal finance research study in school;

A representative of SWED DNB Banks will summarize findings (data).

Material:

<http://starfish.academy/lt/kas-yra-finansinis-rastingumas/>

<https://www.consumerclassroom.eu/lt/I%C5%A1tekliai/temos/Finansinis-ra%C5%A1tingumas>

7.Research personal finance .ppt

Assessment: CREDIT. Also, formative and summative evaluation are applied. During the lesson creative research works are applied.

II. Workshops with specialists in University (results):

<https://www.facebook.com/ktu.lt/app/151858328287166/>

<https://www.facebook.com/search/291898756495/291898756495/photos-in/291898756495/photos>

<http://svietimas.alytus.lt/fr/web/guest/naujienos/>

/asset_publisher/WItoiZf6GhA3/content/ktu-diena-putinu-gimnazijos-pirmokams

<https://putinai.alytus.lm.lt/2017/04/25/praktiniai-darbai-ktu-klaseje/>

http://www.alytus.lt/naujienos-top/-/asset_publisher/WmPJbf8RTFLG/content/putinu-gimnazijos-mokiniai-%E2%80%93-tarptautiniu-robotu-varzybu-nugaletojai

<http://alytusplius.lt/naujienos/putinu-gimnazijos-komanda-pasinere-i-isradeju-pasauli>
https://www.facebook.com/pg/putinugim/photos/?tab=album&album_id=1445348648823291
<https://alytausgidas.lt/besirenkantiems-tiksliuosius-mokslus-ir-inzinerija-ktu-klase-putinu-gimnazijoje/>
https://www.facebook.com/pg/putinugim/photos/?tab=album&album_id=1374772682547555
http://www.alytus.lt/ru/web/svietimas/naujienos/-/asset_publisher/8TM9qztXvnGh/content/putinu-gimnazijos-mokiniu-kelione-i-ktu---savojo-kelio-paieska/
<https://putinai.alytus.lm.lt/2017/04/03/konferencijoje-code-the-future-kaune/>

**Evaluation/
types of
assessment**

Having finished the training program, the gymnasium students get a credit and at the end of the school year they participate in the national students' conference "UP TO YOU". After a two-year course will receive certificates.

**Materials and
tools**

<https://processing.org/>
<http://vaizdopamokos.lt/?s=Vygandas+Bani%C5%A1auskas>
<https://education.lego.com/en-us/?domainredir=legoeducation.com>
<https://www.google.lt/search?q=Lego+education+EV3+programing&sa>
<http://www.spauda.lt/science/math/pythagorean-theorem.htm>
<https://www.consumerclassroom.eu/lt/I%C5%A1tekliai/temos/Finansinis-ra%C5%A1tingumas>
www.pinigubite.lt/
<https://ziniuterasa.swedbank.lt/mano-finansai>
<https://www.geogebra.org/>
<https://www.pasco.com/>

Timing

2 years (68 hours)

Conclusion

The following laboratories of faculties and institutions are visited by the students of this class according to their demands: the center of laboratories, the faculty of electrical and electronically engineering, the FAB LAB laboratory, Bloomberg laboratory, the faculty of economics and business, Design Library Kaunas, the faculty of mechanics engineering and design. Such visits, coordinated with the gymnasium wishes, are considered as beneficial as they direct students' thinking towards their professional activity and allow pupils earlier to understand their career expectations.

Contacts

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7. Romanticism: period and features Jigsaw(composition)



Title	Romanticism: period and features Jigsaw(composition)
Content/ Subject areas	Lithuanian language and literature, ICT
Target group:	17-18 years old students, 4 groups with 4 students in each
Learning objectives / competence s	To make notes, select the most important points and collaborate; they will complete one map per group Students will demonstrate qualities of effective group work during the jigsaw activity; will gather, analyze, and share appropriate information on romanticism.
Description of overall activity	Each group gets a different subtopic about romanticism: epochal boundaries and art, the human, epochal ideas and values. The groups read the information which is provided in the given sources and having selected the most important points students write them. Later they will have to teach the group members of the newly formed groups.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Students are divided into 4 groups. (3 min.) 2. A teacher gives a task and indicates the sources. (3 min.) 3. Groups work for 20 min., read the information in the sources, summarize it and make notes of the main points. https://mokovas.wordpress.com/2011/01/22/romantizmas-ir-romantikai/ http://www.saltiniai.info/index/details/1020 https://prezi.com/fv1_10sjnkzm/romantizmas/ http://www.literatura.lt/enciklopedija/r/romantizmas/ https://smp2014is.ugdome.lt/mo/12kl/IS_DE_37/teorine_medziaga_2_1_2.html 4. A teacher checks them. (5 min.) 5. Each group`s students number themselves “1”, ”2”, ”3” and etc. (2 min.) 6. All numbers “1” go to the same desk, all “2” gather to another one and etc. In this way, new groups are formed involving one student who is an expert of a particular subtopic. (2 min.) 7. In the formed groups experts teach each other their subtopics stating the most important points. (40 min.) 8. Everybody does the task which requires the knowledge from all the subtopics, i.e. completes a graphical map. (15 min.)
Evaluation/ types of assessment	ASSESSMENT. Tasks are posted on a Padlet and a teacher can assess the quality of each map. https://padlet.com/rima_bartkiene/k5d0i45p0t0y Students are assessed according to the assessment grid. The criteria are the following:

	<ul style="list-style-type: none"> ✓ Students use appropriate strategies to organize and carry out group projects (e.g., brainstorming, summarizing, reporting, giving and following instructions); ✓ present information to their peers in a focused and organized form on a topic of mutual interest; ✓ listen to others and stay on topic in group discussion.
Materials and tools	https://mokovas.wordpress.com/2011/01/22/romantizmas-ir-romantikai/ http://www.saltiniai.info/index/details/1020 https://prezi.com/fv1_10sjnkzm/romantizmas/ http://www.literatura.lt/enciklopedija/r/romantizmas/ https://smp2014is.ugdome.lt/mo/12kl/IS_DE_37/teorine_medziaga_2_1_2.html computers, Internet, Mobile phones.
Timing	2x45 minutes
Conclusion	Innovation, collaborative work, finding relevant information on the Internet and writing the most important points in a graphical map.
Contacts	Alytus Putinai gymnasium gimnazija@putinai.alytus.lm.lt

8. The causes of famine and malnutrition



Title	The causes of famine and malnutrition
Content/ Subject areas	Geography, Mother tongue, English, IT, Ethics, Religion
Target group:	16-17years old, 24 students
Learning objectives / competences	To develop social and cultural awareness. To recognize and assess the causes of famine. To share the information (send SMS/ use Messenger) by cooperating
Description of overall activity	The method of one heading. Students work in pairs using well- known causes of famine, create the headlines and send them to their friends .The classmates recognize the cause of famine and suggest 1-2 solutions to the problem.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Having used the material https://ourworldindata.org/food-per-person/ students will be acquainted with world maps of minimum and average dietary energy requirement. 2.The teacher demonstrate short scenes about eating habits in the world and discuss them with students. (app. Materials and tools). 3. Having used https://smp2014ge.ugdome.lt/index.php/site/mo/mo_id/6, students work in pairs and write possible causes of famine on the sheets of paper. 4 Put the sheets of paper in one place then take one and formulate the problem. 5. Create the headline of an article. 6. Send the headline to a pair of friends sitting behind you. 7. Your friends give 1-3 solutions to the cause of famine which is in a headline. 8. Send the answer back. 9. Present the received message to the students. Give comments .
Evaluation/ types of assessment	Formative Ask students to write an article about the causes of famine and malnutrition on blog which will be evaluated by marks.
Materials and tools	Stimulation https://www.youtube.com/watch?v=DQeyjgSUIrk https://www.youtube.com/watch?v=r9M2JPscbmQ https://www.youtube.com/watch?v=3f7I_HAm4d8 https://www.youtube.com/watch?v=VhfOC-mYM7s Mobile phones
Timing	45 min
Conclusion	Mobile phones are used as a learning tools, students are able to present the information in a short period of time concisely. Working in pairs they solve the problems of the global world
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9. Write a story about a picture”

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Title	Write a story about a picture
Content/ Subject areas	Mother language, foreign languages, History, Sciences, Religion
Target group: age range and size of the group	8-16 years old students
Learning objectives / competences	<p>To explore our ideas concerning people from other cultures, social groups etc.</p> <p>To be aware of how these images condition our expectations of people who belong to other cultures or groups. To interpret the message of a photo.</p>
Description of overall activity	How different people can interpret the same photo differently
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Explain to the group that together they are going to create a co-operative story using e-mail. 2. Ask students to establish groups of 4 persons. 3. Explain to students the rules: you will get a photo (the same for each group). Based on this photo, someone from the group write the beginning of a story, then send to someone else. When you receive the story, add one or two sentences to it and then send the letter to a colleague to go on. 4. Send to a member of each group the photo. 5. After about 15 turns stop the mailing. 6. Ask a member of each group to read the story in from of the whole class.
	
Evaluation/ types of assessment	Ask a student from each group to read the entire story. Then ask the group to comment on the story.
Materials and tools	Ask students to compare the stories written by different groups Tools needed: computer network, Internet connection; a photo (in electronic form). Select a digital photo for the activity.
Timing	50 minutes
Conclusion	Learning how to observe a picture in an intercultural way Cooperative learning
Contacts	CREF – Centro de Recursos Educativos e Formação refsesimbra04@gmail.com, www.cref.pt

10. Bolas de Berlim (Portuguese doughnuts) is it healthy to eat it ?



Title	<i>Bolas de Berlim (Portuguese doughnuts) is it healthy to eat it ?</i>
Content/ Subject areas	Mother language, foreign languages, History, Sciences, Geography (STEAM)
Target group:	8-16 years old students
Learning objectives / competences	<p>Learning by doing, based on a real situation and developing skills of the students in a collaborative work.</p> <p>Analyzing the problem and trying to find solutions with the group, reflecting on the difference between situations that seemed feasible but were not really effective in the long term.</p> <p>Contribution to the environment and a healthy society.</p>
Description of overall activity	<p>Explain to students that they will now brainstorm problems in the school, then choose one to try to solve. The key question is : “Is a Berlim ball good for health ? “ The students will use “Mentimeter” tool at : www.menti.com” to answer it. Based on the answers and the main words found, it will be time to start investigating. They will do it in groups and also in different subjects.</p> <p>Step 1: Understand the Problem — Formulate a clear statement of the desired outcome of the problem by asking the questions: What do we know about the problem? What do we <i>not</i> know? Is there enough information to help us find a solution? If not, what information do we need?</p> <p>Step 2: Collect Data — Go out into the field to make observations and collect data that will help us better understand the problem and identify its most significant factors.</p> <p>Step 3: Devise a Plan — With data in hand, working groups discuss and brainstorm possible solutions.</p> <p>Step 4: Final conclusions: students produce a portfolio about what they have been studying in the different subjects, coordinated by the class director, as a Steam methodology.</p>
<p>Description of the process and teaching/ learning strategies used</p> 	<ol style="list-style-type: none"> 1. Explain to the group that together they are going to work on a collaborative problem solving. 2. Ask students to establish groups of 4 persons. 3. Explain to students the rules: in the different subjects they will explore the positive and the negative things connected with eating those cakes, especially on the beach. 4. The teacher presents a movie to introduce the problem: <ul style="list-style-type: none"> . https://www.youtube.com/watch?v=wRltq4oLVf8 5. Then, the groups of students investigate in the internet. Here are some links suggested by the teacher: <ul style="list-style-type: none"> http://lifehacker.com/5660544/a-morning-donut-could-improve-your-memory-and-ability-to-concentrate and http://acordaasonze.blogspot.pt/2005/10/origem-das-famosas-bolas-de-berlim.html

or even

<https://lifestyle.sapo.pt/sabores/receitas/bolas-de-berlim-light>

6. In science the students will analyze the ingredients and the taste. Also they will suggest healthy solutions.

7. In geography the students will study where most of the persons can find it along the Portuguese coast.

8. In History the students will learn how this cake appeared in Portugal.

9. In mother language they will try to find a writer who wrote about it. The teacher suggests:

<https://portalivros.wordpress.com/2013/02/21/alexandre-honrado-serve-bolas-de-berlim-com-crime-a-primeira-missao-do-inspetor-bolhas/>

10. Finally, the groups will present a final work of their investigation and suggest healthy “bolas de berlim” to be sold on the beach.

Evaluation/ types of assessment

The evaluation of this project work will be done in two creative steps:

- a) Students will cook new “bolas de Berlim” to be tasted and evaluated by the colleagues (self-evaluation) and the teachers.
- b) Digital Portfolio will be presented by each group and evaluated by the teacher.

Materials and tools

Tools needed: computer network, Internet connection.

Mentimeter and portfolio tools.

Timing and learning environment

4 lessons (4 x 50 minutes)

Conclusion

Exploring and understanding school curriculum through various tools, is innovative approach and can motivate strongly our students. But specially when they feel that they can contribute for a better society with their work and ideas.

Contacts

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11. The creation of a dramatized story



Title	It will be chosen by each group during the project work
Content/ Subject areas	Portuguese language, History and Geography of Portugal, arts, English language (in the case of having English queens in the chosen kingdom).
Target group:	A class group of the sixth year (about eleven/twelve years old)
Learning objectives / competences	Portuguese and English languages competences: Reading and writing History and Geography of Portugal – knowing the way of living and the relationship among the several social classes in the time of the chosen kingdom. Arts: competences of drawing and music, ICT: Flipping book
Description of overall activity	The class will be divided in groups of six pupils. Each group must create a dramatized story related to a certain kingdom of the Portuguese History following those steps: 1st: choosing a kingdom of the Portuguese History and search about its people, way of life and Geography, on the site given by the teacher: http://www.hirondino.com/historia-de-portugal/dom-joao/ 2nd: planning a dramatized story with people living in that time (social classes – king, nobles, clergy, people and any supernatural character) characterization, way of life) with the help of mind maps; 3rd: writing the dramatized story. 4th: searching music from that time to play at the time of the presentation; 5th: drawing some special moments to decorate the story; 6th: creating the Flipping book; 6th: Choosing the characters to play the story to the class
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Study the History of Portugal; 2. Make researches about that time: Social classes and way of living; 3. Writing a text; 4. The drawing; 5. Making the oral presentation acting; 6. Learning how to play the medieval mu
Evaluation/ types of assessment	The evaluation will be made by the teachers (of Portuguese language, History and Arts during all the process; by the other groups, at the time of presentation and at the end by the teachers (analyzing the writing process, the History background and the drawing).
Materials and tools	Books, Internet tools: research and Flipping Book, drawing tools
Timing	10 sessions of 50'
Conclusion	The students work in groups, organizing themselves, developing their skills and creating new situations according to the knowledge they have got and to their creativity. The further application could be the introduction to these subjects in other classes
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Remarks: *Instead of creating a story, the students can also make a game about the same subject to be played in class. In this project the English language will be replaced by Mathematics to organize the results. The students will need other kind of ICT tools such as Hot Potatoes or others.*

12. We are Europe



Title

We Are Europe

Content/ Subject areas

Mother language, foreign languages, History, Sciences, Geography and Religion (STEAM)

Target group:

10-16 years old

Learning objectives / competences

Create the understanding of diversity in political, social, economic and environmental spheres
Promoting a stronger feeling about being European
Learning about European diversity

Description of overall activity

Stages (Steps or Instructions): Group work

1. Students' task is to describe one digital photo, connected with European diversity, in order to promote reflection about it

What does the picture show?

What might be the idea of the author/photographer? What message does it carry?

2. What do students know about the EU?

How many countries does it include?

Where are they situated?

How was the EU created?

3. Group work where students have to select and evaluate information on the population, age and gender proportions as well as the political situation in a particular EU country. Each group chooses 1-2 countries.

4. Students have to find photos/pictures that would refer different forms of diversity: in political, social, ecological and environmental spheres.

Description of the process and teaching/ learning strategies used

a) The teacher divides the class in small groups of 4 students

b) Asks the pupils to look at a picture which symbolizes European diversity

c) The teacher presents a group of questions that must be answered by the students.

d) The students investigate in the internet about the meaning of diversity in the European countries, at : https://www.salto-youth.net/downloads/4-17-973/SALTO%20booklet_new.pdf

e) Each group presents their work, using interactive board in the classroom with e inspire software (or any other type of ICT software, such like Prezzi presentation)

f) The student`s final work will be kept in a digital book and will be sent to their parents and friends for reading



Questions to answer:

- a) In which country the photo was taken? Why?
- b) Who are the people portrayed?
- c) What can be the age of the persons in the photo?

What is the message of this photo ?

Evaluation/ types of assessment

Ask a student from each group to read the entire story. Then ask the group to comment on the story.

Ask students to compare the stories written by different groups

Materials and tools

Tools needed: computer network, Internet connection; a photo (in electronic form).

Timing and learning environment

50 minutes

Conclusion

Learning how to observe a picture in an intercultural way
Cooperative learning

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13. Story book



Title	Story book
Content/ Subject areas	Mother language, science, geography, history, religion, social sciences...
Target group	10-16 years old
Learning objectives / competences	Producing a book in team work. Developing project based learning competences: how to get students to collaborate effectively, how to facilitate student-driven activities, and finally how to assess PBL in your classroom
Description of overall activity	This lesson will be divided in four parts: a) Using the mobile phones to create a mentimeter (www.menti.com) with the key words to start writing a story (In the case of some subjects this part can be substituted by key words already prepared by the teacher) b) Writing a story in the computers based on the collaborative work c) Producing a digital story book which can be illustrated in other subjects such like arts class d) Publishing a digital book and disseminating it to the community (Friends, parents, school library...)
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Please write in your mobile phone a message, but don't send it. 2. Show the message to your neighbor. 3. Ask him to choose two key-words of your message. 4. Now, you are going to make a wordle with it 5. Look at the picture we've got. 6. Write a short story, based on it. 7. When I say start, you start. When I say stop, you must stop. You can't finish the sentence – you just stop writing. 8. Let's jump the places. 9. Now you read what your college wrote and when I say start, you go on writing. 10. Read the story and give it a title. Note: With the pupils, the teacher collects the stories to correct. 11. Then save the stories in PDF. 12. Now, open your flipping book, make a book and keep it in dropbox. Finally send a link to those you want to read your story.
Evaluation/ types of assessment	Formative evaluation based on the material produced and the process to achieve to the final work Self-group evaluation
Materials and tools	Mobile phones, computers, internet, ICT tools
Timing and learning environment	2 x 50 minutes
Conclusion	Promoting collaborative work and collective responsibility for student learning.
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14. Project work “How to write a blog?”



Title	Project work “How to write a blog?”
Content/ Subject areas	Language
Target group:	6 th -9 th class students
Learning objectives / competences	Students know how to write a blog. Students improve the knowledge of writing. Students improve the knowledge of critical thinking. Students follow the good manner principles. Students improve the knowledge of using different digital tools.
Description of overall activity	Students writing a blog.
Description of the process and teaching/ learning strategies used	<p>in a computer room and the teacher introduces the task. Students are checking web, source is suggested by the teacher. Teacher is talking about sharing the kind of information can be published etc.</p> <p>person group and they have to generate all together a list of the blog rules. r ideas and all together a complete list is done and written to the board. As a what kind of blog they want to write by themselves.</p> <p>ents are in the computer class and they will make their own blog. They will d make it look good according to their chosen topic (school blog, cooking</p> <p>to make 3 posts into their blogs while 1 week. They have to follow the blog y use photos or text from the other pages.</p> <p>resented by the students to the others. The other groups assess the blog, using age. A teacher has made a file for each group (Example: 1 group: 1. No id used material was linked correctly 3. Blog was interesting to read. 5. Blog it to continue reading this blog. 7. Information was correct.)</p> <p>s blog is guided by the teacher. Assessment is seen to all from the big screen. Students can continue writing a blog while the school year.</p>
Evaluation/ types of assessment	Peer assessment. Formative assessment. Individual assessment by the teacher.
Materials and tools	Computers with internet connection, papers, pens.
Timing and learning environment	3 lessons (45 minutes each) plus 1 week for a blog posts. https://www.tricider.com , https://www.blogger.com , https://wordpress.com/
Conclusion	Students learn by performing real tasks. Students learn from each other. Students are critical and active.
Contacts	Students explore new digital environments and use new tools for learning. Kristiina Rattasepp, OÜ Miksike, kristiina@miksike.ee

15. Adjectives



Title	Adjectives
Content/ Subject areas Target group:	English language as a foreign language Students, who are learning 2 nd year of English language
Learning objectives / competences	Student -improves communication skills in English language; – improves digital skills; – improves literacy skills; – improves presenting skills; – improves the knowledge of spelling, speaking and writing; - understands the meaning of adjective.
Description of overall activity	Learning adjectives in foreign language.
Description of the process and teaching/ learning strategies used	out the adjectives. ke exercises in order to memorize adjectives. Exercise: http://miksike/en/lmtests.html?test=1286&start=1 d into groups (4 persons) and each group gets a name of one student in the describe that student very precisely in a group, using many adjectives. They amatically correctly and pay attention to the spelling. They can use online needs to be done in http://www.wordle.net/ . will present their Wordle and the others have to guess, who is the person. the teacher. Teacher evaluates the stories according to the following criteria: of adjectives; 3. correct sentence structure. l the students have to bring some pictures of different people with them (files le the lesson students will make a collage in groups (4 persons in a group). ges all together in a group, put them a name, use many adjectives, save it and ng http://fotor.com etc). 1 a class has to pick one collage and write a description of it and add photo er.
Evaluation/ types of assessment	Individual assessment. Formative assessment.
Materials and tools	Papers, pens, computers with internet access. http://www.wordle.net/ , http://fotor.com , http://miksike.eu
Timing and learning environment	45 minutes plus 45 minutes
Conclusion	Students improve digital skills by using different programs in the internet. Students are active and learn from each other.
Contacts	Kristiina Rattasepp, OÜ Miksike, kristiina@miksike.ee

16. Fairy-tales



Title	Fairy-tales
Content/ Subject areas	Literature, language (Estonian or some other language)
Target group:	4th-5th class students
Learning objectives / competences	Student <ul style="list-style-type: none">- understands the characteristics of fairy-tales;<ul style="list-style-type: none">– can write a fairy-tale following fairy-tales’ criteria;– improves the knowledge of writing;– improves the knowledge of speaking;– improves the knowledge of critical thinking;– improves the knowledge of spelling;– improves the knowledge of using different internet resources.
Description of overall activity	Listening, analysis, writing and presenting of fairy-tales
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none">1. Teacher speaks about the fairy-tales in a class. Brainstorming (What students already know about fairy-tales?).2. One fairy-tale will be read out loud as an example (for example “Snow White”). Teacher asks students to describe characteristics of fairy-tales. It can be done using a tool Answer Garden (https://answergarden.ch/). Students are in groups (4-5 students) and every group has at least one computer. They open the tool and write characteristics of fairy-tales to the program, all the others will see from the big screen what is written. They can comment or add new ones. In the end of the task characteristics will be saved and a file will be sent to all students.3. Every group gets one fairy-tale (teacher can have a list of fairy-tales) and they have to do a mind map about a certain fairy-tale. Which criteria are in that fairy-tale? Possible fairy-tales: “Sleeping beauty”, “Snow White”, “Rapunzel”, “Hansel and Grethel”, “Cinderella”, “Little Red Cap” etc. One example of a group work is seen in the end of the file.4. In the next lesson students will open one storytelling site in a computer (it can be for example storybird.com) and at first they will watch examples of the stories what are made by other students from the Storybird page. Teacher shows how to use this site and how to compose a story. https://storybird.com/create/5. Now students will be in groups (4 persons) and have to choose pictures from the site what could describe their fairy-tale.

17.Foreign words



Title Foreign words (in Estonian or in some other language)

Content/ Subject areas	Language
Target group	4 th class
Learning objectives / competences	Students <ul style="list-style-type: none"> – recognize foreign words in native language; – can write a story using different foreign words; – improve their knowledge of writing; – improve critical thinking; – improve the knowledge of using different internet resources.
Description of activity	Learning foreign words and using them correctly in sentences.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Teacher is talking about the characteristics of the foreign words. How to recognize those words? Students need to think of the examples according to the characteristics. Examples of the words will be added to http://www.wordle.net , which is created by teacher and seen by all the students from the big screen. 2. Students will make an exercise about foreign words spelling in Estonian language: http://www.miksike.ee/en/lmtests.html?test=9055&start=1 3. Groups are made of 4-5 students, who have to make a story, using as many foreign words as they can. Criteria: 1. Sentences must be correctly written. 2. Spelling must be right (students can use online dictionaries). 3. Story structure should be correct (introduction, summary, paragraphs) 4. Story should be interesting. Students write the story collaboratively, using Google shared document: https://docs.google.com They can use online dictionaries (http://www.eki.ee/dict/vsl/). 4. Groups are changing the stories and they have to write comment to the other group work (1-4 points according 4 criteria, which were given by the teacher) in Google Doc. Students have to write feedback about every point and give reasons why the number of points was added as they did. (4 – perfect 3 – very good 2 – good 1 – needs to change a lot). A teacher is guiding. 5. At home students need to make by themselves a crossword of foreign words. It can be made in Puzzlemaker http://puzzlemaker.discoveryeducation.com/CrissCrossSetupForm.asp (criss-cross puzzle). In the next lesson students can solve each other puzzles.
Evaluation/ assessment	Pair assessment. Individual assessment by teacher
Materials and tools	Papers, pens, computers with internet connection https://docs.google.com , http://www.wordle.net , http://www.eki.ee/dict/vsl/ , http://www.discoveryeducation.com/free-puzzlemaker/ , http://miksike.ee
Timing	45 minutes plus homework
Conclusion	Students learn by performing different tasks Students use different internet environments for learning Students are active and think critically Students learn from each other
Contacts	kristiina@miksike.ee , Kristiina Rattasepp

18. Haiku



Title	Haiku
Content/ Subject areas	Literature, language
Target group	8th grade students
Learning objectives / competences	<ul style="list-style-type: none"> –Students know what is the structure of haiku and are able to write it; –Students know syllabication rules; –Students improve their knowledge of writing; –Students improve their knowledge of critical thinking.
Description of overall activity	Writing haiku`s and knowing the characteristics.
Description of the process and teaching/ learning strategies used	<p>1. A teacher speaks about haiku and its characteristics and shows different haiku`s on the big screen. Students are reading and analysing them.</p> <p>Teacher is reminding also syllabication and its rules.</p> <p>3. Brainstorming (words about nature). Using https://answergarden.ch/ and showing the words on the big screen.</p> <ol style="list-style-type: none"> 1. Students are in pairs and need to write 3 haiku`s. They can use the words from the screen. 2. Now groups will share their haikus with one other groups, using shared Google Document: https://docs.google.com A teacher is guiding. 3. The other group has to assess the haiku`s according to the haiku rules. They need evaluate written haiku`s according to given criteria: 1. Syllabication 2. Spelling 3. Topic They also have to write, if they see a mistake in haiku`s structure. 4. Groups need to correct their mistakes, if needed. A teacher is guiding. 5. A collection of haiku`s is made and everybody in a class can read them.
Evaluation/ types of assessment	Pair assessment Formative evaluation by teacher
Materials and tools	Computers with internet access. Papers, pens.
Timing and learning environment	45 minutes https://docs.google.com , https://answergarden.ch/
Conclusion	Students learn from each other Students are active and critical Students use different digital tools Students are performing real tasks
Contacts	Kristiina Rattasepp, OÜ Miksike, kristiina@miksike.ee

19. States and capitals



Title	States and capitals
Content/ Subject areas Target group:	Local history 5 th class
Learning objectives / competences	6. Students increase their knowledge of local history; 7. Students improve their digital skills;
Description of overall activity	Knowing different states and capitals
Description of the process and teaching/ learning strategies used	<ul style="list-style-type: none"> – Brainstorming – states and capitals. http://wordle.net – Students will make one interactive exercise in http://miksike.ee about states and capitals: http://miksike.eu/#keelemiks/en/gtests.html?test=1288&start=1 2. Conversation about different countries. What students know about different countries? A teacher shows photos of different countries and students are guessing (famous or known places). <ul style="list-style-type: none"> – Group work - students has to create a description about one European country. They have to describe landscape, people, traditions, population, size etc. – Groups will read their descriptions and the other groups have to find the name of the country. They can use the internet to find the information. – All the groups are assessed by the other groups, using www.tricider.com. A teacher has a file in Tricider for every group and the others have to vote according to the following parameters: 1. A description included a lot of useful information 2. Facts were interesting 3. A group was very active – A teacher will make conclusions and gives also feedback to the whole class.
Evaluation/ types of assessment	Self-assessment Formative evaluation by the teacher
Materials and tools	Computers with internet access. Papers, pens.
Timing and learning environment	45 minutes http://miksike.eu/#keelemiks/en/gtests.html?test=1288&start=1 , http://wordle.net , www.tricider.com
Conclusion	Students learn from each other Students are active and critical Students use different digital tools Students are performing real tasks collaboratively
Contacts	Kristiina Rattasepp, OÜ Miksike, kristiina@miksike.ee

20. Local history



Title	Local history
Content/ Subject areas	Local history
Target group	5 th class
Learning objectives / competences	Students know facts and history of local places; <ul style="list-style-type: none"> – Students improve their knowledge of collaborative writing; – Students improve their knowledge of critical thinking; – Students improve in searching the information.
Description of overall activity	Finding information about the local place and writing a story collaboratively
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Mindmap to the big screen about the place student live. A teacher can use https://www.canva.com etc. 2. Students need to find information about the place they live. They have to make a list of facts and they can use for example this http://listmoz.com. They need to find information about the history, traditions, landscape, famous people, and holidays. 3. A teacher is speaking about the information what has to be in the group work: 1. Correct spelling 2. Enough facts about history, famous people, traditions, food, holidays, landscape. 3. Picture 4. Interesting story Students are now in groups (4-5) and they share the facts with each other, to be able to put all the facts together and make a story in Google Document all together with the class. https://docs.google.com . A teacher is guiding. Every group gets different color. 4. In the end of the lesson a story is made. Students can share their experience (What were difficulties? What did they like? How they managed? Etc.).
Evaluation/ types of assessment	Self-assessment Formative evaluation by teacher
Materials and tools	Computers with internet access. Papers, pens.
Timing and learning environment	2 x 45 minutes http://listmoz.com , https://www.canva.com , https://docs.google.com
Conclusion	Students learn from each other Students are active and critical Students use different digital tools Students are performing real tasks collaboratively
Contacts	Kristiina Rattasepp, OÜ Miksike, kristiina@miksike.ee

21. Mushrooms



Title	Mushrooms
Subject areas	Nature science
Target group	3rd grade
Learning objectives / competences	<ol style="list-style-type: none"> 1. Students know most common edible and toxic mushrooms; 2. Students know what can happen, if they eat toxic mushroom; 3. Students know what should be done if somebody ate something toxic; 4. Students are able to find information from the internet and make a presentation; 5. Students are improving the knowledge of writing and speaking.
Description of overall activity	Students get new information about mushrooms. They search and present the information.
Description of the process and teaching/ learning strategies used	<ul style="list-style-type: none"> – Brainstorming. What students know about mushrooms? Which ones they know? All answers are seen from the big screen. Teacher will add answers to the http://wordle.net. – A teacher shows different mushrooms in the big screen and speaks about mushrooms (toxic, edible, most common mushrooms, how they are used etc). In Estonian language students can use “Seeneaabits”: http://www.appszoom.com/android_applications/education/seeneaabits_btksd.html <p>Conversation about toxic mushrooms, what to do if someone will eat them? What are the symptoms?</p> <ul style="list-style-type: none"> – Students will be divided into groups (4-5) and every group gets one mushroom (edible or toxic). A teacher has prepared papers with most common mushroom names and students pick them so that they don't see what they get. They have to make a short presentation about one mushroom (name, where it can be found, how it is used, appearance, toxic or not, picture etc). They can use the internet. Criteria: 1. Correct information 2. Correct spelling 3. All needed information added 4. Includes a photo 5. Looks nice Students can make their presentation in https://prezi.com/, https://my.visme.co, https://www.emaze.com <p>A teacher is guiding.</p> <ul style="list-style-type: none"> – Now every group must present their presentation to the others. – Evaluation is done by using www.tricider.com. Teacher will add there one page for each group, with criteria: 1. Presentation was done well 2. Presentation included a photo 3. All the main information was given 4. I liked it / Now all the students from other groups can vote while the one is presenting its work. – In the end of a lesson all the stories are put together as a book.
Assessment	Pair assessment, Individual assessment by the teacher
Materials and tool	Computers with internet connection
Timing and learning environment	2 x 45 minutes http://www.tricider.com , https://prezi.com/ , https://my.visme.co , https://www.emaze.com , http://www.appszoom.com/android_applications/education/seeneaabits_btksd.html , http://wordle.net
Conclusion	Students learn from each other Students use different online environments for learning and use different digital tools Students are active and critical
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22. The ways of self-discovery and rhythm



Title	The ways of self-discovery and rhythm
Content/ Subject areas	Subjects: Arts, Music, Ethics, Psychology, IT, Languages, Sport
Target group	-Primary School -Secondary School
Learning objectives / competences	Cultural awareness and expression competence Social and civic competence Mathematical competence and basic competence in science and technology Linguistic communication competence Physical activity and health competence
Description of overall activity	<p><i>Self-discovery part</i> – creating a collage about yourself, your own dreams and intensions, where you see yourself in the future.</p> <p><i>Rhythm part</i> - introduction to elements of musical rhythm, using sports equipment and various household items for creating the music rhythms, hearing of the sounds and rhythms, staging of the musical accompaniment.</p>
Description of the process and teaching/ learning strategies used	<p><i>Self-discovery part.</i></p> <p>Students are introduced to the task – creating a collage about yourself and options for realization of the task. When students do their task, they cooperate with each other and help each other technically – take photos, draw profile silhouette, process photos in ‘PhotoScape’, share with illustrative materials. Students who chose to draw themselves do it individually. After creating the collages, students present their work and tell the reasons why did they choose this kind of texts that they wrote or why did they chose this kind of images that they photographed, cut or drown.</p> <p><i>Rhythm part.</i></p> <p>Students get acquainted with the available kitchen items - pots, pot lids, meat boards etc. Children and youngsters check the sound of every item. Students repeat the titles of music notes by playing game, talk about the rhythm squares – how ‘‘conductor’’ point out which instrument should sound. Every student, according to their character, choose ‘‘the instrument’’ and students create groups. For the simplest rhythms piano is used, and students are representing a variety of fairy tale characters by the sounds. The teacher helps to ‘‘conduct’’ for younger students, but older students choose ‘‘conductor’’ from among themselves. After that</p>

Evaluation/ types of assessment	Primary school: formative assessment, peer-evaluation Secondary school: formative assessment
Materials and tools	A3 white drawing sheets, illustrated journals, booklets, calendars, colored pencils, scissors, glue sticks, camera, printer, projector, computer with Internet access. Various household items (mostly the kitchen items), basketball balls, piano, pre-selected records, blackboard, music game.
Timing and learning environment	Time is planned accordingly to age group – till 4 hours. Working places – classrooms, gym and assembly hall.
Conclusion	Students had an opportunity to choose the most acceptable way of working and creatively express their feelings and thoughts. Students enjoyed the creative atmosphere, an opportunity to engage in different age groups. Children got the recognition that it is always possible to find things around yourself, with which you can create the rhythm and musical accompaniment. During self-discovering part children looked more into themselves, but, by doing the rhythm elements students were able to express their emotions and feeling in the action.
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Additional information	https://sway.com/ANMIvAzEGCnN1sUm



23. Bally (a novel by chapters)



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Title	Bally (a novel by chapters)
Content/ Subject areas	Langage; foreing languages; Geography, Art
Target group	Students year 5/6 Primary and Secondary. The difficulty will be according to students age
Learning objectives / competences	<p>Learn to work collaboratively with other students in the same school and/or with other European schools</p> <p>Students learn to write a novel by chapters</p> <p>To work in creative way, by doing a trip , students show their knowledge in Geography, Art, ...</p> <p>Students are able to communicate their knowledge and produce stories</p> <p>Competences: creativity, critical thinking ,decision making, learn in collabotative way ...</p>
Description of overall activity	<p>This activity can be done in one school andeach class does a chapter or among different schools for example one country does chapter 1, other chapter 2, The approach we present to students is the title and the title of each chapter, also we provide students how each chapter starts and how each one ends. Students can write in each chapter what they like but the beguining and end is provided by teacher, Each group should do the drawings they like using a digital programme. With all chapter we have a novel written by students with nice works</p>
Description of the process and teaching/ learning strategies used	<p>We teach students to write a story by chapters</p> <p>The teacher provides the chapter title and how it starts and finishes</p> <p>Each group writes a chapter of the novel or more than one if the number of groups is small and illustrates it. (taking care that finishes as it is in the approach)</p> <p>Students write one capter after other according to the approach presented by the teacher/teachers</p>
Evaluation/ types of assessment	<p>Each student fills in a self evaluation form</p> <p>The group presents the chapter to the class Aand other group comments the work according to the criteria fixed by students and teacher with all this data the teacher does the sumative assessment.</p>
Materials and tools Timing and learning environment	<p>A program for drawing, Word,..</p> <p>Each chapter will be done in two weeks, it can be done in the class of foreign languages if we work with European schools or in own language if we do the work with the own school, The teacher of Art can illustrate the chapter</p>
Conclusion	<p>Students work different transversal skills: creativity, decision making, apply previous knowledge, communication skills...</p> <p>It can be used at one school or it can be a work done in six or more schools. Students work different transversal skills: creativity, decision making, apply previous knowledge, communication skills...</p> <p>It can be used at one school or it can be a work done in six or more schools. In our opinion is innovetive becauser students have the opportunity to learn collaboratively, students can learn and work together being in different schools. Important transversal skills are worked and evaluated in the approach ...</p>
Contacts	<p>mtrigo@edu.xunta.es</p> <p>http://centros.edu.xunta.es/cpiocruce/webantiga/actviblio/bally.pdf</p>

24. Spanish Armada



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Title	Spanish Armada
Content/ Subject areas	Langage; foreing languages; Geography, History
Target group	Students Secondary. The difficulty will be according to students age
Learning objectives / competences	To learn all around the Spanish Armada To make Team works To evidence accuracy in gathering and recording information To create high quality final products: Website, ... Students are able to communicate their knowledge and produce own works in collaborative way
Description of overall activity	The teacher introduces the topic to student through a treasure hunt, they have to do a research work, through it they gain knowledge about the history of the Spanish Armada. Various departments (History, Art Language, Foreign Language) work together in a collaborative work. All of them participate in the project work Students also learn transversal skills: Autonomous work, team work, creativity, selection of Information, communication of information using different technological resources, digital literacy, oral communication Students learn by doing a research work, produce a website and perform a radio program that let them know in deep the history round the topic From a WebQuest students follow the working process
Description of the process and teaching/ learning strategies used	Students through a treasure hunt solve in groups small task that help them to solve the big question What happened with the Spanish Armada, reasons for the battle, True reasons for the disaster... Students learn about the Spanish History, they find the information and produce a website to answer the big question
Evaluation/ types of assessment	We do formative assessment by asking students to present (individually) a conceptual map showing all facts round the Spanish Armada We'll also do pair assessment one group assess other group after the presentation of their work and debate on it Teachers use the e-portfolio for assessment.
Materials and tools	Xmind-map, Wordpres or any blog, HTML, Internet, Padlet to share the contents among small group Xmind-map, Wordpres or any blog, HTML, Internet, Padlet to share the contents among small group http://centros.edu.xunta.es/cpiocruce/etm5/arhivos/ainvencible/ai/prin2.htm Students works http://centros.edu.xunta.es/cpiocruce/etm/ainvencible/taien/index.htm Rubric http://centros.edu.xunta.es/cpiocruce/etm/ainvencible/ai/ficha.htm Questionaire http://centros.edu.xunta.es/cpiocruce/etm/ainvencible/ai/quizingles.htm Radio Programme http://centros.edu.xunta.es/cpiocruce/etm/ainvencible/ai/frdrake1dialog.wav

Timing and learning environment	Timing depends on how deep you like to go in the topic. Two weeks will be OK, the environment can be the classroom using 1:1 or tablets, it can be also the computers room.
Conclusion	Students work different transversal skills: Research information, creativity, decision making, apply previous knowledge, communication skills... It can be used in any school to study History topics In my opinion is innovative because students build their own knowledge in groups and learn together, the teacher acts as a guide and helps students to integrate previous experiences and to build new knowledge
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25. The Romanesque



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Title	The Romanesque
Content/ Subject areas	Art, Geography, History, Language; foreign languages
Target group	Students Secondary.
Learning objectives / competences	To learn about the Road to Santiago and Romanesque style To get knowledge about Romanesque Architecture; sculpture and paintings Learn to transfer information into knowledge Learn to work by projects
Description of overall activity	group celebrities is in the shelter of "O Cebreiro", all have made the Road to Santiago, They are around the fire and they agreed on describe a monument (Romanesque Art) of the Road to Santiago that was especially interesting for them. In pairs, the students will have to prepare the description of a Romanesque building in the Road to Santiago. It will be done from the point of view of the celebrity they have chosen. The description will be made with support multimedia: video, Padlet, or power point. When you make the description of the Romanesque monument you will consider the following aspects: - Situation of the building, where it is, constituent elements. - Location of the groups of personages, as they are distinguished, where they are. - Analysis of the concrete aspects - Establish the relationship between the monument and the historical context in which it was developed.
Description of the process and teaching/ learning strategies used)	Students in pairs prepare a description of Romanesque with examples. They visit the web http://centros.edu.xunta.es/cpiocruce/materiales/2arteenglish/index.html do the interactive activities and prepare their presentation. They should explain why this famous person chooses that building They should do the description using multimedia resources. They present the work to the class like if they were the famous people
Evaluation/ types of assessment	We do formative assessment by asking students to present conceptual map on Romanesque. We'll also do pair assessment one group assess other group after the presentation of their work and debate on it Teachers use observation sheets to evaluate students
Materials and tools	HTML or a blog http://centros.edu.xunta.es/cpiocruce/materiales/2arteenglish/proyecto.html http://centros.edu.xunta.es/cpiocruce/materiales/2arteenglish/index.html
Timing and learning environment	Timing depends on how deep you like to go in the topic. Three classes will be OK, the environment can be the classroom using 1:1 or tablets, it can be also the computers room.
Conclusion	Students work different transversal skills: creativity, decision making, apply previous knowledge, communication skills... This small project can be used to present any Architectonic style in any school in Europe. The project is innovative because students are responsible and they build their own knowledge. The teacher supports the students, asks them questions and makes them think about their own learning. Students plan and reflect on their learning
Contacts	mtrigo@edu.xunta.es

26. Creating Apps



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Title	Creating Apps to promote our books „ El Quijote“
Content/ Subject areas	Literature, Language; foreign languages
Target group	Students Secondary.
Learning objectives / competences	To motivate students to learn Be able to read /share and the text in a way appropriate to the age/ability of students Be able to identify which parts of the book will be effective in the App; produce a storyboard for the App, describe the main characters, describe the place where story took place, typical food, information about the writer. Be able to process information and build new knowledge
Description of overall activity	Students learn to create an App using APP inventor Students read some chapters of the book “D. Quijote” Each pair of students creates an APP about the chapter they read In the class they present their chapter to the class With all good ideas students create an APP to present the Quixote They select the best ideas to promote the book and engage students in reading.
Description of the process and teaching/ learning strategies used	Students learn to create Apps After reading the book students create an APP about the book to motivate students to read Students create the test to motivate students to read the book Students produce an App to motivate students to read
Evaluation/ types of assessment	The teacher uses the observation sheet We'll do pair assessment one group assess other group after the presentation of their work and debate on it Teachers use the e-portfolio for assessment.
Materials and tools	App inventor 2
Timing and learning environment	Timing depends on how deep you like to go in the topic. 3 classes will be OK, the environment will be the computers room.
Conclusion	We propose this activity to motivate students to read. The App is to promote a book. Students like to produce materials that let them work with ICT, so they are very much engaged in produce Apps. The activity is very motivating for students who produce the APP but also for students that can see the App in iPads or in their own mobile It can be used in any school but also students can produce an APP with any book they like
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27. Fromprinting to web 4.0



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Title	Fromprinting to web 4.0
Content/ Subject areas	ICT, history, language; foreign languages,...
Target group	Students Secondary.
Learning objectives / competences	<p>To know how communication media has been developed along the time 15th to 21st century.</p> <p>To know the importance of media like printing, cinema, telephone, computers, Internet, mobiles</p> <p>Be able to identify when the resource appears and its importance for humanity,</p> <p>Be able to process information and build new knowledge and reflect it in a timeline which also includes the importance of the invention for the humanity</p>
Description of overall activity	<p>Students learn to research and find information. Each group of 3 students will be responsible for one technological invention: Printing, telegraph, telephone, cinema... Each group will represent a timeline of their technological invention and its benefits. The students put all the works together in a wall and they should represent from 15th century to nowadays</p> <p>Each group chooses a representative and they organize a round table, each one of the representatives has to try to convince the audience that this technological invention is the most relevant for the history of humanity, other participants should try to put theirs in the highest place. Every participant will have the same time to speak and all will have the opportunity to make the same number of interventions</p> <p>At the end participants will use the whiteboards voting system to check what was the most relevant technological invention</p>
Description of the process and teaching/ learning strategies used	<p>Create a c timeline of an invention in groups of 3</p> <p>Later they put all timelines one after other on a wall. The timelines should include a short summary of the benefits of that invention</p> <p>Set up a round table with one member of each group. They should talk about their technological invention and answer other questions</p> <p>A Jury decides which was the most relevant invention and why</p>
Evaluation/ types of assessment	<p>The teacher uses the observation sheet</p> <p>We'll do pair assessment the class assess participants in the round table and team work. Teacher compiles all data for assessment</p>
Materials and tools	<p>Large papers to represent the timeline, marker pens, voting system of the whiteboard (if one school has not got it. they can vote with papers)</p>
Timing and learning environment	<p>3 classes will be OK, the environment will be the library</p>
Conclusion	<p>Students get knowledge on how the technological inventions affect to our lives and when did they took place</p> <p>They become aware of the benefit of technological development</p> <p>It can be used in any school</p>
Contacts	<p>mtrigo@edu.xunta.es</p>

28. Business Analysis on a Company's Advertising Policy



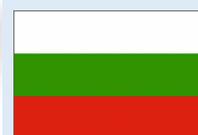
Title	Business Analysis on a Company's Advertising Policy
Content/ Subject areas	Entrepreneurship, Business and Management
Target group: age range and size of the group	Age range: any, Group size: 2-5 students
Learning objectives / competences	Improve business analysis and management skills, social and communicative, learning to learn competences, collaborative problem solving and critical thinking skills.
Description of overall activity	Students present analysis the advertising policy of an existing business company
Description of the process and teaching/ learning strategies used	<p>For students:</p> <ol style="list-style-type: none"> 1. Student divide into groups 2-5 people. 2. Students develop as homework for 2 weeks a present and make suggestions for improvement and/or future steps. 3. Students present their presentations in front of the class and a receive questions and comments from other students and teacher. <p>Tips for teachers:</p> <ol style="list-style-type: none"> 1. Provide guidelines in advance about the main points to be included in the presentation of the advertising policy of the company. <p>Learning strategies:</p> <ol style="list-style-type: none"> 1. Collaborative Problem Solving 2. Honey and Mumford Learning Styles 3. Daniel Kolb's Experiential Learning Cycle 4. Learning by doing
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	<u>Annex.</u> Initial Scenario and Guidelines for the Management Project, given in advance from the teacher to the students. http://www.innovative-teacher-motivated-student-project.com/materials.html
Timing and learning environment	The methodology is suitable for any timing and duration of the training and it is applicable in any learning environment
Conclusion	Innovation: The Good Practice Business analysis of a company's advertising policy is supporting students in gaining real world experience and application of the theoretical knowledge they receive at school. It applies STEAM, CPS and learning by doing. If points are introduced it could foster Gamification in class.
Contacts	www.bfc-bg.com

29. Business Model Analysis



Title	Business Model Analysis
Subject areas	Entrepreneurship, Business, Economics and Management
Target group:	Age range: over 14 years old, Group size: 2-5 students
Learning objectives / competences	Developing of social and communicative, learning to learn competences, collaborative problem solving and critical thinking skills, gain entrepreneurial, business and primary management skills.
Description of overall activity	Describe the business model of an existing famous company, using Business Model Canvas
Description of the process and teaching/ learning strategies used	<p>For students:</p> <ol style="list-style-type: none"> 1. Students divide in groups and receive a task to choose an existing famous company and to describe its business model using the Business Model Canvas tool. 2. Students work in teams for 25 minutes describing the business model. 3. Students prepare and present their models at the end of the class. 4. All other student groups and the teacher are asking questions to the presenting team and are starting a discussion on the presented business model. <p>Tips for teachers: Help students discover their mistakes and think of more ideas on variations of the presented business model.</p> <p>Learning strategies:</p> <ol style="list-style-type: none"> 1. Collaborative problem solving while working in team on the creative task 2. Honey and Mumford Learning Styles 3. Daniel Kolb's Experiential Learning Cycle 4. Learning by doing
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	<p>Annex.Business Model Analysis. Business Model Canvas www.strategyzer.com Initial Scenario and Guidelines for the Management Project, given in advance from the teacher to the students http://www.innovative-teacher-motivated-student-project.com/materials.html</p>
Timing and learning environment	The methodology is suitable for any timing and duration of the training between 25 and 45 minutes and it is applicable in any learning environment
Conclusion	Innovation: The Development of Business Model of an existing company is providing opportunity for students to develop their business analytical skills and gain ideas how to develop further the current business models of existing famous companies. It applies CPS and learning by doing. If adding points it can foster also Gamification in class.
Contact	www.bfc-bg.com

30.Management Project Regional Development



Title	Management Project Regional Development
Content/ Subject areas	Entrepreneurship and Management
Target group:	Age range: over 14 years old, Group size: 2-5 students
Learning objectives / competences	Gain management skills
Description of overall activity	Develop a project idea in the field of regional development (development of the community - municipality project)
Description of the process and teaching/ learning strategies used	<p>For students:</p> <ol style="list-style-type: none"> 1. Students divide in groups and receive a scenario with guidelines about developing a project idea in the field of regional development (development of the community - municipality project). Scenario is providing equal initial conditions for all groups in the course. 2. Students work in teams for 4 weeks developing a regional development idea for their municipality/region/community. 3. Students prepare a project proposal document, following the requirements from the teachers and present their projects at the end of the month. 4. All other student groups and the teacher are asking questions to the presenting team and are starting a discussion on how to improve the plan. <p>Tips for teachers: Follow the structure of the given scenario and guidelines in the project and give clear tasks for the students on every meeting, while working on the project.</p> <p>Learning strategies:</p> <ol style="list-style-type: none"> 1. Collaborative problem solving while working in team on the creative task 2. Interdisciplinary approach due to the usage of knowledge from many different areas in this Management Project 3. Honey and Mumford Learning Styles 4. Daniel Kolb's Experiential Learning Cycle 5. Learning by doing
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	Initial Scenario and Guidelines for the Management Project, given in advance from the teacher to the students. Annex. Project Regional development http://www.innovative-teacher-motivated-student-project.com/materials.html
Timing and learning environment	The methodology is suitable for any timing and duration of the training between 2 and 12 weeks and it is applicable in any learning environment
Conclusion	Innovation: The Management Project Regional development is providing opportunity for students to develop their ideas for improving their local community/region/municipality by working in team and working on solving a problem i.e. collaborative problem solving (CPS). They apply knowledge from different knowledge areas i.e. interdisciplinary education (STEAM), CPS and learning by doing. If adding points it can also foster Gamification in class.
Contacts	www.bfc-bg.com

31.Presentation skills development



Title	Presentation skills development
Content/ Subject areas	ICT, Any area
Target group	Age range: any, Group size: individual
Learning objectives / competences	Improve presentation skills
Description of overall activity	Students present themselves with a PowerPoint presentation as first step in their presentation skills training
Description of the process and teaching/ learning strategies used	<p>For students:</p> <ol style="list-style-type: none"> 1. Students prepare as homework a short presentation about themselves (with photos, favorite hobbies, etc.). Asking students to make their first presentations about themselves is eliminating the problem to “forget your lesson” and is allowing students to focus mainly on their presentation and also to gain initial courage for making presentations. 2. Students present themselves with the presentation in front of the class. 3. Students receive questions and feedback from other students and teacher. <p>Tips for teachers: Help students feel comfortable with presenting practice by sharing tips and good practices. Learning strategies: Learning by doing</p>
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	<p>https://support.office.com/en-us/powerpoint www.templateswise.com</p> <p>Presentation skills good practices and tips from the lecturer Initial Scenario and Guidelines for the Management Project, given in advance from the teacher to the students</p> <p>http://www.innovative-teacher-motivated-student-project.com/materials.html</p>
Timing and learning environment	The methodology is suitable for any timing and duration of the training and it is applicable in any learning environment
Conclusion	Innovation: The Good practice Presentation skills development is easing the first steps in the presentation skills of students. It applies learning by doing.
Contacts	www.bfc-bg.com

32. Restaurant Business Analysis



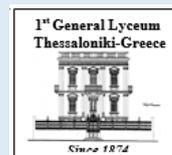
Title	Restaurant Business Analysis
Content/ Subject areas	Entrepreneurship, Business and Management
Target group: age range and size of the group	Age range: any, Group size: 2-5 students
Learning objectives / competences	Improve business analysis and management skills in the restaurant business, improve presentation skills
Description of overall activity	Students present a restaurant business by their choice, provide analysis, feedback and proposal for future improvement following a guidelines document by the teacher
Description of the process and teaching/ learning strategies used	<p>For students:</p> <ol style="list-style-type: none"> 5. Student divide into groups 2-5 people. 6. Students work as homework on analysis of a restaurant business by their choice, provide analysis, feedback and proposal for future improvement following a guidelines document by the teacher. 7. Students present their presentations in front of the class and receive questions and comments from other students and teacher. <p>Tips for teachers:</p> <ol style="list-style-type: none"> 2. Provide students with clear guidelines document for the tasks and topics which should be included in the project <p>Learning strategies:</p> <ol style="list-style-type: none"> 6. Collaborative Problem Solving 7. Honey and Mumford Learning Styles 8. Daniel Kolb's Experiential Learning Cycle 9. Learning by doing
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	<p>Annex. Restaurant Business Analysis. Initial Scenario and Guidelines for the Management Project, given in advance from the teacher to the students</p> <p>http://www.innovative-teacher-motivated-student-project.com/materials.html</p>
Timing and learning environment	The methodology is suitable for any timing and duration of the training and it is applicable in any learning environment
Conclusion	Innovation: The Good practice Restaurant Business Analysis is focused towards applying theoretical knowledge in real world business sphere. It applies STEAM, CPS and learning by doing. If points are introduced it could foster gamification in class.
Contacts	www.bfc-bg.com

33. Touristic place - Team presentation development



Title	Touristic place - Team presentation development
Content/ Subject areas	ICT, Any area
Target group:	Age range: any, Group size: 2-5 students
Learning objectives / competences	Improve presentation creating skills, team working skills and presentation skills
Description of overall activity	Students present 3 touristic places in their city with a PowerPoint presentation by including only photos and videos made by them and with their participation
Description of the process and teaching/ learning strategies used	<p>For students:</p> <ol style="list-style-type: none"> 1. Student divide into groups 2-5 people. 2. Students present three touristic places in their city with PowerPoint presentations and all photos and videos included in the presentation should be created by them and with their participation 3. Students present their presentations in front of the class and a receive questions and comments from other students and teacher. <p>Tips for teachers:</p> <ol style="list-style-type: none"> 3. Help students feel comfortable with presenting practice by sharing tips and good practices. <p>Learning strategies:</p> <ol style="list-style-type: none"> 1. Collaborative Problem Solving 2. Honey and Mumford Learning Styles 3. Daniel Kolb's Experiential Learning Cycle 4. Learning by doing
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	<p>Annex Presentation skills developmlent. https://support.office.com/en-us/powerpoint , www.templateswise.com</p> <p>Presentation skills good practices and tips from the lecturer Initial Scenario and Guidelines for the Management Project, given in advance from the teacher to the students</p> <p>http://www.innovative-teacher-motivated-student-project.com/materials.html</p>
Timing and learning environment	The methodology is suitable for any timing and duration of the training and it is applicable in any learning environment
Conclusion	Innovation: The Good practice on touristic place presentation is aimed towards involving students deeper in the experiential and learning process. It applies STEAM, CPS and learning by doing. If points are introduced it could foster gamification in class.
Contacts	www.bfc-bg.com

34. Immigration

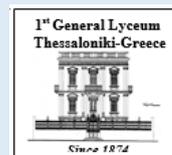


Title

Immigration

Content/ Subject areas	History of Social Science. Sociology. Political Education.
Target group: age range and size of the group	16-18 years old
Learning objectives / competences	Information and understanding of the social phenomenon of immigration.
Description of overall activity	<ul style="list-style-type: none"> To define and distinguish the concepts immigrant and refugee Understanding of the permanence of the phenomenon and realize the multiculturalism where they will live. To become aware of the problems and feel the difficulties that the immigrants and the refugees are facing. To adopt an accepting attitude of the immigrant or refugee (not just tolerate) but respect of their rights and diversity. To redefine attitudes and behaviors. <ul style="list-style-type: none"> To condemn racist attitudes and to defend human rights.
Description of the process and teaching/learning strategies used	<p>Random division into groups where each group will study a different period and destination of the Greek Immigration.</p> <p>Distribution of a questionnaire.</p> <p>Presentation of a documentary 20'.</p> <p>For 20' the members of each group will:</p> <ul style="list-style-type: none"> Brainstorm <ul style="list-style-type: none"> Create maps with immigrants' moves randomly assigned roles within each group (immigrant, journalist, class institution, employer) Randomly assigned roles within each group (immigrants, journalist, police officer, employer) 10' interview among students Completion of questionnaire <ul style="list-style-type: none"> Creation of presentation by the professor of statistics, based on student's answers written at the questionnaire 50' conversation, dialogue, debate, questions.
Evaluation/ types of assessment	<ul style="list-style-type: none"> Cross approach Exploratory learning
Materials and tools	Lesson: sociology emigration. New digital tools, ex. Cmap tools etc. ,
Timing and learning environment	2 hours and 50 minutes in class
Conclusion	To encourage people to express their opinions about a topic.
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35. Offering a gift

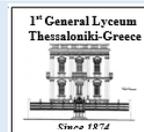


Title

Offering a gift

Content/ Subject areas	History of Social Science. Sociology. Anthropology
Target group: age range and size of the group	17-18 years old. 8 or more persons.
Learning objectives / competences	Observation of social values, culture and living standards through the process of exchanging gifts.
Description of overall activity	How people think in different historical periods. How values and the economic situation influence the expression of love, respect and commitment of humans. How each observer interprets in a different way the above activities.
Description of the process and teaching/learning strategies used (what, how, in which order)	<ul style="list-style-type: none"> • Creation of four groups (each of them will have 4 persons) • The four groups will receive two examples from two different historical periods (one subject for two groups). • Each group will have 20' in class for brainstorming and clarifications given by the teacher • Through email and within 3 days each team will have to prepare a presentation with 10 slides with the above context • Description of the given topic, historical season and act. • Assumption of the economic and social situation in that period. • Evaluation of the reasons of gifts. <li style="padding-left: 20px;">Assumption of the impact that the gift will create to the recipients. • Discussion of the students after each presentation • Record of conclusions
Evaluation/ types of assessment	Each group will evaluate a project.
Materials and tools	Microsoft office Internet Projector. Black board
Timing and learning environment	3 hours and 50 minutes in class
Conclusion	To encourage people to express their opinions about a topic. Collaborative group work, Management skills due to evaluation. Developing presentation skills
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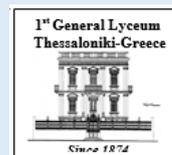
36. Genders in Literature



Title	Genders in Literature
Content/ Subject areas	Greek Literature – Native Language (Greek)
Target group: age range and size of the group	1 st Grade High School (15 years old students) 4 teams consisting of 5 individuals each
Learning objectives / competences	<ul style="list-style-type: none"> • Higher response and concern about the lesson. • Students take initiatives acting by themselves. • Weaker or ignorant students are given the opportunity to learn by participating within the team environment. • The traditional way of teaching is enriched and the class is becoming more active. <p>Students' skills are cultivated and unveiled.</p>
Description of overall activity	How the role of woman has been formulated with the lapse of time and the way in which different female characters (both real and fictional) respond the challenges of their lives.
Description of the process and teaching/ learning strategies used	<ul style="list-style-type: none"> • Students are provided with 3 literary bodies (“Romeo and Juliet”, “Stella Violanti”, “Helen or the Nobody”). The 4th object of research is required to be researched by the students themselves via the Internet as it presents a contemporary persona and her true story. • Students are also provided with introductory information on the 3 literary texts by their instructor so as for them to be familiarized to the plot of the stories. • Team–centered project. Students research on the authors' biographies. • Based on the collection of data they have already done, each team is assigned to write one monologue for a different female character, impersonating it. • Each team defines one of its members to play the role of the female character they have made the monologue of in a forthcoming dramatization. • Rehearsals are conducted for the preparation of the dramatized monologues. Music is embodied in the plays and some students work on the preparation of the tracks. • Final dramatization of the teams' monologues.
Evaluation/ types of assessment	<ul style="list-style-type: none"> • Team –evaluation (during the dramatization procedure, teams are given evaluation sheets in which they assess the result of the other teams' work). • Individual assessment by the instructor, who guides and monitors the teams' work closely.

Materials and tools	Literature books, teachers' material, handouts, evaluation sheet, PCs, theatrical costumes, musical instruments, staging materials (paintings drawn by the students).
Timing and learning environment	8 class hours (45 min each) – classroom environment 1 hour for the dramatization – theatre provided by the local community center.
Conclusion	<ul style="list-style-type: none"> • <u>Innovation</u>: Dramatization of literary and real life personas through the creation of the students' text. • <u>What makes it a good practice</u>: Enabling students to transform the text they read into words of mouth and see the world through the eyes of these four female characters. Experience learning through dramatization. • <u>Further application</u>: Ability to compare and contrast the social establishments of different eras and evaluate the differences in the society.
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37. Young negotiators



Title

Young negotiators

Content/ Subject areas	Modern Greek language. Monuments – Cultural Heritage.
Target group: age range and size of the group	Senior class of high school (17-18)
Learning objectives / competences	To strengthen students' ability in: <ul style="list-style-type: none"> • argument development • arguing ability (to reason with clarity, relevance, and purpose) • understanding and evaluating counter arguments • analysis of current social, commercial, and political issues • objectivity – critical thinking • oral speech • self-esteem • responsibility
Description of overall activity	<p>For the course of modern Greek language at the unit of “persuasion” and “political speech” students are required to administer a current and interesting subject.</p> <p>The approach must be realistic and based on the study of prehistory of actions and also the ability of students to draw up new arguments to convince others and to refute the contradiction. Content:</p> <ul style="list-style-type: none"> • Introduction • Short questionnaire • Reading - Discussion • Theoretical background • Group forming • Role assignment • Collecting the material • Debate • Conclusion/Verdict
Description of the process and teaching/ learning strategies used	<p>Students will have access to internet in order to seek information on:</p> <ul style="list-style-type: none"> • Greek monuments and the museums that host them • Historical facts about the moving of the monuments • The relocation debate and analysis of current social, commercial, and political issues. They will be divided in groups <p>1st group: Proponents of the monuments' repatriation 2nd group: Defenders of the monuments' remaining in host museums 3rd group: neutral (i.e. the judges)</p> <p>Each group will</p> <ul style="list-style-type: none"> • research

- develop
- organize
- Present its position and arguments.

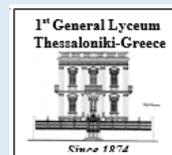
Decision/Verdict. The judges will have to:

- listen the arguments
- study the evidence
- view the presentations

Finally, they will have to rule in favor of one of the two groups.

Evaluation/ types of assessment	The supervisor teacher will watch the debate as well as the preparation of the teams and will grade the students' performance on: <ul style="list-style-type: none"> • Structure • Verbal expression • Elocution • Content
Materials and tools	Computers, internet, newspapers, magazines, interviews, biographies, historical sources, constitution and countries decisions
Timing and learning environment	4 teaching hours and will take place in the classroom and the computer lab
Conclusion	Outcomes: <ul style="list-style-type: none"> • Team-work • Improved ability to focus and to reason • Learning to listen and revoke the counter arguments • Critical thinking • Objectivity • Improved presentation skills • Improved verbal skills Initiative and responsibility
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38. Euthanasia



Title	Euthanasia
Content/ Subject areas	Philosophy, Native Language - Greek
Target group: age range and size of the group	2 nd Grade High School students (16 years old) 5 teams consisting of 4-5 individuals each
Learning objectives / competences	<ul style="list-style-type: none"> • Higher response and concern about the lesson. • Students take initiatives acting by themselves. • Weaker or ignorant students are given the opportunity to learn by participating within the team environment. • The traditional way of teaching is enriched and the class is becoming more active. • Students' skills are cultivated and unveiled.
Description of overall activity	How an ambiguous social issue, such as euthanasia, can be approached, analysed and evaluated on the basis of research, group work, reality response and discussion.
Description of the process and teaching/ learning strategies used	<ul style="list-style-type: none"> • Description of the theory - use of audio-visual material in power point form. • Team - centred project – work on an article on Euthanasia – answer project sheets. • Interviews given to students by individual experts who express their views on the topic – students take the journalists' roles. • Screening of the film “Mar Adentro” abstracts whose main issue is that of euthanasia. <p>[The process is described above in the chronological order that the stages actually took place.]</p> <ul style="list-style-type: none"> • Simulation of the topic to the everyday life paradigm by reading about true contemporary stories of people choosing euthanasia. • Rhetorical speech debates between students standing in favour or against the practice of euthanasia.
Evaluation/ types of assessment	<ul style="list-style-type: none"> • Peer – evaluation (through rhetorical speech debates and different project sheets distributed to each team). • Self – assessment (through the interviews given by experts). • Individual assessment by the instructor (through the personal effort displayed by each student)
Materials and tools Timing and learning environment	Teachers material, Handouts, project sheets, PC, DVD player, projector. 9 class hours (45 min each) School classroom

Conclusion

- Innovation: Internal and experiential learning.
- What makes it a good practice: Dealing with an everyday social phenomenon from all possible perspectives as well as being able to handle an issue in a social discussion level.
- Further application: Life learning and deep understanding of the theoretical material.

Contacts

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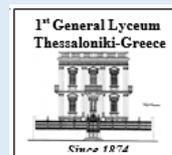
39. Racism



Title	Racism
Content/ Subject areas	Modern Greek Language
Target group: age range and size of the group	2 nd Grade High School students (16 years old) 4 teams consisting of 5-6 individuals each.
Learning objectives / competences	<ul style="list-style-type: none"> • Students taking initiatives. • Interest about a social issue was raised and students were inspired to write their own texts about racism as well as created their own filming material. • Dramatization. • Group work. • The whole class was involved in all parts of the project.
Description of overall activity	<ul style="list-style-type: none"> • Familiarizing students with the meaning of racism and its different aspects. • Students get to know themselves about famous historical personalities whose work against racism has been a cornerstone in global history. • Group work assignments (<u>1st group</u>: selection of material on the lives of famous activists and creation of a song- <u>2nd group</u> : writing of short drama texts on racism – <u>3rd group</u>: writing an essay about racism – <u>4th group</u>: shooting a short film) • Students creating their own art work with collages and paintings about racism and anti-racism. Screening of videos on the Holocaust as well as footage from moments of Nelson Mandela, Mahatma Ghandi and Martin Luther King. Dramatization • Discussion on anti-racism as well as key features of racism– solutions.
Description of the process and teaching/ learning strategies used	<ul style="list-style-type: none"> • Focus on the realization of the issue of racism and familiarization with historical events that are widely connected with the problem and still influence today's world. • Construction and elaboration of material connected with racism. • Problematics on the way the issue of racism has affected the world history, the rationale of people as well as how such a problem has reached the students' lives through recent

	historical events taking place in their own country (refugees).
Evaluation/ types of assessment	<ul style="list-style-type: none"> • Team evaluation (during the groups' presentation procedure teams are given evaluation sheets in which they assess the work of the other teams). • Individual assessment by the instructor who guides and monitors the teams closely.
Materials and tools	Handouts, PCs, projector, craftwork material, staging material, filming material.
Timing and learning environment	6 class hours (45 min each) School classrooms.
Conclusion	<ul style="list-style-type: none"> • Innovation: Students come in contact with real life racism experience through the studying and analysis of the history of racism. They, also, create their own material on the issue, responding to the information they received. • What makes it a good practice: Through the procedure of students being involved in the analysis of racism, they develop critical thinking and arts, writing and drama skills. • Further application: Students acquire the ability to interpret the characteristics of the world around them while they value the essence of humanism and realize the importance of anti-racism
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40. Odysseus Elytis

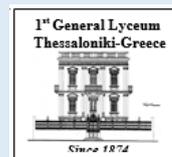


Title **Odysseus Elytis, the poet of the Aegean Sea and the Greek spirit.**

Content/ Subject areas	20 th century Modern Greek Literature
Target group: age range and size of the group	2 nd Grade High School students (16 years old) 5 teams consisting of 4-5 individuals each.
Learning objectives / competences	<ul style="list-style-type: none"> • Students taking initiatives • Interest about poetry was raised and students were inspired to write their own texts about adolescence and the problems of this period of people's life. • Role play – dramatization • Students creating their own poetic work. • The whole class was involved in all parts of the project.
Description of overall activity	<ul style="list-style-type: none"> • Brainstorming with information about poetry and, especially surrealism and symbolism. • Study of a variety of Odysseus Elytis' poems. • Listening to the poet himself reading his poems. • Screening of film abstracts concerning the poet's life and work. • Group work assignment [research on the poet's personality and summary of his works (1st group), information about Elytis' Nobel Prize award (2nd group), work and analysis on the poem (3rd group), research on music written on Elytis' poetry by the famous composer Mikis Theodorakis (4th group).] • Dramatization • Music and poetry • Production of poetic work created by the students themselves.
Description of the process and teaching/ learning strategies used	<ul style="list-style-type: none"> • Focus on the relation among music, poetry and theatre • Realization that a great poet may inspire students not only to read poetry but also to write their own text. • Interaction among students must be encouraged. • Focus on fulfillment through literature. • Discovery of the interconnection among poetry, philosophy and psychology.

Evaluation/ types of assessment	<ul style="list-style-type: none"> • Team evaluation (during the dramatization procedure teams are given evaluation sheets in which they assess the work of the other teams). • Individual assessment by the instructor who guides and monitors the teams closely.
Materials and tools	Modern Greece language, Handouts, evaluation sheets, collages, theatrical costumes, staging material, PCs, CDs, projector.
Timing and learning environment	9 class hours (45 min each) School classroom
Conclusion	<ul style="list-style-type: none"> • <u>Innovation</u>: The creation of personal literary work through poetry. • <u>What makes it a good practice</u>: Enabling students to realize the deep meanings of poetry while transferring them to terms of their everyday lives. Thus, they evaluate poetry as an important means of selfexpression. • <u>Further application</u>: being involved in poetry reading and writing more actively.
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41. Cognitive conflict methods using computer simulations in teaching quantum mechanics fundamentals



Title	“Cognitive conflict methods using computer simulations in teaching quantum mechanics fundamentals”
Content/ Subject areas	Science (Physics – Chemistry), computer simulations
Target group	16-18 years old
Learning objectives / competences	The method of cognitive conflict is typical in teaching elementary aspects of science in younger ages. On the other hand, some advanced concepts in science as quantum mechanics are usually described using behavioral teaching methods resulting in a very low percentage of understanding. We can adopt the cognitive conflict method in teaching these concepts with the combination of computer simulations of quantum mechanical systems.
Description of overall activity	Suitable topics of the concept that we can use are those that we usually have a great percentage of misconceptions and can be successfully simulated by the simulation software. Such a topic is the Bohr interpretation of structure of the atom of hydrogen.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. We make a short tutorial of the simulation software and use some simple teaching examples that they can use by themselves. This encourages the students and gains their attention instead of letting them confront some plain advanced concepts. 2. We apply the cognitive conflict scenario in a way that they can easily find out the situation where their existing understandings about the concept no longer stand. 3. We encourage them to discuss the aspect in combination with further simulations
Evaluation/ types of assessment	Formative evaluation of the group of students. Self-evaluation of each individual.
Materials and tools	A computer connected to a projector or an interactive whiteboard
Timing and learning environment	3 x 45 minutes
Conclusion	Students respond to this scenario usually in two different ways. The ones with little interest in physics find it just “more fun” than the usual teaching method. However, the students with “science orientated” interest find the cognitive conflict disturbing at first, but very fascinating at the end. The simulation sometimes ends in further philosophical debates. This ensures this method as good practice as well as a STEAM initiative
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42. Photodentro



Title	Photodentro
Content/ Subject areas	Mathematics, Geography, Geology, Biology, Physics, Chemistry, English, French, Informatics, Technology, Religious, Education, Aesthetic Education
Target group: age range and size of the group	Primary and Secondary Schools. Teachers and pupils 13+ Work in small groups (3-5 students)
Learning objectives / competences	PHOTODENTRO LOR, THE GREEK NATIONAL LEARNING OBJECT REPOSITORY Photodentro LOR hosts open learning objects: small, semantically and functionally autonomous, reusable, open educational resources, tagged with educational metadata.
Description of overall activity	Photodentro LOR is targeted to teachers and pupils and it constitutes a core part of the Greek Ministry of Education digital infrastructure for educational content for schools. Photodentro LOR resources are organized into collections; collections are grouped into larger communities; a community represents content contributors working within the same framework or for the same goal. The “Digital School” community was the first one in Photodentro LOR
Description of the process and teaching/ learning strategies used	Photodentro was set up for the purposes of digital textbook enrichment; it consists of around 120 qualified teachers in ten (10) domain-specific workgroups, each one operating under the supervision of a coordinator (academic with significant domain and pedagogical expertise). Since 2011, the “Digital School” community has developed and maintained thirteen collections of learning objects, including Mathematics, Geography-Geology, Biology, Physics, Chemistry, English, French, Informatics, Technology, Religious Education, and Aesthetic Education. So far, collections have been populated with 3,800 learning objects selected from a total of 6,500 resources developed for textbook enrichment so that they conform to the Photodentro LOR specifications for learning objects. All objects are “click-and-play”, i.e. can be directly reproduced in web browsers. Regarding their type, they include explorations and inquiry-oriented activities, dynamic simulations and experiments, educational games, presentations, interactive exercises, interactive maps as well as simple learning assets.
Evaluation/ types of assessment	Peer-to-peer team evaluation and individual self-evaluation
Materials and tools	-Collections of learning objects, including Mathematics, Geography-Geology, Biology, Physics, Chemistry, English, French, Informatics, Technology, Religious Education, and Aesthetic Education. -Digital Educational Platform for pupils and teachers
Timing and learning environment	All objects are “click-and-play”, i.e. can be directly reproduced in web browsers. Regarding their type, they include explorations and inquiry-oriented activities, dynamic simulations and experiments,

educational games, presentations, interactive exercises, interactive maps as well as simple learning assets.

Conclusion

-Navigation based on pedagogical use of educational videos in activities.

-Activities for the development of cognitive skills.

-Promoting the use of open learning sources

-Hyperlinks to the Digital Educational Platform for students and teachers, Digital School and Interactive School Books

The material is available in Greek and English language

<http://photodentro.edu.gr>

Computer Technology Institute and Press “Diophantus” (CTI)

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43. Pinterest



Title	Pinterest
<p>Content/ Subject areas</p> <p>Target group: age range and size of the group</p>	<p>All subject areas</p> <p>Primary & Secondary Schools</p> <p>7-18</p> <p>Group work</p>
<p>Learning objectives / competences</p>	<p>Except from its normal use, Pinterest can also be a great tool for use in education. It is great for organizing vast quantities of information and brainstorming ideas. The visual nature of Pinterest makes it particularly suited to engaging learners. Teachers can use it to:</p> <ul style="list-style-type: none"> • Compile content, including educational video • Organize and store ideas • Connect and comment on students' work • Make connections with other teachers and get ideas for future projects • Create group projects: community boards can be perfect for collaborative projects
<p>Description of overall activity</p>	<p>One of Pinterest's main advantages is its ability to save links to resources that you discover on the web. We all find really interesting articles, images or videos which would be useful for another day. The problem until now has been to find a way to save these items in one place where you can refer back to them. The visual nature of Pinterest makes it easy to rediscover resources we have saved previously and to store them under a relevant topic title. The beauty of this is the fact that all the images link back to the original source, so you won't find yourself searching around for the place where you found the image. You can even write a note to yourself as a reminder of why you chose this particular resource. This can be particularly useful for teachers when planning lessons and for collating ideas for future lessons.</p>
<p>Description of the process and teaching/ learning strategies used (what, how, in which order)</p>	<p>Collaborate with other teachers using Pinterest</p> <p>Pinterest boards can be a great way to collaborate with other teachers. You can share ideas, resources, videos, news articles, infographics and images. You don't have to be working in the same school, or even the same country, to be able to work on the same collection of resources.</p> <p>Share resources with students</p> <p>Pinterest boards can be used to provide a structured list of resources for students writing about a certain topic. Instructing your students to research on the web can lead them to distraction. The web is too wide and there are many unreliable sources. Sometimes it would be good to restrict what you want them to look at: you can create a board with all the information they need so they can concentrate on writing, rather than searching through masses of information.</p> <p>Using Pinterest for group work</p> <p>Students can work together on a group project, putting together a board of ideas and resources, working independently and pinning</p>

	ideas onto the board to create a group collage. The teacher can then visit the board, leaving comments and feedback on the resources put together.
Evaluation/ types of assessment	Self-evaluation, peer to peer assessment and discussion with teachers.
Materials and tools	The Pinterest website www.pinterest.com but also the apps for all mobile platforms.
Timing and learning environment	There are no time limitations using Pinterest in education.
Conclusion (Innovation what makes it good practice, further application)	<p>Pinterest brings out the creative side of your students. They can take pleasure in producing something which is both beautiful and educational. Students can also create a board to show what resources they used to write a particular essay, much more exciting than the traditional bibliography.</p> <p>Pinterest is more than just sharing photos – it’s about sharing ideas and moods. You can also share your videos through Pinterest, which can be particularly powerful in education.</p>
Contacts	Epimorfotiki Kilkis sm llc, epimorf@otenet.gr , https://www.epimorfotiki.gr/eu

44. The National Digital Learning Resources Network



Title		The National Digital Learning Resources Network
Content/ Subject areas	History	
Target group	Teachers; School Education and Early Childhood	
Learning objectives / competences	The NDLRN is a network of infrastructure and processes that enables the management and distribution of the national collection of digital resources to education authorities. It comprises systems to manage content, standards, networks and distribution infrastructure.	
Description of overall activity	The National Digital Learning Resources Network (NDLRN) comprises a resource collection, delivery infrastructure and metadata standards. The NDLRN has been collaboratively developed and is jointly owned by all Australian school education jurisdictions.	
Description of the process and teaching/ learning strategies used	<p>There are more than 16,000 digital resources in the NDLRN; they are free for use in all Australian schools. The resources are accessible to teachers through portals and Scootle. Preservice-training universities can access the resources through the eContent Repository</p> <p>Digital curriculum resources are delivered in a variety of formats:</p> <ul style="list-style-type: none"> interactive multimedia student resources designed to promote constructivist and inquiry learning primary source film, image and sound materials suitable for teachers to adapt when developing their own learning sequences thematic collections of resources in popular topics that have been collated and made available to teachers resources for teachers to share strategies when using materials sourced from the national collection units of work developed by teachers and professional associations on implementing the Australian Curriculum formative assessment resources web resources sourced from international repositories links to professional resources hosted by the Australian Institute for Teaching and School Leadership (AITSL) datasets sourced from scientific and government organizations and presented in online tools that promote open-ended learning and allow students to analyze authentic data. 	
Evaluation/ types of assessment	Self-assessment	
Materials and tools	<p>The national infrastructure http://www.ndlrn.edu.au includes:</p> <ul style="list-style-type: none"> content management and distribution systems an exchange that enables the sharing of resources by web services, linking state and territory repositories state education portals and Scootle intellectual property management systems and licensing protocols. 	
Timing and learning environment	The national operating environment is supported by the Schools Online Thesaurus (ScOT), agreed education value standards for digital	

	resources, technical infrastructure, metadata and rights management through the NDLRN.
Conclusion (Innovation what makes it good practice, further application)	The most of included material of National Digital Learning Resources Network is well document, includes data analysis and research. The NDLRN helps teachers to manage content, standards, networks and distribution infrastructure.
Contacts	Epimorfotiki Kilkis sm llc, epimorf@otenet.gr , https://www.epimorfotiki.gr/eu

45. The Virtual Architecture Project



Title	The Virtual Architecture Project
Content/ Subject areas	Art History
Target group	Students of ages 13+, Individual and group work
Learning objectives / competences	Virtual Reality Tours in Art History
Description of overall activity	<p>This project was conceived and carried out for Williams College by Michael and Barry Gross, under the direction of Professor E.J. Johnson, Amos Lawrence Professor of Art. The first prototype, the Palazzo del Te in Mantua, Italy, was created in 2002. Since then the project team has documented over one hundred sites and monuments throughout Europe and North America. The collection of virtual tours is used as a teaching resource in the classroom by the Department of Art at Williams. Many courses utilize the resource, most notably Professor Johnson's Art History 101 course (Aspects of Western Art). The Virtual Architecture Project is based on high-resolution digital spherical panoramas, commonly viewed with Apple's QuickTime Virtual Reality technology. To view this site, you will need the QuickTime Plugin. We recommend using Apple's Safari browser or Mozilla's Firefox browser on PCs to view the tours.</p>
Description of the process and teaching/ learning strategies used (<i>what, how, in which order</i>)	<p>When a page loads, you may click and drag on the image – holding the mouse button down, and dragging the cursor – in the direction that you wish to pan. You may also zoom in and out using the "+" and "-" onscreen icons (at the bottom-left of the QuickTime window) or the "Shift" and "Control" keys on your keyboard. There are hotspots embedded in most of the panoramas that allow you to navigate throughout the buildings. In some cases, there are hotspots that link to high-resolution jpeg images of architectural details and paintings. To see where these hotspots are located, watch the cursor as you move it over the image. When it changes from two small concentric circles to a globe-and-hand, click to follow the link. To find the hotspots quickly, you may click on the little "?" icon at the bottom of the QuickTime window, and they will appear in opaque purple. Click the "?" icon again to hide them.</p> <p>It is also possible to navigate by clicking on the pulsing "orbs" on the image of the plan, to the right of the panorama</p>
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	Digital course about Art History http://web.williams.edu/art/architectureVR/help.html
Timing and learning environment	Any time, the teacher defines the duration of the activity.
Conclusion (<i>Innovation what makes it good practice, further application</i>)	The Virtual Architecture Project turns concept into reality, providing students in Williamstown with a dynamic, immersive experience of great architecture and sculpture from around the world. Generations of students will be inspired not only by the subject matter, but by the innovative manner in which it is presented.
Contacts	Epimorfotiki Kilkis sm llc, epimorf@otenet.gr , https://www.epimorfotiki.gr/eu

46. Freud and the psychoanalysis



Title	Freud and the psychoanalysis
Content/ Subject areas	Philosophy, Psychoanalysis
Target group: age range and size of the group	Students of philosophy: 1. Age range: 17-18 years 2. Size of the group: 6 groups of 5-6 students 3. Level: medium
Learning objectives / competences	The students have to organize a presentation explaining the topic that was previously divided in 5 parts: 1. the method 2. the isterias and neuroses 3. the libido and over the libido 4. the representations of psyche 5. metapsychology
Description of overall activity	The students must understand the purpose of critical reflection connected with the historical context. The purpose is to work together and to cooperate to understand important themes of philosophy. Students also learn transversal skills as team work and creativity.
Description of the process and teaching/ learning strategies used	During the lessons each group has to organize a presentation in which everyone has to do a research about the topic. They have to read and analyze different philosophical texts.
Evaluation/ types of assessment	Considering the dedication, the explanation, the organization of the presentation.
Materials and tools	A computer with a projector The book, the researches on internet
Timing and learning environment	3 days to prepare the presentation and 30 minutes to expose it.
Conclusion	The theme proposed to students has generated considerable interest in psychoanalysis. In addition, the division into heterogeneous working groups has allowed the boys with greater difficulty to interact with their classmates.
Contacts	http://www.istitutoimmacolata.it/

47. Angular Momentum in Sports



Title	Angular Momentum in Sports
Content/ Subject areas Target group: age range and size of the group	Physics, science, sports and Informatics 1. Age range: 17-18 years 2. Size of the group: 6 groups of 5-6 students 3. Level: medium
Learning objectives / competences	The objective is to understand the behavior of physical quantity "angular momentum", as well as the realization of a power point representation and the ability to expose clearly to an audience of students
Description of overall activity	This work is proposed with the aim of learning the central theme, ie physics of angular momentum, and at the same time: <ul style="list-style-type: none"> stimulating group work and collaboration, implementing electronic devices and familiarizing themselves with Microsoft Office packages, very useful for writing a document, as well as making a presentation that can be exchanged, compared and reused by future classes.
Description of the process and teaching/ learning strategies used	The students have to prepare a power point representation in which describe the main features of the physical quantity "angular momentum" then analyze the law of conservation of angular momentum . In particular, they must focus their attention on the action of this quantity in sports, as in martial arts, diving, skating..
Evaluation/ types of assessment	Considering implementation of a power point representation, ability to understand physical laws and creativity.
Materials and tools Timing and learning environment	The book, internet resource and a personal computer with a projector 10 days to prepare the presentation and 20 minutes to expose it.
Conclusion <i>(Innovation what makes it good practice, further application)</i>	The proposed work has aroused the interest of the students in the experimental world, stimulating creativity in the search for applications of greatness considered in the sport world. They also had to work together and interact with those classmates who usually do not have that kind of relationship. They also had to learn to use excel and power point programs, Microsoft Office packages, which for some students were totally unknown.
Contacts	http://www.istitutoimmacolata.it/

48. Creating Music to promote our musical “Sulle vie della provvidenza“



Title	Creating Music to promote our musical “Sulle vie della provvidenza“
Content/ Subject areas	Franciscan literature, History of the Franciscan Sisters of the Sacred Heart Congregation.
Target group:	Secondary High school.
Learning objectives / competences	To motivate students to learn Play / share music appropriately for the age and ability of students. To be able to identify which instrument parts will be effective in the application; Record musical tracks to describe the main characters, describe the place where the history of the congregation happened, play together with students from other schools.
Description of overall activity	Students learn to use software that uses several plug-ins. The students read some chapters of the Franciscan Sources In the class they study and present the individual instrumental parts.
Description of the process and teaching/ learning strategies used	The teacher uses the observation sheet There will be a peer evaluation: a group evaluates the execution of another group after running their song and discussing it. Teachers use the e-portfolio for evaluation.
Evaluation/ types of assessment	The teacher uses the observation sheet There will be a peer evaluation: a group evaluates the execution of another group after running their song and discussing it. Teachers use the e-portfolio for evaluation.
Materials and tools	Cubase 8
Timing and learning environment	Four lessons for two hours. School Musical Laboratory.
Conclusion <i>(Innovation what makes it good practice, further application)</i>	We propose this activity to motivate students to enhance non-virtual music. Students love to create artistic applications with the help of applications. The activity is very motivating also for students who can see, hear and judge live and studio executions.
Contacts	http://www.istitutoimmacolata.it/

49. Physics of Fluids



Title	Physics of Fluids
Content/ Subject areas	Physics and Informatics
Target group: age range and size of the group	<ol style="list-style-type: none"> 1. Age range: 16-17 years 2. Size of the group: 6 groups of 5-6 students 3. Level: medium
Learning objectives / competences	The objective is to understand the behavior of fluids, as well as the realization of simple instrumental equipment and the ability to expose clearly to an audience of students.
Description of overall activity	<p>This work is proposed with the aim of learning the central theme, in physics of fluids, and at the same time:</p> <ul style="list-style-type: none"> • stimulating group work and collaboration, • implementing electronic devices and familiarizing themselves with Microsoft Office packages, very useful for writing a document, as well as making a presentation that can be exchanged, compared and reused by future classes.
Description of the process and teaching/ learning strategies used)	The students have to prepare a power point representation in which they describe the main features and physical laws of fluids. In particular, they must try to recreate in the classroom the main experiments that demonstrate the validity of the laws studied (such as Pascal's law, the principle of Stevin, the hydraulic press,...).
Evaluation/ types of assessment	Considering implementation of a power point representation, ability to understand physical laws and creativity in experiments realization; the ability to work in teams.
Materials and tools	The book, internet resource and a personal computer with a projector.
Timing and learning environment	10 days to prepare the presentation and 20 minutes to expose it.
Conclusion (<i>Innovation what makes it good practice, further application</i>)	<p>The proposed work has aroused the interest of the kids in the experimental world, stimulating creativity in the realization of simple experiments made with recycled materials such as bottles, straws, flat glasses, etc.</p> <p>They also had to work together and interact with those classmates who usually do not have any kind of relationship. They also had to learn to use excel and power point programs, Microsoft Office packages, which for some students were totally unknown.</p>
Contacts	http://www.istitutoimmacolata.it/

50. Vatican Council II



Title	Vatican Council II
Content/ Subject areas	Canon Law, Language. Troubleshoot collaborative issues
Target group: age range and size of the group	Secondary High school.
Learning objectives / competences	Motivate students to learn Understanding the facts and ideas in the historical-cultural context; Being able to organize knowledge that can apply it. Being able to process information and create new knowledge
Description of overall activity	Students search for some information about the four constitutions of the Council. Students organize the documents by dividing them into Decrees and Constitutions. After creating the information and uploading it on the school's website, students learn to create concept maps of Cocile's activities.
Description of the process and teaching/ learning strategies used	Students prepare the information on each document. They upload information on the web.
Evaluation/ types of assessment	The teacher uses the observation sheet Each student speaks of the document he has worked on Students produce a conceptual map of the novelties brought by the Council.
Materials and tools	iPad, Word, Photoshop
Timing and learning environment	The time will be four lessons per hour in the school library environment.
Conclusion <i>(Innovation what makes it good practice, further application)</i>	Students learn the canonical legal language
Contacts	http://www.istitutoimmacolata.it/

51. The Byronic hero and the modern heroes in the society



Title	The Byronic hero and the modern heroes in the society
Content/ Subject areas	Language; Foreign languages, English Literature
Target group: age range and size of the group	Age of the students: 18-19. The difficulty will be according to student's level of each group. Groups can vary in size but should not be less than 4.
Learning objectives / competences	To learn to work collaboratively with other students, doing researches on a new topic. Students learn how to create slides and how to work with problem solving. Students are able to compare the modern heroes with the previous one.
Description of overall activity	This activity was planned to accustom our students to compare the literature with the modern age. In this way, we can help our students to study effectively this subject without considering it difficult and in order to prevent boredom. So, they have to take notes during the explanation of George Gordon Byron with particular attention on the figure of the Byronic hero, and then they have to focus on the modern heroes that propose our society.
Description of the process and teaching/ learning strategies used	I teach my students how to compare the modern age and the Romantic age explaining the differences and stimulating the reflection. Then we have to create a sort of debate in order to understand if the whole class has understood the concept that I have explained. The class is divided in groups and each writes some heroes of our society explaining the reasons of their choices, it's an interesting way to face a new challenge. Every student has to be motivated because then they have to explain the report to the class.
Evaluation/ types of assessment	Each student fills in a self-evaluation form/questionnaire of their learning process. The groups present the final report to the class and we comment it explaining the difficulties during the process and the results. With all this data the teacher does the summative assessment.
Materials and tools	The book, Word and websites
Timing and learning environment	Each slide will be organized in class with the help of the teacher and then the students have to work at home with the possibility to ask for help from the teacher every day during the lessons. We can calculate one week to study and to organize the final report and the presentation to the class.
Conclusion	Students work different transversal skills: creativity, decision making, revising of previous concepts of English Literature. It can be used in all schools and you can create a conference in order to examine the different ideas about the concept of the hero compared with the figures of the Literature.
Contacts	http://www.istitutoimmacolata.it/

52. The problems of the environment and our society



Title	The problems of the environment and our society
Content/ Subject areas	Language; foreign languages, Science
Target group: age range and size of the group	Age of the students: 14-15. The difficulty will be according to student's level of each group. Groups can vary in size but should not be less than 4.
Learning objectives / competences	To learn about the problems of the environment. The students should improve their capacity of collaborating in a team. In this way they can improve their knowledge and create something in a collaborative way.
Description of overall activity	This activity was planned in order to pay attention on the problems of the environment, such as the pollution, the climate change and all the consequences. The teacher introduces the topic with the help of the teacher of Science, in this way they can take notes about the topic and then they have to create a seminar, with the help of the teachers, in order to discuss the results of their study. The purpose is to work together and to cooperate to create and propose some possible solutions to solve this important problem. Students also learn transversal skills as team work and creativity. In this way students will be able to organize a sort of conference to explain their researches.
Description of the process and teaching/ learning strategies used <i>(what, how, in which order)</i>	There will be some lessons with the collaboration of Science's teacher in order to focus on the problems of the environment, and then the students divided in groups of 4 create a conference addressed to the other teachers and to their parents. So, there will be 3 phases of the project: <ol style="list-style-type: none"> 1. Explanation of the topic 2. Creation and discussion of the possible solutions 3. The final presentation in the conference.
Evaluation/ types of assessment	We do a formative assessment according to a debate after the conference, in order to analyze the final presentation and the difficulties during the realization of it.
Materials and tools	Some articles on the websites, or any blog, Internet, Paddle to share the contents among small groups.
Timing and learning environment	Timing depends on how deep you go in the topic. One week to select the material and at least four days to organize the final conference at school.
Conclusion <i>(Innovation what makes it good practice, further application)</i>	Students work different transversal skills: research information, creativity, decision making, organization of an event. It can be used in any school to study and to focus on different problems related to our society (the use of drugs, early school leaving, the bullism...).
Contacts	http://www.istitutoimmacolata.it/

53. The Eclogues of Virgil



Title	The Eclogues of Virgil
Content/ Subject areas	Latin language and literature, foreign languages Learning by doing, peer education
Target group: age range and size of the group	Age range: 17 – 18 years Size of the group: 5 groups of 4 students Level of difficulty: medium
Learning objectives / competences	There are two types of goals that students must achieve: cognitive and operative objectives. In cognitive objectives we can mention the strengthening of the knowledge of the Latin language, the ability to identify the specific nature of Virgil's style through the direct reading of the text, the ability to place the author in historical and cultural context of the age of Augustus, highlighting the relationship between political power and the role of the intellectual. Instead, between the operational objectives we can include the ability to deepen the reading skills of a literary text, guiding students toward an autonomous and conscious reading.
Description of overall activity	At first the teacher will explain to the students the content and features of the <i>Bucolics</i> by Virgil; later, with class participation, we will proceed with the metrical reading, translation and commentary of verses 1-35. The last part of the work will be carried out independently by the groups of the students, who will have to translate a part of assigned text and providing their own commentary on the content and the style and language used by the poet. Finally, students will report their translations and their comments on a power point, so as to create in the end a unique presentation with the entire text, translated and commented, to share with the whole class.
Description of the process and teaching/ learning strategies used (what, how, in which order)	The groups will be formed of heterogeneous students, in this way the most disadvantaged elements can learn from the more experienced ones within a cooperative and relaxed environment. It might be interesting, especially if in a high school specializing in linguistic subjects, to prepare for each section of Latin text a translation into other European languages, so that language skills can be strengthened and students can reason and better understand the translation mechanisms.
Evaluation/ types of assessment	Student's assessment will consider the correctness of the translation and the comments made; it will be also evaluated the creativity in the preparation of the power point presentation.
Materials and tools	The textbook and internet's resources. Computer / tablet with package Microsoft Office Power Point and a projector.
Timing and learning environment	6 hours (2 of frontal lesson; 2 of cooperative learning; 2 of oral presentation and sharing of the work done)
Conclusion (Innovation what makes it good practice, further application)	Students work different transversal skills: creativity, learning by doing, decision making, communication skills, apply previous knowledge Students produce materials for other students Students learn with materials produced by their class mates
Contacts	http://www.istitutoimmacolata.it/

54. The grammar complements



Title	The grammar complements
Content/ Subject areas	Language, Latin grammar, foreign languages Learning by doing, peer education
Target group	Age range: 14 – 15 years, Size of the group: variables Level of difficulty: simple
Learning objectives / competences	The main objective is to review and enhance the knowledge of the Latin complements; the work can be done through the use of Padlet platform, in order to strengthen digital skills as well as the ability to work in group to achieve a common goal.
Description of overall activity	Students, working individually or in small groups, at home or in the classroom with tablets or pc, have to prepare and update step by step a worksheet on Padlet platform, indicating the complement's name, a description of its functions, the way in which they are constructed in Latin and Italian, related to concrete examples in both languages; thanks to Padlet functionality, students can correlate the examples with images or create cartoons.
Description of the process and teaching/ learning strategies used	The activity, especially if it is done in small workgroups, can encourage interaction between students; at the same time the most prepared student can help the weaker one in the learning process within a peer education strategy. It might be interesting, especially if in a high school specializing in linguistic subjects, to enhance the work of linguistic comparison by presenting a translation of Latin complements in other European languages, so that language skills can be strengthened and students can reason and better understand the translation mechanisms.
Evaluation/ types of assessment	Student's assessment will consider the correctness on the execution of the work assigned; it will be also evaluated the creativity in the preparation of the worksheet as well as the ability to work in teams. By means of an oral exam, will be then verified the knowledge of the studied complements.
Materials and tools	The textbook and internet's resources Computers / tablet with package Microsoft Office and a projector The padlet worksheet
Timing and learning environment	Two or three hours each month
Conclusion	Students work different transversal skills: creativity, learning by doing, decision making, communication skills, apply previous knowledge Students produce materials for other students Students learn with materials produced by their class mates
Contacts	http://www.istitutoimmacolata.it/

STEAM EDUCATION

1. We explore the water



Title

We explore the water

Content/ Subject areas

- Integrated education week, which took place in the first grade, is presented in the paper.
- Final objective and outcome of this week's work- preparation of the scientific map for the term "Water" and presentation of the results of the research activities to the school's community during the scientific conference "What is water?"
- The research problem arising from the term *water* was analysed or emerged in the context of all the subjects of the primary education programmes (world's in-sight, mathematics, Lithuanian language, music, physical education, ethics).

The work presents three major topics of the contest:

 1. STEAM (mostly natural science and mathematics subjects)
 2. Various problem solving through communication activities are presented.
 3. Gamification is applied in the educational process.

Short project video clip with English subtitles

Target group:

6-7 years old/12 children

Learning objectives / competence s

- The aim of the activities, which were organized during the integrated education week, was to develop various subject-based skills, general competences and higher reasoning skills of the children.
- Natural science educational objectives are directly related to the final result of the work and they were mainly implemented through research activities.
- It was sought to reach development of subject-based skills in mathematical, linguistic, artistic and sport activities, though cognitive objectives and development of natural science-based skills were also integrated in these activities. This was implemented in two ways:
 - particular "scientific discoveries" (e.g. spatial forms produced when freezing the water worked as a mean to introduce children to the spatial objects and to "discover" the solid state of water) were made on a basis of such activities;
 - natural science-based skills are deepened through such activities and their application and relation to everyday environment are noticed (e.g. while preparing the paper for watercolour technique try-out by covering it with a layer of water using a wet sponge, children have noticed the property of "moistening", which was "discovered" during the celery experiment).

Subject-based skills:

Natural science:

- To discover the characteristics of water;
- To name senses, which help to recognize water;
- To distinguish the three states of water and indicate their main characteristics. To explain the reasons of their change in a simplified way;
- To notice, name and describe the states of water in the nature.

Note: opportunities were created for more academically capable and curious children, in ways acceptable for them:

- to know more about what they are going to study in upper grades of the primary school (property of moistening, changing states of water, condensation process, precipitation formation, water circulation in the nature, water on the Earth, environmental issues);
- to explore subjects that “go beyond the programme” and which are usually not discussed in the primary school- children learned more about molecular structure of substances, different forms of water states, their dependence on particular cohesion and motion of the molecules;
- to participate in experiments, during which some processes took place but their causes were not particularized. These experiments developed curiosity, aspiration to learn more, to find out and motivate the observed phenomena.

Mathematical:

- To apply the knowledge about plane figures;
- To get to know and name spatial figures;
- To name the units of measurement for length, improve the practical skills of measuring and comparing different lengths.

Linguistic:

- To improve reading and text comprehension skills;
- To distinguish between prose and poetry pieces;
- To be able to stage artistic text.

Artistic:

- To get to know and try out the watercolour technique;

Musical:

- To distinguish between musical and non-musical sounds;
- To develop singing and rhythmic skills.

Physical education:

- To develop agility and jumping by playing mobility games;

Ethical:

- To understand that senses help us to notice beautiful things.

General competences:

- Knowing how to learn (to set and reach goals)
- Communication (appropriate expression of thoughts and transfer of information)

- Social (communication and cooperation)
- Learning (desire to know and discover)
- Proactiveness and creativity (offering creative ideas)
- Personal (considering your feelings, evaluating your behaviour)
- Information literacy (properly using ICT, the Internet)

Description of overall activity

The chosen course of comprehensive educational integration allowed the educational process not to be segmented into separate unrelated parts. Therefore, all the activities of the week make up a consistent chain of water-related explorations and discoveries.

Note regarding the description of activities and process course:

- Visual material is provided to illustrate the activities, written consent for the use of which was obtained from the parents'. Each described activity has its place in the visual material indicated in seconds.
- References from “Material used in the educational process and ICT tools/programs” and numbering of annexes are provided while describing the activities.
- Aids used in the educational process for the interactive Promethean board are provided as *ActivInspire* program file (flipchart) and in pdf format.

1. Morning news (see video clip 1)

Even in the everyday Morning news activity, which has its own structure, lasts for around 30 minutes and is intended for setting minds for work, familiarizing with activities and goals for the day, finding connections and relations between subjects, getting to know the calendar, weather, temperature, time, encouraging to observe changes in the environment, developing communication skills and etc., certain moments, which are related to the topic of the week, are included:

- **“Chitchat- thingies” with a gift from the water.** Children share their everyday joys and worries (together they also learn the rules of talking properly and listening, develop their personal competence of self-awareness). This week children are talking and passing a ritual object- a gift from the water (coral, peace of amber, shell, seaweed, sea urchin) from hand to hand. (0:00 – 0:20)
- **Energetic exercise with water animals.** On the first day of the week children are moving while trying to imitate water animals (this way a possibility to guess the topic of the week is made), during the other days they learn how to dance “The duck dance”. During different days of the week this dance is performed using different visual material. (0:20 – 0:40) *Reference No.12*
- **On the news- information on precipitation.** The presenter of the morning news (selected using a virtual selection tool) presents a calendar of each day, describes cloudiness and precipitation, which are noted using particular conventional signs, and indicates air temperature. This everyday information is directly based on the knowledge gained about the forms of water in the nature and their changes. Moreover, this activity encourages children to observe weather every day. (0:40 – 1:15) *Reference No.9; Annex No.1*

2. **Motivating, game-based activities- essential factor of learning and key to success** (video clip 2)

Schoolchildren are learning willingly, are active, are trying to reach goals, because all the activities offered to them:

- are meaningful;
- related to previous experience;
- attractive, playful;
- have an attractive result;
- take place in an environment, which stimulates positive emotions.

During the course of the week schoolchildren were offered various activities, the main purpose of which is to make them interested, involve them into work, relate newly explored objects and phenomena with previous experience, as well as to teach how to communicate and cooperate, develop the ability to learn and other competences. Examples of such activities are as follows:

- **Monday intrigue- sea pirate Captain Flint.** On the first morning of the new week this literary character, which is loved by children, welcomes them with a well-known song. During the morning news children are encouraged to read the magazine of this character and all the magazines are left in a place where they are well visible, so that children could read them during the breaks or their spare time. (0:00 – 0:20) A number of other “pirate- sea” activities are arranged.
 - **Key (topic) and problem (problem question) of the week.** Children complete the task of the character of the day- Flint on the interactive whiteboard and try to unlock the chest, which contains the problem question of the week to be analysed. First of all children find “the key” (keyword of the week) and thus the topic of the week is unravelled. Children have to find connections between the pictures, notice the associations, indicate first letters and assemble a word (“*water*”). Geography knowledge is deepened with this assignment (port of Lithuania and the Baltic Sea are indicated on a map). The chest is unlocked with the “key” that was found, the letters are taken out and the problem question of the week “What is water?” is read. During this activity the development of linguistic skills is integrated- auditory analysis exercises are completed, the punctuation of a question sentence is remembered. (0:20 – 1:05) *Annex No.1*
 - **“Rain of thoughts”.** When applying the method of the rain of thoughts, children, while it is “raining” (a certain audio recording is played), have to write words that are related to the term “*water*” on a paper raindrop. When they run out of words, schoolchildren are directed to think in a certain way (e.g. words describing action, beach, vehicles and etc.). During the course of the week, when children learn new things and generate new ideas, the paper raindrops are supplemented with new words and associations. (1:05 – 1:25) *Annex No.1*
- Keyword “water”.** This will be a central word of the scientific map; thus it is stucked on to the wall. Specific way of writing this word is to be noticed- diphthong *uo* (which is going to be studied during the week) and the range of colours of the word (rainbow formation is explained; colours are repeated). (1:25 – 2:05)
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- **Poem of the week “Fairy-tale of rain”.** The poem “Fairy-tale of rain” by V. Palčinskaitė is memorised in different ways (by deleting some words, verses, together with the rhythm of the rain, by singing a song, repeating during leisure time and etc.) thus children learn it naturally during the week. Linguistic skills (reading technique, expressive recitation, text analysis, literary education, distinguishing of poetry, rhyme) are developed with a help of this poem and vital importance of the water, need to save the water and environmental issues are discovered. (2:05 – 2:55) *Annex No.2; Reference No.15*
 - **Mathematical assignment “Finding the treasure”.** This assignment is designed to develop the skills of recognising and naming plane figures as well as cooperation skills. An intriguing assignment of the Captain Flint is provided- to bury the pirate treasure (“plates of gold”) in certain islands. Schoolchildren, while working in groups, divide the geometric shapes (“plates of gold”) into three groups (triangles, circles, quadrangles. More academically capable children can find trapeziums, parallelograms and rhombi among the quadrangles). Then, without talking to each other (“so the aborigine would not hear them”), they “fence” the island with a rope in a certain shape and bury their selected treasure there (e.g. leave the circles in a circle-shaped island). (2:55 – 3:30)
 - **“Young researchers club”.** In order to explore the problem of the week, children are invited to gather up into young researchers club in the “scientific laboratory” of which during the course of the week they perform researches and find out scientific truths related to water. Assignment and objective of the week is presented- to prepare a scientific map of the term *water* and present this map, together with discoveries made during the week, in a final scientific conference. (3:30 – 3:50) *Annex No.6*
 - **Breaks with Frepy.** During the breaks children not only play interactive DTA “Frepy” linguistic games related to the water topic (“Anglerfish”, “Swamp”, “Treasure”, “Danger at sea”, “Fish tail”) but also learn how to learn – plan their learning (results- completed assignments are recorded in a table).(3:50 – 4:15) *Reference No.6; Annex No.3; Annex No.4*
 - **“Battle of the ships” online.** Schoolchildren are presented with an opportunity to play a traditional game virtually. During a break, children in real time play the “Battle of the ships” with a person from another country. In this way children learn how to properly communicate via the Internet (to thank for a game, congratulate the opponent who has won), how to use modern technologies (send a link of the game to a friend so they can play together from different computers). (4:15 – 4:40) *Reference No.8; Annex No.3*
- Puzzles on the interactive whiteboard.** During the breaks children together with their friends put together selected water-themed puzzles (interactive whiteboard Promethean allows up to 10 touch points at once). They learn how to reach a common goal, fill in the activities sheet, observe and compare the time of puzzle completion. (4:40 – 5:05) *Reference No.7; Annex No.3; Annex No.5*
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- **Cumulative assessment “You reap what you sow”.** All year long children assess themselves with “pluses” for successful work (this is the honey collected in the jars by the bees- the hard-working first graders). 20 collected pluses are converted into a sticker (this week the sticker related to theme of pirates and sea) and “approved” with teacher’s seal (“a flower” used by a teacher to assess the pupils). Through this activity counting skills are developed as well. (5:05 – 5:40) *Annex No.11*
 - Motivation is also promoted by creating a certain environment during the breaks- musical, visual background, video clips. *Reference No.13; Reference No.14*

3. Education based on personal experience, discoveries is the most effective. Detailed description- *see Course of the process.*

- By referring to personal experience, answering questions, using different sensations, carrying out researches, completing assignments, performing tests in virtual laboratories, playing games, pupils are able to discover the truths of natural sciences, summarize them, come up with conclusions, transfer them to the map of terms and at the end of the week share their experience during an improvised scientific conference.
- First of all researches, related to the major properties of water and senses describing them, are carried out. What is found out is that you cannot always trust your senses (video clip 3,1)
- Later researches are carried out and answers to the following questions are looked for: what are the states of water? What determines the change of those states? What is the form of liquid, solid and gas water? What is the shape of the drop? What determines the different form of water states? How do the molecules move in different states? How can you see vapour? At what temperature does the water boil? How the states are changing in the nature? (video clip 3, 2)
- All the activities of the week are summarized, interactive survey is carried out and the pupils present their discoveries and scientific map to the community of the school. Other interesting experiments with water are demonstrated, which encourage children to continue exploring and searching for answers to their questions in the future. (video clip 3, 3)

4. Water theme in various activities. Application of personal experience and gained skills. (video clip 4)

The theme of water presented throughout various activities allowed to recall, apply and notice in a broader context the knowledge and skills gained. In some cases, it helped to develop new skills.

- **Linguistic activities- about the rain.** During the linguistic assignments while reading, analysing and staging the saga “Whose legs are the longest” by L. Gutasukas children deepen their knowledge about precipitation, strengthen their understanding of water circulation in the nature. Presentation introducing the water cycle is shown (0:00 - 0:40) *Reference No.5*

Research- getting to know condensation. The process rain formation is demonstrated, the phenomenon of condensation is introduced- experiment

with boiling water and cold plate is conducted, presentation is shown, various interactive assignments are offered. (0:40 – 1:00)

- **Lunch- condensation.** While putting the food into the plate children are asked to pay their attention to the condensation phenomenon (this is observed on the walls of a cold bowl with hot porridge). (1:00 – 1:15)
- **Observing nature. Making a craft. Mathematics assignment. Icicles.** While spending their time outdoors pupils notice icicles in the school yard. They learn how the icicles form. When children come back to the classroom they make “icicles” from plastic bags and decorate classroom’s window with them. The length of the icicles that children made is measured, compared and correct units of measurement for length are written down. (1:15 – 2:00)
- **Musical activities- the sounds of water.** Children listen to various sound records of water (stream, waterfall, sea waves, snowstorm, rain) and try to recognise them. They check if their guesses were correct by watching video clips. (2:00 – 2:25) *Reference No.11*
- **Vigorous activities- water in motion.** In sports facility children play story-based active games (“The sea is waving”, “Stream, bank”). Exercises with a “parachute” are performed- while listening to a story about a ship being tossed around by wind in the sea, they try to safely bring back the ship into the shore (the ball has to end up in the middle of the parachute. Children offer and try various strategies thus developing team work skills, understanding that only harmonious activities of the whole group can help to reach a goal. (2:25 – 3:05)
- **Break with virtual reality glasses.** While using “Cardboard”, smartphone and “SeaWorld” app, pupils are observing the underwater world. In this way a possibility is made to get to know better, feel and imagine the underwater world. (3:05 – 3.25) *Reference No.10*
- **Art activities- water in colours.** Pupils get to know the watercolour technique and try it out by depicting the underwater world. While completing the assignment the first graders discover new characteristics of water (pastel colours are created using water), notice the ones that they have discovered before while conducting experiments (moistening property discovered during the sponge research). While using information search engine they watch video clips about the inhabitants of underwater world, which they would like to depict in their pictures. (3:25 – 4:50)
- **Rest break- water meditation.** After the classes some time is dedicated to rest and relaxation while listening to the sounds of water. (4:50 – 4:55) *Reference No.16*

Description of the process and teaching/ learning strategies used

Research activities, which are directly related to the final objective of the week’s activities- preparation and presentation of the scientific map of the term *water*, are going to be described. Section 3 “**Education based on personal experience, discoveries is the most effective**” of the “Description of the activities” is going to be described in detail. As it was mentioned before, while trying to solve the problem- to find out what water is, children gathered up into a young researchers club. Pupils are informed that they are going to work as real scientists, i.e. all the scientific research stages are going to be included in their activities: children are going to observe phenomena, raise questions, hypotheses, carry out researches, summarise results, draw up conclusions and present them to others. One of the

ways to inform others about the results is to prepare a map of terms. It is discussing that scientists usually work in groups thus children are also going to work in groups while solving problems and trying to reach the objective. In this way they will not forget to follow the rules of good communication.

Interactive whiteboard is a tool used during the work in the “young researchers club”. On this whiteboard children can see the problem questions that were raised, provided instructions, references to DTA, conclusions drawn. *Annex No.6*

I. First discoveries are related to the three main characteristics of water. (video clip 3, 1)

- **First research** (problem): How to distinguish water? What are the main characteristics of water?

Children are provided with five samples of different liquids (fresh water, sparkling water, sugar solution, water with lemon and mint essence) and an assignment (*Annex No.7*)

While working in groups, applying basic stages of the scientific research, children determine and define three characteristics of liquid water- colourless, tasteless, and odourless.

While conducting the research they formulate a hypothesis (which jar contains water), choose strategy and course of a research and, by following their senses of taste, sight and smell, describe the samples. The research conducted is then summarised and conclusions are drawn up. They begin to fill in the map of terms. They evaluate their activities in a group and on an individual basis. (0:00 – 2:20)

- **Second research.** What helped to determine typical characteristics of water?

Referring to the reflection of the first research and by describing it, children “discover” and name senses and sensory organs, which helped to determine typical characteristics of water. The map of terms is then supplemented with new information.

When answering the problem question (is it only three senses, which describe the water) children learn that there is two more senses, which might provide more information about water (e.g. touch- wet, hearing- babbling of the stream). To consolidate the knowledge gained about the senses, an assignment on the interactive whiteboard as well as a laboratory work with digital teaching aid “Smart robots” is provided. (2:20 – 2:45) *Reference No.1*

Senses are also discussed in the context of ethics subject- insights on how senses help a person to notice and judge the beautiful and right things in life are shared.

- **Third research.** Which characteristic of water will not be felt with our senses? How do plants “drink”?

The problem question is raised- can we always refer only to our senses while carrying out a research? The celery experiment is then conducted collectively. Celery is submerged into water with food colouring and hypothesis is formulated- what will happen? One child says that now the celery will revive and unfold (because now it is quite withered). The result that can be seen after a couple of hours (the celery became blue up to its top)

allows to come up with a conclusion regarding the moistening (the water can travel up through little channels), which allows the plants to “drink” water. Conclusion is reached that not everything is possible to see “here and now” and that not always you can refer to your senses.(2:45 – 3:35). This “discovery” will be useful when children will learn that all the substances are made out of little particles- molecules (this information is provided in a game form during a break) as well as while conducting other experiments.

II. Laboratories of the first graders- answers to the questions related to the three states of water are looked for. (video clip 3, 2)

Children complete assignments- researches, through the help of which they are able to name the states of water themselves, “discover” their forms, learn about they depend on a different movement of the molecules. The strategy of asking questions is applied, practical assignments are completed, activities in virtual laboratories are conducted, and activities of developing mathematical skills are integrated.

- **What’s in the box?** A game “What’s in the box?”. While answering the questions about the substance, which is in the box, children find out that there is an ice cube- solid state of water hidden in the box. (0:00 – 0:30)
- **How to turn water into ice?** Children try to answer the problem question that was raised. It is prepared to do this practically- water is poured into forms and taken into a freezer. (0:30 – 0:40)
- **What is the form of liquid water?** When preparing to freeze the water and answering questions, children “discover” the scientific term of liquid form of water (liquid substances take the form of a container). (0:40 – 1:40)
- **What is the shape of a drop?** During a break pupils play a game “Drop the champion”- on a piece of paper, which has a 2 cm wide “race track” drawn on it, children have to blow the drop from the start line to the finish line by using a straw. Before starting the game children observe the drops, their shapes and come to a conclusion that the drop has a shape of sphere. (1:40 – 1:50)
- **What is the shape of ice?** Next day children take out the pieces of ice from the forms. They come to a conclusion that unlike the liquid water, solid water keeps its shape. While observing pieces of ice of different shapes they learn about spatial objects and complete mathematical assignments related to spatial figures. (1:50 – 2:15)
- **Where did the water go?** While observing the changes of the wet wipes (one was placed on the windowsill and the other one- on the radiator), which were used to clean the work desk, and answering questions, children learn that there is a third state of water- gas, which usually cannot be seen. It is learnt that this state forms when the temperature is rising. (2:15 – 2:50)
- **What is the shape of the gas state of water?** Children observe the experiment with air freshener, which is filled with gas. They notice that gas dissipates and fill the space (after a while they felt that the smell from the end of a classroom spread to other places). Therefore, they come to a

conclusion gas state of water does not have a shape but fill the space. (2:50 – 3:05)

- **How can you see the vapour?** What temperature is needed to boil the water? Children observe evaporation when the water is boiling. The problem question “At what point does the water boil?” is then raised. Children conduct a group research in a virtual laboratory and then fill in the assignment sheets individually (formulate hypothesis, state conclusions, evaluate themselves) (3:05 – 3:50) *Reference No.2; Annex No.8*
- **Why is the state of water different?** After learning that states of water are changing depending on temperature, children play a game that demonstrates how molecules behave in different states (they hold each other firmly, then loosely and then run around). While working individually by the computers they observe this process in the virtual DTA “Nature and human being, grades 5-6” laboratory and conduct researches while following guidelines. More academically capable children try to explain the process that is taking place. (3: 50 – 4.45) *Reference No.3*
- The states of water in the nature are presented for the more curious children and their knowledge is deepened using the DTA “Nature and human being, grades 5-6” demonstration. *Reference No. 4*

III. Summary. Other experiments. Video clip 3, 3

- **Scientific conference.** Based on the scientific map of the term “water”, which was prepared during the week, children present their discoveries in the “scientific conference” (0:00 – 0:45) *Annex No.9*
- **Quiz.** Knowledge is consolidated and deepened, things that have been learnt are checked by using Aktiv Inspire quiz and classroom voting system. (0: 45 – 1:00) *Annex No.10*
- **Other experiments with water.** These experiments are designed to stimulate curiosity of the pupils, encourage them to be interested and explore (1:00 – 2:00). Observations are made and answers to the following questions are looked for:
 - „How to get the coin from the water so it remains dry?” (jar and candle experiment);
 - Where does the piece of ice end up when you put it into a jar with oil and water? What happens when some salt is put in there?
 - How should the crow drink some water from the bottom of the jug? (a story about a crow, which threw pebbles into the jug so the water would rise and she could drink, is read)
 - What happens when some vinegar is poured into the water, in which a red cabbage was placed previously, and why does it happen? What happens when some soda is put in there instead of vinegar?

Evaluation/ types of assessment

Various forms of formative assessment (self-assessment) were applied during the educational process:

- Verbal assessment- children receive and provide a feedback to each other about successes of the activities during the course of learning. They make suggestions of what should be improved, commend, applause. The CAS rule is applied (Commend. Ask. Suggest) (*Annex No.11*)
- “Mood drops” on the classroom wall- following the indicated criteria, pupils place their badges on an appropriate drop (five point scale) (*Annex No.11*)
- “Mood drops” on the assignment sheets (three or five point scale)
- Verbal reflection- activities are discussed in groups, thoughts are expressed individually to the whole class or thought over in silence.
- Instant self-assessment using “thumb” or “traffic-light” method.
- Cumulative assessment system “You reap what you sow”- pluses are collected for activities and effort that was put in. After collecting 20 pluses, a sticker can be chosen (this week the sticker is related to theme of pirates and sea) (*Annex No.11*)
- “Daily news”- everyday activities after classes, during which reflections on the activities of the day are made (*Annex No.11*)
- “Check if you have learnt”- a tool also suitable for diagnostic assessment. With the help of Promethean interactive whiteboard’s classroom voting system, pupils can select an answer and directly see if they managed to answer correctly. The teacher receives a feedback by saving information about each child’s answers in an Excel file (*Annex No.10*)

Materials and tools

- *Reference No.1*
Laboratory work “Explore the importance of senses to a human” of the digital teaching aid “**Smart robots**”
<https://ismaniejirobotai.lt/index.php?play=88&back=t>
- *Reference No.2*
Laboratory work “Determining the boiling temperature of the water” of the digital teaching aid “**Nature and human being, grades 5-6**”
http://gamta5-6.mkp.emokykla.lt/lt/mo/laboratorija/vandens_virimo_temperaturos_nustatymas/
- *Reference No.3*
Research work “States of water”- 1st and 2nd experiments of the digital teaching aid “**Nature and human being, grades 5-6**”
http://gamta5-6.mkp.emokykla.lt/lt/mo/laboratorija/vandens_busenos/
- *Reference No.4*
Demonstration “States of water” of the digital teaching aid “**Nature and human being, grades 5-6**”
http://gamta5-6.mkp.emokykla.lt/lt/mo/demonstracijos/vandens_busenos/
- *Reference No.5*
Water circulation cycle. Teaching aid of the teacher R. Šulinskienė

<http://www.slideboom.com/presentations/302654/Vandens-apytakos-ratas-2-kl>

- *References No.6*

Speech therapy tool Frepy- water-themed games during the breaks.

Anglerfish <http://www.frepy.eu/games/Frepy17lt/>

Fish tail <http://www.frepy.eu/games/Frepy6lt/>

Swamp [http://www.frepy.eu/games/Frepy14lt-/](http://www.frepy.eu/games/Frepy14lt/)

Treasure <http://www.frepy.eu/games/Frepy20lt/>

Danger at sea <http://www.frepy.eu/games/Frepy17lt/index2.html>

Table for marking (*Annex No.4*)

- *References No.7*

Puzzles – group activities for the pupils during the breaks

Fish tank

<http://www.jigsawplanet.com/?rc=play&pid=1bfa86235f7e&pieces=24>

Iceberg <http://www.jigsawplanet.com/?rc=play&pid=387e7a3e028b>

Mandarin duck

<http://www.jigsawplanet.com/?rc=play&pid=00c2962490c2>

Waterfall <http://www.jigsawplanet.com/?rc=play&pid=1ce9e8922d46>

Coast <http://www.jigsawplanet.com/?rc=play&pid=1b7c770ae4ae>

Table for marking (*Annex No.5*)

- *References No.8*

Online game- Battle of the ships

<http://en.battleship-game.org/>

ability to play with an opponent- computer

<http://www.learn4good.com/games/board/battleship.htm>

- *References No.9*

Name selection tools

<http://primaryschoolict.com/random-name-selector>

also can be used:

http://www.classtools.net/education-games-php/fruit_machine

<http://www.classtools.net/random-name-picker/>

- *Reference No.10*

Virtual reality glasses

“Sea World VR2” App (*downloaded from “Play” to an Android telephone*) used with Cardboard and smartphone.

Youtube resources:

- *References No.11*

For the activity of distinguishing sounds of music

Flow of the stream <https://www.youtube.com/watch?v=EZ8xFe1zw7E>

Forest stream <https://www.youtube.com/watch?v=9Nwn-TZfFUI>

Immense waterfall <https://www.youtube.com/watch?v=Qo3OM5sPUPM>

Rain and thunder <https://www.youtube.com/watch?v=jB-7Y5eDfXk>

Sea waves https://www.youtube.com/watch?v=HTc_2XmKK-M

Rain <https://www.youtube.com/watch?v=J5OSRpRyl6g>

Show, snowstorm <https://www.youtube.com/watch?v=UO1NCOG9K2s>

- *References No.12*

- **For the energetic exercise**

- Duck dance <https://www.youtube.com/watch?v=kQQ59Z-al4w>

- Duck dance performed by a rooster

- <https://www.youtube.com/watch?v=PMk9MGLe2bk>

- and roosters https://www.youtube.com/watch?v=8gRw_K1Q2A4

- <https://www.youtube.com/watch?v=wKiZSberm8E> (when children have learnt the dance)

- *References No.13*

- **For the background of the breaks, to establish a general mood**

- Clownfish <https://www.youtube.com/watch?v=Tqkq4zUJ3Yw>

- Dolphins <https://www.youtube.com/watch?v=MPov9cVfz0U>

- Among the corals <https://www.youtube.com/watch?v=Q1TyoYotSf0>

- Underwater world <https://www.youtube.com/watch?v=Tqkq4zUJ3Yw>

- *References No.14*

- **For the leisure time**

- A song „Droplets“ by I. Jankauskaitė

- <https://www.youtube.com/watch?v=kE8j-pEbtck>

- <https://www.youtube.com/watch?v=V8BliE4Mjw>

- A fun pause with the ducks

- https://www.youtube.com/watch?v=954_HtkIvNo

- A cartoon for a leisure time

- <https://www.youtube.com/watch?v=fKcXU8P6aaQ>

- Captain Flint songs <https://www.pakartot.lt/album/geriausios-kapitono-flinto-dainos>

- *Reference No.15*

- **For learning the poem of the week**

- a song “Rain gnomes” (based on a poem by V.Palčinskaitė), performed by music studio “Nieko tokio” <https://www.pakartot.lt/album/grazi-istorija/lietaus-nykstukai>

- *References No.16*

- **For meditation**

- <https://www.youtube.com/watch?v=luRkeDCoxZ4>

- <https://www.youtube.com/watch?v=TkFm1jmJemU>

- <https://www.youtube.com/watch?v=SynzKC4fWp0>

- **Learning aids for the interactive whiteboard prepared using Activ Inspire programme** *see Annexes, provided Flipchart and pdf files in Lithuanian language.*

- Assignments for the Morning news activities (marking the weather using conventional notations, name selection tool, temperature marking, topic of the week and problem question “selection” assignments, rain of thoughts with audio file) (*Annex No.1*)

- Poem of the week and assignments (recording of the interactive activities and a song) (*Annex No.2*)
- For the breaks (links to interactive games) (*Annex No.3*)
- Assignments for the research works (with links to presentations, demonstrations of the digital teaching aids, virtual laboratories) (*Annex No.6*)
- Quiz - voting for assessment and self-assessment (*Annex No.10*)
- **Assignment sheets for research activities**
- Research of water characteristics (*Annex No.7*)
- Determining water temperature (*Annex No.8*)

Timing and learning environment

- Duration of the activities: one week (based on the educational plan- 22 academic hours)
- The activities took place in: classroom, art studio, sports hall, kitchen, yard, conference hall.

Conclusion

We believe that educational process arranged during the integrated education (learning) week “What is water” respond to the challenges of modern education:

- seeks to implement education trends and guidelines described in the conception of a Good school;
- offers ways how to effectively implement education content provided in general programmes;
- provides aids for the development of general competences and emotional intelligence of the schoolchildren.

The success of the education (learning) process is determined by application of educational methods, which correspond to the characteristics of a modern child, and strategies chosen:

- Integration. Integrated education (learning) based on mutual connections.
- Experience-based education (learning). Daily activities based on previous experiences and discoveries.
- Personalization. Orientation towards individual needs of a child (learning style, abilities, hobbies, fields of interest, previous experience).
- Modern technologies. Purposefully applied ICT tools.

Chosen learning trends allow to educate children, who:

- are always seeking to know and discover;
- know how to plan their learning, choose and apply the most suitable methods of learning, necessary strategies of knowledge;
- are able to reflect, assess their learning, development;
- are not afraid to critically evaluate problems, look for right ways to solve problems;
- are creative;

- have high academic achievements;
- are developing skills of public speaking;
- have high emotional intelligence;
- are able to communicate, agree, achieve a common goal together with others;
- purposefully use modern technologies.

Annexes:

- *Annex No. 1 Assignments (flipchart)*
- *Annex No. 1 Assignments (pdf)*
- *Annex No. 2 Poem of the week (flipchart)*
- *Annex No. 2 Poem of the week (pdf)*
- *Annex No. 3 For the breaks (flipchart)*
- *Annex No. 3 For the breaks (pdf)*
- *Annex No. 4 Frepy*
- *Annex No. 5 Puzzles*
- *Annex No. 6 For the activities of the researchers club (flipchart)*
- *Annex No. 6 For the activities of the researchers club (pdf)*
- *Annex No. 7 Research_characteristics*
- *Annex No. 8 Research_temperature*
- *Annex No. 9 Map of the term water*
- *Annex No. 10 Quiz (flipchart)*
- *Annex No. 10 Quiz (pdf)*
- *Annex No. 11 Assessment*

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 VšĮ “Šiaurės licėjus”

2. Integrated creativity education program



Title	Integrated creativity education program
Content/ Subject areas	6 subjects are integrated: native language , history, chemistry, physics, biology and mathematics
Target group:	15-17 years old, 3 groups X 7 students
Learning objectives / competences	Thematic principle to develop communication and cooperation skills, encourage creativity. Active learning, knowledge and reasoning, communication, self - esteem/identity, cooperative learning, evolution for mentoring, public speaking.
Description of overall activity	<ol style="list-style-type: none"> 1. This model is made up of 34 lessons (one per week) during one teaching year. During one teaching year students have 4 themes in detail from 6 subjects perspectives analyzed. 2. The specific theme with expected outcome is defined by students in the process of learning (which is the manifestation of creativity). 2. Six subjects (native language, history, chemistry, physics, biology and mathematics) are integrated into this model according to the theme. 3. Thematic cycle consists of 7 lessons, which makes up 3 stages. 4. The first stage: students are divided into three groups (7 students per group) and they are taught three subjects: Mother tongue language, physics and history for three weeks. Groups rotate: <div data-bbox="726 1211 901 1384" data-label="Diagram"> </div> 5. The second stage: in three weeks students are taught to other three subjects: chemistry, biology, mathematics. Groups rotate: <div data-bbox="742 1464 949 1668" data-label="Diagram"> </div> 6. The third stage: all teachers and student groups meet together and reflects on all the stages/activities. Students share the best experiences, presents the outcomes/results.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Teachers and students of all six integrated subjects decide on the topics they are going to study in the lessons of the Model. 2. It was decided to take the following topics: Animals, Colours. Trees, Water. 3. After having decided on the topics, every teacher when planning one's lessons, integrate the topic (for example animals) in the subject. 4. For example: Topic of Colours integrated into the subjects:

In the lesson of Native language: pupils discussed about animal colours in life and in the provided extracts of different texts. Later they created the text where red colour had to be dominated while simultaneously following the the style of the indicated writer.

In the History lesson: while surfing the Internet the pupils were searching for the most popular colours which were used in ancient history and in the Middle ages. Later they played the game „To dress up the prince and princess of Egypt“. Also, the students learned the history of three colour flags.

In Physics: the students made practical work to create spectroscope, hologram and spectraball.

In Chemistry: the students made practical work to form colorful drawing when mixing different colors (Runge method).

In Biology: students got acquainted with color therapy and made presentations on “Colors and dishes”.

In Mathematics: when using geometrical figures and making calculations the students created colorful gift boxes.

Evaluation/ types of assessment

In the third stage the teachers with their classes gathered together and reflected on different experiences.

Rainbow color method was applied: while using colorful sheets of papers students had to write the answers to the questions about the lessons on the theme “Colors”: What/Who/ (red), How? (orange), Why for? (yellow), Where from? (light blue), What purpose? (green), Why is it important to me? (blue), Where could I use? (violet).

Materials and tools

Different strategies are used (problems reformulation, associations - new connections between ideas – quest, the use of analogies and metaphors).

Timing and learning environment

7 X 45 min.

Conclusion

Thematic integration for talented and creative students

Contacts

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3. Interior decoration. Snowflake



Title	Interior decoration. Snowflake
Content/ Subject areas	Technologies, physics, photography
Target group:	14-16years old, 16 students
Learning objectives / competenc es	To develop cultural and ecological awareness. To recognize water's solid state of aggregation forms. To make interior detail. To share the information (send e-mail / use Messenger) by cooperating.
Descriptio n of overall activity	2 students homework: presentation about snowflakes forms http://www.technologijos.lt/n/mokslas/gamta_ir_biologija/straipsnis/Snaiges?name=straipsnis-3712 Brainstorm: snowflakes as interior decorating details (teacher captures on the board). Teacher provides information http://www.gami.lt/popieriniu-snaigiu-karpymobudai http://www.ltvirtove.lt/sventes.php?lt=kaledines_eglutes_papuosalainertos_snaiges Reminds graphical crochet symbols (https://smp2014te.ugdome.lt/index.php/site/mo/mo_id/338) Students individually choose an attractive idea. For students are reminded safety rules, evaluation criteria. Students shear or crochet snowflake (necessary measures were discussed in advance) By chosen way interior detail's production process is shared with school friend (Photo story for windows, Windows movie maker, SMS and etc.) Friend evaluates idea from 1 to 10.
Descriptio n of the process and teaching/ learning strategies used	Presentation "Snowflakes". Physics and chemistry knowledge about water's physical forms. 10.Snowflakes.ppsx Brainstorm: kind of snowflakes could decorate an interior: Students individually choose an attractive idea. Teacher provides references for idea generation; crocheting repetition. Students work by using chosen technology; captures stages of work by mobile phone. By chosen way interior detail's production process is shared with school friend (photo story, windows movie maker, message and etc.), asks to evaluate idea from 1 to 10 Gets friend's evaluation and informs teacher.

Evaluation / types of assessment	Accumulative Final evaluation consists of friend's evaluation and lessons activities evaluation.
Materials and tools	http://www.snowcrystals.com/ http://www.technologijos.lt/n/mokslas/gamta_ir_biologija/straipsnis/Snaiges?name=straipsnis-3712 http://www.gami.lt/popieriniu-snaigiu-karpymo-budai http://www.ltvirtove.lt/sventes.php?lt=kaledines_eglutes_papuosalai_nertos_snaiges https://smp2014te.ugdome.lt/index.php/thread,crochet,paper,clippers,mobilephone
Timing and learning environment	2x45 min
Conclusion	<p>Students master programs as information presentation tool; Mobile phone is used as educational tool; Educated evaluation and cooperation skills. Created detail decorates home.</p> <p>10.Snowflakes.wmv</p>
Contacts	Alytus Putinai gymnasium gimnazija@putinai.alytus.lm.lt

4. Journey in time – the river „Sidabra“ in the past, at the Present, in the Future



Title	Journey in time – the river „Sidabra“ in the past, at the Present, in the Future
Content/ Subject areas	<p>To reveal this integrated project, the students must have the knowledge from the 8th grade biology textbook (Subjects: "Grubby world, Clams - water and land settlers, Arthropod abundance", "The world belongs to the insects, the human population on nature), the 7th grade history textbook (Topics: "Baltic tribes, the Baltic crafts and businesses, mounds edge") and the 7th and 8th grades geography textbooks (Topic - "Rivers and lakes") the 8th grade chemical textbook (Theme - "Meet the chemicals"), the art (Subject – "Realistic painting"), and from technology (Theme - "Raft").</p>
Target group: age range and size of the group	<p>28 eighth grade students. Their ages 13 -14 years. 6 groups of 4 or 5 students.</p>
Learning objectives / competences	<p>The aim: To show the students Joniskis district and the river Sidabra: the pollution, emissions and their impact on the environment polluters and as the river's future.</p> <p>To introduce the large variety of bottom invertebrates and the value for the nature.</p> <p>To develop a sense of responsibility for their own land, the country's environmental situation.</p> <p>To develop observation, cultivate aesthetic senses, awaken the imagination of capturing the area's natural identity, beauty by doing the creative tasks.</p> <p>To develop students' information culture.</p> <p>Increase motivation.</p> <p>Competences: knowledge, initiative and creativity, communication, ability to learn, personal, social, key subject.</p>
Description of overall activity	<p>Subject - Biology.</p> <p>Activities:</p> <ol style="list-style-type: none"> 1. 4 - 5 students, the members of the group will look through the glasses as environmentalists. And implements their objective set. 2. Review the 8th grade themes: "World of Grubby, Clams - water and land settlers, Arthropod abundance.

-
3. On the Internet they will find a large bottom invertebrates and their adaptation to live in various forms of pollution water.
 4. On the Internet and in the press they will find some accidents which were in river Sidabra and solutions to reduce pollution.
 5. Students will make a scoop to catch large bottom invertebrates.
 6. For these 3 steps (1, 2, 3, 4, 5) we will need three classes.
 7. On the expedition on the raft through the River Sidabra, the students catch large bottom invertebrates. They recognize and describe their adaptation to live in polluted water.
 8. Sets, River Sidabra, pollution class by captured large bottom invertebrates. It takes 1 lesson.
 9. After the expedition there is a reflection, during which the members of the group present their work (Annex. 2) and participate in the discussion.
 10. The self-assessment do the students themselves according to their contribution to the work done in the group (individual self-assessment) and the other group members for completing individual tasks. Evaluates teachers.

Subject - Chemistry.

Activities:

1. 4 - 5 students members of the group will look through the glasses as chemists. And implement their objective set. Reviews the 8th grade topic "Meet the chemicals.
 2. Students will find how the nitrogen and phosphorus compounds effects on the living organisms living in these compounds polluted rivers.
 3. In the "Environmental book they will find a description which will help to determine the physical properties of water.
 4. For these steps (1, 2, 3) we will need 3 lessons.
 5. Expedition on the raft through the River Sidabra. Students will use a portable laboratory and explore the physical properties of water, nitrogen and phosphorus content in the river Sidabra water.
 6. Establish, Silver River, the level of contamination by nitrogen and phosphorus compounds in the river water, according to the physical properties of water. It takes 1 lesson.
 7. After the expedition going reflection, during which time members of the group present their work done (Annex. 1) and is involved in the discussion.
 8. The self-assessment do the students themselves according to their contribution to the work done by the group (individual self-assessment) and the other group members for completing individual tasks. Evaluates teachers.
-

Subject - History.

Activities:

1. 4 - 5 students, the members of the group will look through the glasses as historians and implements their objective set. Review the 7th grade topic: "The Baltic tribes, the Baltic and crafts businesses, mounds edge.
2. They will visit Joniskis history - Cultural Museum and get acquainted with exhibits - archaeological artefacts found during excavations at places where Sidabre Castle was standing, with it's destruction, the inhabitants lived there, their business, the river Sidabre origin name, and how to achieve Semigallians metals and other products.
3. These steps (1, 2) and will require 2 lessons + 1 lesson in Joniskis history - Cultural Museum.
4. Expedition on the raft through the River Sidabra, students will find a place where the Sidabra Castle stood, draw the scheme River Sidabra in the Past, in the Present and in the Future. It takes 1 lesson.
5. Determine the River Sidabra historical significance for Semigallians and for Joniskis habitants.
6. After the expedition there will be a reflection, during which the members of the group present their work done (Annex. 3), and participate in discussions.
7. The self-assessment do the students themselves according to their contribution to the work done by the group (individual self-assessment) and the other group members for completing individual tasks. Evaluates teachers.

Subject - Geography.

Activities:

1. 4 - 5 students members of the group will look through the glasses as geographers and implements their objective set. Review the 7th grade the last topic: "Rivers and lakes, and 8th grade geography textbook last topic:" Rivers and Lakes ".
 2. In the Map students will find the river Sidabra, its tributaries, the river's geographical location, river pollution methods
 3. They will visit and Joniskis water centre and become familiar with the water treatment methods.
 4. These steps (1, 2, 3) and will require 2 lessons + 1 lesson in Joniskis water centre.
 5. During the expedition on the raft through the river Sidabra, students will work with chemists. Students will determine the way the river pollution, the water content of the river flow. It takes 1 lesson.
-

6. After the expedition there will be a reflection, during which the members of the group present their work done (Annex. 4), and participate in discussions.

7. The self-assessment do the students themselves according to their contribution to the work done by the group (individual self-assessment) and the other group members for completing individual tasks. Evaluates teachers.

Subject - Art.

Activities:

1. 4 - 5 students, the members of the group will look through the glasses as artists and implement their objective set.

2. Students will learn to paint from nature - large Sidabra river bottom invertebrates with the freely chosen instrument.

3. They will learn how to make a collage from the same drawings.

4. These steps (1, 2,3) and will require 3 lessons.

5. Expedition on the raft through the River Sidabra the students will work with the environmentalists who will catch the major bottom invertebrates, students will paint the invertebrates and do the poster "Large river Sidabra bottom invertebrates. By using papier - mache technique and freely chosen measure students restore the castle of Sidabra in collaboration with historians and technicians. It takes 1 lesson.

6. After the expedition there will be a reflection, during which the members of the group present their work done (Annex. 5), and participate in discussions.

7. The self-assessment do the students themselves according to their contribution to the work done by the group (individual self-assessment) and the other group members for completing individual tasks. Evaluates teachers.

Subject - Technology.

Activities:

1. 4 - 5 students, the members of the group will look through the glasses as technologists and implements their objective set.

2. Students will find on the internet the information about the rafts production out of secondary raw materials.

3. They will make a sketch of the raft and think about the means to produce the raft.

4. Make a raft.

5. These steps (1, 2,3, 4) and will require 3 lessons.

6. Students make a raft and swim in the river to do the expedition through the river Sidabra. It takes 1 lesson.

7. After the expedition there will be a reflection, during which the members of the group present their done work (Annex. 6), and they will be involved in the discussion.

8. The self-assessment will be done by the students themselves according to their contribution to the work done by the group (individual self-assessment) and the group members for completing individual tasks. Teacher's Evaluation.

After the expedition there will be a reflection, during which the members of the group present their work done (Annex. 6), and participate in discussions.

7. The self-assessment do the students themselves according to their contribution to the work done by the group (individual self-assessment) and the other group members for completing individual tasks. Evaluates teachers.

Description of the process and teaching/ learning strategies used

Students in biology lessons, the theme "Human population on nature" hears the lesson's aims and interests. They are divided into 6 groups, which will do the different tasks and look through different glasses. Students think about different hypotheses and activities (the description of the activities) as well as different tools (the description of the activities), use of learning and teaching strategy PLUS: A) is B) location, c) use of the information, d) evaluation of methods: practical research, collage, group work, individual work, discussion, project, goggles, development, design, expedition. By doing the tasks teachers use the formative assessment that students could adjust their work. After the expedition 6 Groups present their activities carried out. Students indicate where the life experience and knowledge they will apply. Discuss about the strengths and weaknesses during the project. Do the self-assessment themselves (according to their contribution to the work of the group), the group of each other, the teachers from these assessments led to mean and written diary.

Evaluation/ types of assessment

Students are evaluated in two stages: 1. they evaluate the themselves by thinking about the work done together in the group (individual self-assessment) and the class of students for completing individual tasks 2. Evaluate teachers. And applies formative assessment.

Materials and tools

This material is used for teaching biology, chemistry, art, geography, history, technology subjects. Extra-curricular activities, in regional and national competitions and conferences. ICT tools / applications: Microsoft Office, Paint, Internet Explorer, e-mail.

Timing and learning environment

Conclusion Teaching (learning) environment: 3 lessons in a traditional environment - classroom or 2 lessons in a traditional environment - the classroom + 1 lesson – in Joniskis waters center/ Lesson 1 "Joniskis history - Cultural Museum + 1 lesson expedition through the Sidabra river.

:

1. This action is innovative because there were used different, active learning (learning) methods (eg. Project, discussions - it allows to change the perception of the things, glasses) methods, which focus on the role of students (eg. Project development, design).
2. In order to reveal the topic of this work - "A journey through time – The River Sidarba in the Past, in the Present and in the Future", pupils will need the knowledge and skills of the 6 major subjects: biology, chemistry, history, geography, art and technology. This allows students to integrate these things in knowledge and skills and an understanding of interfaces and applications in real-life situations.
3. The activity takes place in different environments and traditional (classroom) and unconventional (in Joniskis waters company, in Joniskis History - Culture Museum, Silver River).
4. These activities will rise the students' motivation.
5. These activities help students develop competencies: knowledge, initiative and creativity, communication, ability to learn, personal, social, key subject.
6. These activities and formative assessment, learning and teaching strategy PLUS ICT: helped pupils to solve problems collaboratively.
7. Activities taking place - the closest to the student's living environment. Such environmental and operational sense of responsibility for their own land, the country's environmental situation, the avalanche of attention, improves the aesthetic senses, stirs the imagination capturing the area's natural identity, beauty, the creative tasks.

Appendix No.1 Chemists

Purpose: Students will get acquainted with the Joniskis district and river Sidabra, develop a sense of responsibility for their own land, the country's environmental situation. To develop students' information culture. Increase motivation.

Students will get acquainted about the safety requirements: Avoid contact of reagents with skin and eyes. Do not swallow the reagents. Do not eat or drink during testing. Wash hands after handling.

Objective: 1. To investigate the physical properties of water and pollution of nitrogen and phosphorus compounds.

Hypothesis

Location: Silver River, chemical cabinet

temperature

Materials and tools: water samples for mercury thermometer.

Instructions:

Temperature affects many water occurring chemical and biological processes (oxygen and carbon dioxide dissolution in water, photosynthesis rate). Particularly important river life 10o temperature, because the water comes alive fauna (which occurs at the end of April). When the water cools below this temperature - again, everything dies (in early October). Temperature affects the taste and smell of water, it must be measured in the jar, as soon as the water is taken. Before taking the water sample scoop the water container into the water to equal the temperature of the water. Soak the thermometer in water for 5 - 10 minutes until the mercury has been stabilized. Register not only the river water temperature, but also the air temperature.

Results: the data obtained are listed in the table

Table 1. The river Sidabra water and air temperature.

Year, Month Day River water temperature air

Conclusion:

color

Materials and tools: water samples, distilled water, the tube, the white paper background, filter paper, funnel, container refiltration.

Instructions:

Usually clean water seems to us a clear, colorless, polluted - is associated with the fetid water, the running from the sewer pipe, or thrown into the water waste. This is confusing signs, because the toxic materials are soluble in water and is colorless and transparent stream can be completely lifeless. Water and the intensity of the color is determined visually white paper background, research comparing the water with the same volume of distilled water to cast it into exactly the same containers. Water color can be colorless, pale yellow, yellow, light gray, dark gray, brown, brown.

Results:

Conclusion:

Odor

Materials and tools: flasks, spirit lamp, thermometer, filter paper, glass flask covered.

Instructions:

Water smell depends on the biochemical processes in water, soil composition and sanitary condition, from entering the domestic waters flush variety of materials. In the flask, the addition of the test river Sidabra water and is covered with glass. Water whip a circular motion, move the glass and smell the smell of the water. If the water is not determined there will be the smell of boiled water, to identify the smell. After heating to 50 ° Celsius after cooling water up to 20 ° Celsius after sniffing the smell of the water.

Results: the data obtained are listed in the table

Table 2 Sidabra river water smell

Water physical characteristic point Sidabra

Odor

Conclusion:

Concentrations in water.

Materials and tools: Reagents from portable laboratory.

Instructions:

Pour into a container of water and 10 ml mark. Put the two measuring spoons of reagent (1), close the jar and shake to dissolve the reagent. Open the container and place one measuring spoonful of reagent (2), close the jar and shake for 1 minute. It can stay a little sediment. Then leave the sample for 10 minutes. After they open the container and compare the color of the water with the color chart. Comparing Place a container on the marked local color table. The color values applicable from above. The concentration (mg / l) at each specified color, what color suits your sample - the nitrate concentration value we collect. Intermediate values must be calculated. Results:

Conclusion:

Ammonium ions in water

Materials and tools: Reagents from portable laboratory.

Instructions:

Pour into a container of water and 5 ml mark. Pour 10 drops of reagent (1) solution and stir. Open the container and place one measuring spoonful of reagent (2), close the jar and shake until everything is dissolved. Then leave the sample for 5 minutes. Then add 15 drops of reagent (3) closing the container a good shake. Leave the sample for 7 minutes. Then you open the jar compare the water color with a color chart. Comparing Place a container on the marked local color table. The color values applicable from above. The concentration (mg / l) at each specified color, what color suits your sample - the ammonium concentration value we collect. Intermediate values must be calculated.

Results:

Conclusion:

Phosphates in water

Materials and tools: Reagents from portable laboratory.

Instructions:

Pour into a container of water and 5 ml mark. Pour 10 drops of reagent (1) solution and stir. Open the jar and add 1 drop of reagent (2), close the jar and shake until everything is mixed.

Then leave the sample for 5 minutes. Then you open the jar compare the water color with a color chart. Comparing Place a container on the marked local color table. The color values applicable from above. The concentration (mg / l) at each specified color, what color suits your sample - the phosphate concentration value we collect. Intermediate values must be calculated

Results:

Conclusion:

Nitrites in water

Materials and tools: Reagents from portable laboratory.

Instructions:

Pour into a container of water and 5 ml mark. Put two tablespoons of measuring reagent, close the jar and shake until everything is dissolved. Then leave the sample for 3 minutes. Then you open the jar compare the water color with a color chart. Comparing Place a container on the marked local color table. The color values applicable from above. The concentration (mg / l) at each specified color, what color suits your sample - the nitrite concentration value we collect. Intermediate values must be calculated

Results:

Conclusion:

Facts

Joniskis district - also not one of those where the tourist or traveller gladden the heart of a huge, roam the forest, and the eyes constantly ripple from rivers and lakes-blue. Natural rivers and lakes Joniskis district poor. No interlayer underground waters that nourish the rivers. Therefore, most natural rivers do not reach the ground water, and in winter freezes to the bottom, and in the summer it dries. This is typical of the river and silver. The larger of Musa and Lielupe river basin - silver. The total of its length - 45 km, and the area length of 33.2 km. It flows to Riga as an independent river, and then flows into the river Plato, and this carries the waters of Lielupe. According to the mineral nitrogen mg / L target to significantly polluted rivers Lithuania - Class V, while the phosphates heavily polluted rivers Lithuania - Class VI.

discussion

Nitrates and phosphates entering ways in the River Sidabra.

Questions and Tasks

1. What are the elements called Biogen?
2. The effects of phosphates and nitrates in the current state of the river.
3. The effects of phosphates and nitrates in the river-dwelling organisms.

problem-solvers

Students from portable laboratory takes --- NO₂, NH₄ +, NO₃--. Find information sources, as these ions associated with phosphates and nitrates.

1. What ions in the form of water plants absorbed nitrogen?
 2. Location of nitrogen gets the animals?
 3. As ammonium ions to water?
 4. What bacteria converts ammonium ion into?
-

5. What turns a volatile nitrite ion into?

Application:

Self-evaluation: How I helped a group to do the work (individual self -assessment)

1	2	3	4	5	6	7	8	9	10
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Group evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (delivery of the project) - 1 point							

Teacher evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (delivery of the project) - 1 point							

Appendix No.2 Environmentalists

Purpose: To get acquainted with Joniskis district and river Sidabra. To develop a sense of responsibility for their own land, the country's environmental situation. To develop students' information culture. Increase motivation.

Objective: 2. Access to the large bottom invertebrate diversity and significance of nature and man.

Hypothesis

Location: Silver River, Biology cabinet

Materials and tools: scoop bath, preferably white or bright, to collect and sort the animals, some plastic enclosed cups livestock, tweezers and comfortable work clothes to the water, head to describe organisms.

Instructions:

Scoop frame make the thick solid wire, D-shaped or triangular, the front edge of the latissimus is about 25 - 30 cm in length. It is fixed to 1.5 m long rod. Frame close with strong grid whose eyes - about 0.5 mm in diameter. Collector stands upstream scoop underneath the base to the bottom and hoeing with the scoop in front of the bottom of the foot or the hand, moving upstream. Propelled by a primer in conjunction with the animal enters the downstream held a grid from which they then carefully with tweezers a selection. We collect about 20 minutes. different biotopes that it would be caught the number and variety of organisms. In order to accurately assess the selected research stream in the local water quality, additionally preferably out of the water and explore a few stones or pieces of wood. In the wooded areas, which are out of the water, it must be observed the plants too. These can also be adheres animals species found the scoop. Results: the data obtained are listed in Table 1

Animals	The group which was found	The number of different groups	Assessment	
			Number of species in the group	Class
Plecoptera larvae				
Ephemeroptera larvae				
Trichoptera larvae				
Amphipoda, Megaloptera, Asellus Aquaticus, Hirudinae				
Tubifex tubifex				
Gastropoda and Bivalvia molluscs, Plathelminthes, Diptera larvae, Hydracarina, Coleoptera and their larvae, the other animals				The other animals do not influence the setting of the approximate class
The total number of species			Class	

Conclusion:

Facts

The larger than Musa and Lielupe rivers' basin there is the river Sidabra. The total length is 45 km, and the area length of 33.2 km. It flows to Riga as an independent river, and then flows into the river Plato, and this carries the waters of Lielupe. According to the mineral nitrogen mg / L target to significantly polluted rivers Lithuania - Class V, while the phosphates heavily polluted rivers Lithuania - Class VI. Lack of dissolved oxygen in water. Organic material need oxygen to break down, if organic matter accumulates a lot of oxygen can up too much, and then the organic material unraveling takes place under anaerobic conditions, often diverging toxic materials.

Discussion Is it worth it to clean streams such as silver bottom and abundant coastal vegetation? Why do you think so?

Questions and Tasks

1. In your own words, describe what the ecosystem and provide 1- 2 examples of ecosystems.
2. Large Benthic adaptation to live in the river Sidabra.
3. Had the river Sidabra accidents (oil entering slurry access) affect the water quality and the organisms that live in it?
4. What are the environmentalists actions helped to reduce water pollution in the event of such accidents (oil entering slurry entry)?
5. What are the factors that contribute to river bogging?

Problem-solvers picture River Sidabra. Is it metabolism intact, or is affected by eutrophication? The answer explain.



1. Where does the excessive nutrient content in the river Sidabra ecosystem come from?
2. Describe in your own words, how you understand the river blooms.
3. As a result of the abundant algae overgrowth a variety of organisms will be changed?
4. How the sludge at the bottom of the river forms?
5. What is the future of this river? Explain your answer.

Self-evaluation: How I helped a group to do the work (individual self- assessment)

1	2	3	4	5	6	7	8	9	10
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Group evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (delivery of the project) - 1 point							

Teacher evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (delivery of the project) - 1 point							

Purpose: To acquaint students with Joniskis district and the river Sidabra. To develop a sense of responsibility for their own land, the country's environmental situation. To develop students' information culture. Increase motivation.

Objective 3.: To investigate river Sidabra historical past.

Hypothesis

Locations: River Sidabra, History Cabinet, Joniskis History - Culture Museum

Facts of Rhymed Livonian Chronicle

Now let me describe how successful the other group was. Sidabra , which I mentioned, was in the Semigallians land. They hurried toward the castle. They had to ride through the swamps. And through the dark forest, following paths that edge. We had to leave the castle - told them all to leave. The animals they had taken. Property in the castle wasn't. . The brothers worked until the castle burn like the ground. Yes, Sidabra was burned. They all land devastated. Rakte, Dobele, Sidarba were not able to resist. All three already mentioned here, they burned this year: One thousand one hundred and two and a half, yet add forty - years after the birth of the Lord.

Discussion

What is a fact is mentioned poetical Livonian Chronicle and how it relates to silver river past?

Questions and Tasks

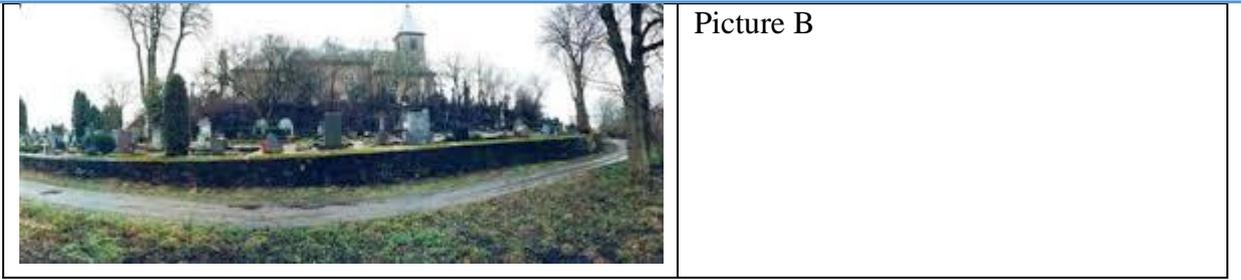
1. At what age Semigallian tribe lived in Joniskis district?
2. The most important Semigallian center.
3. How Semigallians made a living?
4. Why the crusader attracted this land?
5. How concerns name of the river Sidabra with metal silver?
6. How metals and other products reached Semigallians?
7. The historic significance of the river Sidabra for Semigallians and for us - Joniškis inhabitants.
8. Draw the scheme of the River Sidabra in the Past, Present and Future.
9. Why Semigallians was forced to leave the country?

problem-solvers

1990 Summer Lithuanian Institute of History by archaeologists Sidabrė mounds and inhabitants exploratory research. One mound is on left in Kalnelis, and another mound is on the right side. Which photograph in a mound called the castle site and which hill?



Picture A



Fill in Table 1

District	
District	
Parish	
Name of the mound	
When the place was lived	
Archaeological finds	
Legends of the mound (if they exist)	

1. For what purpose was a mounds made for?
2. Describe the mound fortifications.
3. The mound is different from the barrow?
4. Historical sources are classified according to form:

Historical sources

4.1. Which source you will assign archaeological findings?

Application:

Self-evaluation: How I helped a group to do the work (individual self -assessment)

1	2	3	4	5	6	7	8	9	10
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Group evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
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Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (the project delivery on time) - 1 point							

Teacher evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (the project delivery on time) - 1 point							

Appendix 4 Geographers

Purpose: To get acquainted the students with Joniskis district and the river Sidabra. To develop a sense of responsibility for their own land, the country's environmental situation. To develop students' information culture. Increase motivation.

Objective 4.: To investigate Sidabra River geographical position, tributaries, river pollution and polluters techniques, water treatment methods.

hypothesis

Location: Silver River, Geography cabinet, Joniskis water centre.

Facts: Joniskis district - also not one of those where the tourist or traveler gladden the heart of a huge, roam the forest, and the eyes constantly ripple from rivers and blue lakes. Natural rivers and lakes in Joniskis district are poor. No interlayer underground waters that nourish the rivers. Therefore, most natural rivers do not reach the ground water, and in winter freezes to the bottom, and in the summer it dries. This is typical of the river and silver. The larger of Musa and Lielupe river basin - Sidabra. The total of its length - 45 km, and the area length of 33.2 km. This river's pollution in Lithuania is the second after Kulpe.

Discussion of the larger river polluters are companies or individuals?

Questions and Tasks

1. What kind of water pollution, do you know?
2. What are the two methods of water pollution? And in what way is it the river Sidabra polluted?
3. Ask what contaminants can get into the nearest village or the river?
4. Why spilled oil spreads on the surface of the water in Baltic sea or lake or river Sidabra?
5. What kind of damage to the spilled oil makes the aquatic flora and fauna?
6. For what company cleaning equipment has become less powerful?
7. What are the compounds which were not cleaned in company Joniskis waters?
8. What is the Monera individual that helps to clean the water?
9. What are the main streets of the population Sidabra river polluters? In his answer, give.
10. Sidabra River geographical location. Tributaries.
11. Compute the water flow.

Lithuania solve the problem of water swept by mechanical or biological. Which cleaning method is more effective?

1. At what age or Lithuanian cities were equipped with primitive equipment the sewer?
2. In what year in Joniskis was build a mechanical treatment plant and to what years they operate?
3. How many of the suspended waste filtered up to the mechanical treatment plant?
4. In what year in Joniskis was build a biological treatment plant?
5. What is the biological sewage treatment capacity per day?
6. What is Joniskis treatment plant composition?
7. What is Joniskis treatment plant for the mechanical cleaning of water, and what biological treatment plants to clean the water?

Application:

Self-evaluation: How I helped a group to do the work (individual self- assessment)

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Group evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (the project delivery on time) - 1 point							

Teacher evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (the project delivery on time) - 1 point							

Appendix No.5 Artists

Purpose: To acquaint the students with Joniškis district and river Sidabra. Develop observation, cultivate aesthetic senses, awaken the imagination of capturing the area's natural identity, beauty, the creative tasks. To develop a sense of responsibility for their own land, the country's environmental situation. To develop students' information culture. Increase motivation.

Objective: 5. Learn to paint from nature - large Sidabra river bottom invertebrates with the freely chosen instruments to do a collage from the drawings. Make a poster "Large Sidabra river bottom invertebrates from the drawings. Using papier - mache technique and freely chosen measure students "restore" castle Sidabra.

hypothesis

Location: Silver River Art Cabinet

Application:

Self-evaluation: How I helped a group to do the work (individual self -assessment)

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Group evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (the project delivery on time) - 1 point							

Teacher evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (the project delivery on time) - 1 point							

Appendix No.6 Technology

Purpose: To acquaint the students with Joniskis district and the river Sidabra. Develop observation, cultivate aesthetic senses, awaken the imagination of capturing the area's natural identity, beauty, and the creative tasks. To develop a sense of responsibility for their own land, the country's environmental situation. To develop students' information culture. Increase motivation.

Objective: 6. Make a sketch of the raft, to consider measures raft produce.

Made raft. hypothesis

Location: Silver River, Technology Executives

Application:

Self-evaluation: How I helped a group to do the work (individual self- assessment)

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Group evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (the project delivery on time) - 1 point							

Teacher evaluation

The criteria and possible scores	Given scores	1 gr.	2 gr.	3 gr.	4 gr.	5 gr.	6 gr.
Accuracy (job did by the descriptions and there is an arrangement of the results of) - 5 points							
Adapting to life- 4 points							
Time (the project delivery on time) - 1 point							

Contacts

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5. Integrated IT project „Paukščiai čiułbuonėliai“ („Birds-Chirpers“)



Title	Integrated IT project „Paukščiai čiułbuonėliai“ („Birds-Chirpers“)
Content/ Subject areas	Integrated topics: IT – Robotics – Science- English
Target group: age range and size of the group	Grade: 5-6
Learning objectives / competences	see: https://goo.gl/d7obxm
Description of overall activity	see: https://goo.gl/d7obxm
Description of the process and teaching/ learning strategies used	for pupils: https://tackk.com/dg2uw9 for the teachers: https://goo.gl/d7obxm
Evaluation/ types of assessment	see: https://goo.gl/d7obxm
Materials and tools	see: https://goo.gl/d7obxm
Timing and learning environment	2 lessons
Conclusion	see: https://tackk.com/dg2uw9 https://goo.gl/d7obxm
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6. The diet study of Venus Flytrap



Title	Project “The diet study of Venus Flytrap (lat. Dioneaea muscipula)” (The importance of research for motivating students while examining the topic "Healthy Eating")
Summary / subjects (<i>contest theme / topic</i>)	I want to share my experience as an example - the idea of research activities, while teaching a theme of "Healthy Lifestyle" in the lessons of World cognition and includes several subtopics. One of them - "healthy diet". In order to engage students in the subtopic of “healthy diet” and to explain the benefits of protein for a growing organism, I suggested researching a carnivorous plant. <u>The aim was for children to study the benefits of protein for a growing organism in an engaging form of learning – practical research (with elements of a game) and communication (in groups).</u> Embedded subjects: mathematics, arts and technology.
Target group: age range and size of the group	Target group: 3rd A grade pupil; Pupils ‘ages: 9-10 years; Group size: 20 pupils.
Learning objectives / competences	<u>Teaching (learning) objectives / competences:</u> <ul style="list-style-type: none"> • Learn the scientific research method. • Form the skills of scientific literacy. • Promote cooperation. • Develop environmental knowledge and communication competencies.
Description of activities	Activities: <ul style="list-style-type: none"> • <u>Collecting information</u> about Venus Flytrap online (Work in pairs, cooperation while completing the questionnaire). • Hypothesis. • Research (group work, cooperation while "nourishing", monitoring the plant). • Recording facts during the research (teamwork, cooperation by completing the "observation sheets"). • Conclusions. • Preparation for the educational video „Venus Flytrap diet study“ creating scenes and illustrations for the video (cooperation on the division of roles in groups). • Educational video. • Project presentation for parents and lower grades’ pupils. (Pupils learn to share information, summarize, interpret the conclusions – these are the elements of critical-logical thinking, necessary for the development of the modern student).
Process stages (Tools, methods, training)	The aim of the research: to find out what food does the Venus Flytrap (lot. Dioneaea muscipula) digest. To water the plant with distilled or rain water during the study, to record all the findings.

**(learning)
strategy / what,
how, in what
order)**

Hypothesis: Venus Flytrap only digests foods that contain animal protein.

Necessary measures:

- the carnivorous plant "Venus Flytrap" (this plant can be purchased at flower shops);
- rain or distilled water;
- foods: curd, fresh chicken, cottage cheese, hardboiled egg, fresh fish, fresh beef, walnuts, white bread, boiled beef dumpling;
- tweezers;
- Flag-Tabs;
- Observation sheets – to record the findings.

Time period: September-October.

Process of the research:

The plant was introduced before the start of the research: what it looks like, what is the structure of the leaves, why are these leaves special, why does the instructions says to only water the plant with rain or distilled water (see. 1 photo).



Magnifying lip alone was not enough for students to understand the insectivorous plant characteristics. Some of the students found out for the first time that there are plants that are capable of catching insects and digesting them! After a closer visual examination of a Venus Flytrap growing on classroom windowsill, students raised questions: „Why does it catch insects? Why does it need them? What are we going to feed it? How many times can the same leaf close and open? Can this plant catch a butterfly or a larger fly?” Preliminary information given by the teacher, led to even more questions. So, we had to look for more information online (see. Photo 2).

1 photo. Venus Flytrap watered with distilled water.



Photo 2. Students looking for information online.

The students understood the importance of information– „After all, you cannot do research without getting to know the details of the research object“. In order to ensure that pupils did not get lost searching for information, I presented ten key things they should know about the Venus Flytrap, before carrying out the research. Working in pairs, pupils had to find answers to the questions in the table (see. Table 1) online.

Table 1. **Information about Venus Flytrap** (*Dionaea muscipula*)

Who gathered the information:.....

No.	Questions	Answers
1.	What is the kingdom of Venus Flytrap?	
2.	What is the family of Venus Flytrap?	
3.	In which continent can you find Venus Flytrap?	
4.	Which countries is the Venus Flytrap spread in?	
5.	Where can you find the Venus Flytrap (soil, meadow, water, etc.)?	
6.	What makes the leaves of this plant exceptional?	
7.	What do the glands of the leaf emits when the insect lands on it?	
8.	What does the Venus Flytrap use to attract insects?	
9.	Why does the Venus Flytrap catch insects?	
10.	Which “relatives” of Venus Flytrap grow in Lithuania?	

After the information was gathered and the hypothesis was made, we began the most interesting stage of the research – the experiment. We discussed how to carry out the experiment, what kind of food to give to the plant (see. Photo 3), what kind of results we can expect.



Photo 3. **Children feeding fresh chicken to the Venus Flytrap.**

Within two months of the survey we planned to feed the Venus Flytrap with 9 different food products and we prepared for monitoring of the digestion process: the speed at which the plant will close its leaves, how many days it takes for them to reopen, will there be any food left inside. Students performed daily monitoring and wrote notes in the "Observation Sheet" (see table 2). Pupils worked in three groups.

Table 2. Observation of **Venus Flytrap** (*Dionaea muscipula*) duration of digestion.

No.	Food type	Start of digestion	End of digestion	Duration (days) of digestion	Remarks	Notes done by (name of pupil)
.....						
.....						

The leaves, which digested food, were marked with flag-tabs (see. Photo 4).



Photo 4. **The leaves, which digested food, labeled with flag-tabs.**

The results:

Curd digested - 3 days, Fresh chicken - 10 days, Cottage cheese - 5 days, boiled egg - 9 days., Fresh fish - 6 days, Fresh beef - 3 days, boiled beef dumpling - 9 days, did not digest walnut and white bread.

Conclusions:

The longest period (10 days) of digestion - fresh chicken, the shortest - (3 days) fresh beef and curd. Did not digest walnut and white bread.

Hypothesis confirmed: Venus Flytrap digest food, which had animal protein.

After a successful study, we summarized the activities and acquired skills by creating an educational video. The aim was to show the sequence of the research, to present the results and explain the importance of protein to the insectivorous plant and to do that in an interesting way.

We made a scene where a Health show host asks a dietitian for advice on which protein containing foods are best for the plant (see. 5 photos).



5 photo. **Scene: show host interviews the dietitian.**

Children hear the names of foods that contain protein. While playing a game, children learn new concepts - "dietitian", "food ration", "healthy eating", "animal protein". During the discussion of the results children naturally raised the question of whether proteins are also important to the human body. Children reasoned as follows: "If the carnivorous plant receives protein, it successfully grows. That means the children grow successfully if they eat protein food as well!". Children became interested in the topic "healthy diet", they learned and stayed motivated during all the lessons. I believe, that the reason for their motivation and eagerness was the research of carnivorous plant.

Evaluation
(types and
methods)

During the project students' achievements were assessed by **forming a grade:**

6. constantly praising for their activities, for example: "It's great that you could coherently explain how to water the plant," "I'm glad that you've worked very carefully with the tweezers", "You didn't make mistakes listing the products of animal origin, however you should revise the meaning of the word "diet", "I am glad you came to an agreement about the process of presentation," etc.
 7. The results were evaluated according to what was expected, and the progress made.
 8. Formative evaluation **helped students** to successfully carry out practical work, to learn and improve.
-

<p>Educational material used in the process and Information and Communication Technology tools / programs</p>	<p>Sources:</p> <ul style="list-style-type: none"> • Jonynienė V. (2006). <i>World cognitive textbook "Our World" 3rd class.1st. Book</i>. Kaunas: Šviesa. • Primary and basic education Framework Programme. Order of Lithuanian Republic Minister of Education 2008. 26 August. no. ISAK-2433. Online: <https://www.smm.lt/.../pradinis_ugdymas/>. • The world of plants. <i>Venus flytrap. Dionaea muscipula. Carnivorous plants</i>. Online: <http://www.walnuts.lt/augalai.php?lt=musekautas>. • Baltokienė. R. (2010-05-20). <i>Venus flytrap cultivation and reproduction</i>. Online: <http://www.musekautas.lt/?p=251>. • Wikipedia the Free Encyclopedia. Venus flytrap. Online: <https://lt.wikipedia.org/wiki/Jautrusis_mus%C4%97kautas>. • Urbonienė L. <i>Healthy way of life, or what we know about healthy lifestyle</i>. Online: <http://www.aidas.lt/lt/sveikata/article/10874-06-06-sveikos-gyvensenos-pagrindai-arba-ka-mes-zinome-apie-sveika-gyvensena>.
<p>Time (duration) and training (learning) environment</p>	<p>Duration: September - October. Learning environment: classroom, computer class.</p>
<p>Conclusions / Innovativeness of the training (learning) activities, annexes (video material, handout material and (or) any other material)</p>	<p>Conclusions:</p> <ul style="list-style-type: none"> • Motivational environment has been created in preparation to analyze the topic of “Healthy eating”. • Educational video "<u>Venus Flytrap diet study</u>" has been made. • During the research: <ul style="list-style-type: none"> ➤ Found out the importance of protein to the carnivore plant. ➤ Learned to apply the scientific research method. ➤ Formed the skills of scientific literacy. ➤ Developed environmental knowledge competencies. ➤ Carried out all tasks in cooperation with others. <p>Learning activities are innovative, because pupils performed research themselves: hypothesized, followed the research process and recorded changes, came to conclusions, created an educational video (https://www.youtube.com/watch?v=4f4vMpSwD9c), were able to convey the received information to their classmates.</p>
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7. Lesson of World cognition „Wood. Wood species“



The title of the Project Lesson of World cognition „Wood. Wood species “

Summary / subjects

Lessons in nature – inexhaustible world of discoveries for children. According to the findings of the survey of the national student achievements, the pupils are **poorly able to apply theoretical knowledge in practice**. How to solve this problem? One of the ways is to develop pupils' cognitive skills during **workshops** in educational process. In order to apply this method, a teacher must work unconventionally; involve pupils in the learning process so that they wouldn't realize they are studying and that they are expected to learn something. It is important to work together, learn new things when working in the school yard or the town square while monitoring, recording, analyzing, communicating and collaborating.

Lesson of World cognition „Wood. Wood species“ is one of the lessons from the cycle „Our crafts and folk art“(3rd grade). In previous lessons pupils have been acquainted with the Lithuanian forest species, diversity of trees, shrubs and fauna, the importance of forests to human and animal life. **Embedded subjects: mathematics, arts and technology.**

Target group (Pupils' age / group size)

Target group: 3rd A grade pupil;
Pupils' ages: 9-10 years;
Group size: 20 pupils.

Teaching (learning) objectives / competences

Teaching (learning) objectives / competences:

- Practical activities in nature.
- Practical method of age calculation of deciduous trees.
- Determination of the maturity of wood based on the bark.
- Formation of the skills of scientific literacy.
- Promotion of cooperation.
- Development of environmental knowledge and communication competencies.

Description of activities

Activities:

- Interview (children actively participate in the conversation related to their life experience).
- The game (during the game, hidden lessons task is solved under specified conditions).
- Submission of questions (New lesson material is interpreted providing immersive questions, actively participating: examining the trees, their bark, explaining new concepts).
- Practical activities in nature (performing independent tasks, provided in the „[Activity Sheet](#)“, group tasks).
- Analysis of the carried out activities (groups of students submit their work; photos of the selected objects are jointly examined and discussed; errors are analyzed, etc.).

- Self-evaluation (pupils self-evaluate their work during a game - by drawing a "self-portrait" according to the instructions).
- Home assignments (in order to strengthen learned material students are assigned the tasks specified in the "Activity Sheet").

Process stages

Necessary equipment:

- Smartphones, "Activity sheets", measuring tape, pencils, a small tree roll (with visible tree rings).

- **Lesson course:**

- **Engaging.** Activities in classroom. Using engaging conversation and questions children are encouraged to name the things in the classroom that are made from wood; children discover that there are few wooden things in the classroom. Children are encouraged to consider how old the tree has to be for its wood to be suitable for the production of furniture. Children are encouraged to think how to determine the age of a tree. During a conversation it is discovered that children understand that the age of the trees can be identified by the tree rings. However, how to determine the age of a tree without a hurting it? This is revealed during the lesson. Using a game (Finding a wood roll hidden in the class room), the lesson assignment is found.

- **Announcement of assignment:** "When carrying out practical activities in nature we will learn to calculate deciduous trees age and maturity according to tree by bark" (Children are instructed to take mobile phones, pencils, measuring tapes and behave safely, because the other part of the lesson will take place outside).

- **Analysis of new topic (in nature):**

1. Theoretical part: by using engaging questions children are encouraged to determine what kind of forest they see (mixed, deciduous or coniferous) and to consider whether it is a natural forest or planted by people (children submit their observations).
2. After revealing, that this is a coniferous forest, planted by people, children are asked the questions, and encouraged to use critical thinking, e.g.: „why people chose to plant coniferous trees? What circumstances led to this?“(Children must realize that the choice was determined by the soil, its properties. The most suitable place to plant coniferous forest, etc.)
3. Questions asked: „What’s the age of the forest? How old are the trees?“ During an interview it is explained that the best time to use the trees for production is when they are around 60-70 years old (although the average tree life is 100 to 300 years or more). Then the quality of the wood is the best. It is clarified that each tree has different smell, rigidity, pattern, color. The wood of deciduous and coniferous trees differs: the wood of coniferous trees is soft, therefore good for manufacturing paper, containers, and building houses; meanwhile wood of deciduous trees is hard and therefore used for manufacturing furniture, tools, and ships.
4. Practical activities in nature. Activity sheets are distributed ([see Annex 1](#)). Tasks are reviewed. The concepts „mature tree, „sapling“, „tree bark“ are interpreted (describing, indicating). The need to use a formula to calculate the age of trees is

explained; revision of mathematical concepts such as "measuring tape", "size", "volume" etc. **Children are given 20 min. to perform a task.** Regardless of whether they will manage to complete a task until the end of the given time, they have to be at the meeting point on time (the aim was for children to concentrate, perform their duties; and this method gave the desired results: some of the children set the timer on their phones to avoid being late, some of them even set the timer with a few extra minutes, so that they had sufficient time to come. **Children are warned**, that they are responsible for their own activity sheet, but **they can choose to work in pairs or in larger groups** (the aim: every child has to think, if he prefers working alone, or in a group (when they are able to help each other, to negotiate, to be bolder when presenting their results).

- **Lesson summary.** Task analysis (groups or single students present their results; examination and discussion of photos; repetition of new concepts; analysis of errors, etc.).
- **Self-evaluation** (Work Self-evaluation (pupils self-evaluate their work in a playful way - by drawing a "self-portrait" according to the instructions (see [Annex 1](#)).
- **Homework** (in order to strengthen new knowledge pupils get the tasks specified in the "Activity sheet" ([see. Annex 2](#)).

Evaluation (types and methods)

Pupils' achievements were assessed in a **formative way**:

9. constant praising for their activities, or promotion of concentration, e.g.: „It's great you were able to use the measuring tape“, „you get a praise because you figured out how to apply the formula to calculate tree age“, „Think again, remember how to measure, which number you should pay attention to on a measuring tape?“, „I am glad you came to an agreement about the process of presentation.“, etc.
10. The results were evaluated according to what was expected, and the progress made.
11. Formative evaluation **helped students** to successfully carry out practical work, to learn and improve.

After completing the tasks pupils self-evaluate their work in a playful way - by drawing a "self-portrait":

- Hair length indicates how interesting you found these activities.
- The size of your eyes shows how much you have learned.
- The width of the smile demonstrates - how interesting were the tasks for you.

(It was fun for children to self-evaluate: most of them wanted not only to show their portrait to the class but also to comment. Long hair drawn by boys and wide smiles of all the portraits were the cause of a lot of laughter).

Educational material used in the process and Information and Communication Technology tools / programs

Sources:

- Jonynienė V. (2006). *World cognitive textbook "Our World" 3rd class. 2nd book*. Kaunas: Šviesa.
- Primary and basic education Framework Programme. Order of Lithuanian Republic Minister of Education 2008. 26 August. no. ISAK-2433. Online: <https://www.smm.lt/.../pradinis_ugdymas/>.

- Gintarė Plankytė. *Natural cognitive learning skills for green environments. Material of the Republican methodical conference "School environment - our world and future"*. Vilniaus Trakų Vokės gimnazija, 2016-03-22.

Time (duration) and training (learning) environment **Time:** May; 45 min. lesson.
Learning environment: classroom (5 min.), a grove adjacent to the school (40 min.).

Conclusions / Innovativeness of the training (learning) activities, annexes (video material, handout material and (or) any other material)

Conclusion:

- Motivating environment for the analysis of the world cognition.
- Pupils worked in nature rather than in a classroom.
- Theoretical knowledge applied in practice.
- When carrying out practical activities students:
 - Used innovative technologies.
 - Learned to apply the research method.
 - Formed skills of scientific literacy.
 - Developed environmental cognitive competence.
 - Carried out all tasks in cooperation with others.

Learning activities are innovative, because pupils studied in nature, applied theoretical knowledge in practice, studying was linked to life experience and future benefits.

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8. Gis & Me



Title	GIS and me
Content/ Subject areas	<p>A daily camp for the city high schools. 3 subjects are integrated: Informational technologies, geography and history. “We are creating and presenting the maps of Shalchininkai region’s cultural heritage.”</p>
Target group	30 pupils from 14 to 17 years old
Learning objectives / competences	To create maps of Shalchininkai region’s cultural heritage using ArcGis online program and to strengthen youth’s IT and social competence required for their future profession and career.
Description of overall activity	<p>During activities pupils will be able to get to know and create their projects – maps using an innovative program “Geographic information system” (GIS). Nowadays, this program creates unlimited opportunities to get to know our diverse world, explore connections and tendencies between objects, gives tools to choose, store, analyse and present spatial information in the form of the map, suggests methods and ways which allow to solve different tasks. With GIS teachers can interest students of any age with informational technologies and involve them in interesting explorations, which stimulate to think of presenting spatial information and deepen studies of their surroundings. By working in teams during the camp teenagers will try to look at the home town with their young eyes and find things which may be interesting for their city or village young citizens. The campers will show their thoughts by creating maps with GIS program which will include famous objects, memorials and etc.</p> <p>Team work will also be very important during these activities.</p>
Description of the process and teaching/ learning strategies used	<p>On the first day, campers will gather in Shalchininkai Lithuaniai Millennium high school to get to know each other, listen to lecturers’ lessons and have a look at GIS system, its abilities and merits, try to work with this program for the first time (create a GIS map). The theme by which the participants will have to create their maps will also be announced on the first day.</p> <p>Theme: Shalchininkai region cultural heritage.</p> <p>Excluding the first and the last days, the campers will work in different schools. Therefore, different social medias and tools on the Internet will be used to ensure interaction between students and a project leader. Training materials and tasks will be put in www.informacinestechnologijosltg.jimdo.com. They will be given out to every school group’s leader. Daily consultations and discussions of the results will be held online. It is expected to have three group leaders which will have to organize educational camp “Gis and me” and the teaching of the participants: they will have to make sure that the camp is working and</p>

	<p>pupils are educated by the plan, assure that the informational technologies are working properly and look after students during the camp.</p> <p>On the fifth day, the main task for everyone will be to introduce their team, the map which they will have created and their results. The creators of every map will try to present what they have learnt and created during the camp as originally as they can. Presentations will have to show every group's originality, creativity and the IT skills – some students will create presentations using PowerPoint, Prezi or other apps, maybe some of them will make short clips or even websites.</p> <p>A competent commission will have to rate maps and presentations. Using different criteria will be chosen 3 best maps and 3 best presentations. Students will be given participation's certificates and gifts for their victories.</p>
<p>Evaluation/ types of assessment</p>	<p>The work will have to be created using “ArcGIS Online” program for digital maps (www.arcgis.com). Maps will be rated by these criteria:</p> <ul style="list-style-type: none"> • Overall esthetic look (for example: the right font and its size, the chosen colors); • Compliance of the theme; • Clear and correct notes written in Lithuanian language; • Cartographical look – the right scale for the explored territory and the good looking objects and expressions; • The usage of helpful and extra elements in the map (graphics, texts, diagrams, photos); • Applications from the creation of the map (an extra element). <p>The Participants of the contest will be given the appreciation letters, the winners will get prizes.</p>
<p>Materials and tools</p>	<p>Lessons will be printed and given out to the group leaders</p> <p>IKT tools:</p> <p>http://www.arcgis.com/features/ http://storymaps.arcgis.com/en/ https://padlet.com/ https://prezi.com https://drive.google.com/drive https://www.google.lt/maps?hl=lt&tab=ol http://www.jimdo.com/</p>
<p>Timing and learning environment</p>	<p>Duration – 5 work days</p>
<p>Conclusion</p>	<p>Pupils, who will take part, will create maps of Šalčininkai region cultural heritage, use ArcGis online program, strengthen IT and social competencies required for their future profession and career.</p> <p>They will get to know their region better and find out what different cultural heritages it has and why they are under protection.</p> <p>They will work in teams; communicate using communication tools on the internet.</p>
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9. Saving water, protecting life



Title	“SAVING WATER, PROTECTING LIFE”
Content/ Subject areas	Mother language, English, Science, (But it can be adapted to any subject and also any level of the students, depending on the questions to input)
Target group: age range and size of the group	10-15 years old
Learning objectives / competences	<p>In this example of a best practice from Portugal, a class team of teachers from different subjects, worked with their pupils in order to prepare and publish a new digital exercise, in Portuguese and English. This methodology intends to develop teachers and pupils, based on collaborative problem-solving Project work, exploring a new form of teaching, learning and assessment, so that students can feel motivated and inspired for discovering and learning. We believe that it can help teachers and pupils to improve their key competences, including digital competence, presentation and conflict management skills, effectiveness to develop new innovative teaching methods and create new products.</p>
Description of overall activity	<p>✓ Firstly, the class team must find a good idea, a theme that can be developed by the class in different subjects (Something useful for all the participants, the school teachers and the society). Then, they must learn how to work on the Project using word page, make hyper links and finally keep it as a web page. When they finish it, it can be possible also to add music, so that they can feel more attracted to work on the exercise. Finally, publishing it and creating a short cut to make it easier to start it. That’s what was done in the example that we are going to present, based on the idea of “Saving water, protecting life”: teachers, in different subjects worked on that idea in the classroom. The second step was to create questions for the digital exercise.(We adapted, in a simple way, the questions to the Project participant’s countries). Finally, students try to answer, using laptops or smart phones at:</p> <p>http://quizizz.com/admin/quiz/574bf46fe03181e921ceb9d2</p>
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none">1. Brainstorm about some important idea to develop in the classroom. In this case to reflect about the importance of saving water in the world.2. Giving the students the digital tools to work on3. Dividing class in groups of 4 pupils4. Students investigation in the internet and reflection about the situation in the school and at home5. Group presentation of the work done6. Digital evaluation using quizizz tool

Evaluation/ types of assessment	Formative evaluation of the group work Self-evaluation inside each group
Materials and tools	Evidently in order to use this digital exercise initiative in schools there need to be working computers. Teachers need to be motivated to incorporate digital technologies into the lives of their students and a culture of cooperative learning must be valued. If schools already have working internet connections and connected computer suites, no additional expense is needed in order to enable the use of their resource.
Timing and learning environment	3 x 50 minutes
Conclusion	The potential for students to use this resource creatively is variable and depends upon the innovative ideas of the individual teachers, according to this Project and as a STEAM initiative. .
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10. Global education



Title	Global education
Content/ Subject areas	Global issues
Target group	6 th grade students
Learning objectives / competences	<ol style="list-style-type: none"> 3. Students understand different global issues; 4. Students are thinking critically; 5. Students are improving their knowledge of writing and speaking; 6. Students improve their knowledge of using different internet resources for learning.
Description of overall activity	Thinking about global issues and making presentations.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. Brainstorming about the topic „global issues“. Teacher can use different tools, for example https://worditout.com/word-cloud/create, http://www.wordle.net/ or https://answergarden.ch/. Which global issues students can describe? All the answers will be seen from the big screen, added by teacher. Teacher is guiding the process. 2. Students are divided into groups and have to choose one topic from the screen, search information about it from the web and make a presentation. At first students choose a tool, where they want to make a presentation: https://prezi.com, https://www.emaze.com/ etc. They have to make a presentation so that they answer the questions given by the teacher: 1. Definition 2. Main problems 3. Examples 4. How I can decrease the issue? Teacher is guiding the process. Students can finish the groupwork at home. 3. Students present their work to the others while the second lesson. Teacher gives feedback.
Evaluation/ types of assessment	Formative assessment E-portfolio
Materials and tools	Papers, pens, computers with internet access.
Timing and learning environment	3 lessons (3 x 45 minutes) https://prezi.com , https://www.emaze.com / , https://worditout.com/word-cloud/create , http://www.wordle.net/ , https://answergarden.ch/
Conclusion	Students learn from each other. Students search information and use different online tools. Students are active and work together.
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11. Angles: measuring angles



Title	Angles: measuring angles
Content/Subject areas	STEAM Math/Science/Engineering/Biology/Applied Art/Sports
Target group	Grade 5 (10-11 years old), max 21 student
Learning objectives / competences	Measuring the angles, ability to create an alternative ways to measure the angle, understanding the principles of the angle measurement Communication and co-operation Problem solving
Description of overall activity	Students through practical group activities in real environment build an understanding of angles and their measurement.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1 The teacher shows how to create self-made angle measurement device: <ul style="list-style-type: none"> - Draw two circles of the radius of 5 and 6 cm respectively using the compass on different color paper. - Cut them out. - Using the protractor mark the angles on the outer edge of the bigger circle. - Slit the both circles from the outer edge towards the center. - Connect the both circles at their slits so the centers of both circles coincide. 2 The teacher divides the students into the groups of 3 people in each. Groups go out to the parkland. The teacher shows how to use the self-made angle measuring device using the branches of the tree. 3 Students are given the worksheet No. 2 and are invited to measure the angles of the branches of the trees. 4 Students choose a plant and draw it on paper. After that they have to measure the angles in nature and in drawing and compare them. 5 Students with their bodies constitute acrobatic postures. Students train skill to determine type and size of the angle by eyes. Then one student draws the postures on paper and students measure the angles on the drawing. 6 When all the measurements are done, the teacher and the students return to the classroom to discuss the results.
Evaluation/ types of assessment	For formative assessment teacher indicates the exact angle and group must find an object in nature and show it to the teacher, and verbally determine the type and size of it. Also, for formative assessment such tool as “Plickers” can be used.
Materials and tools	Colored paper, a compass, a protractor, a pencil or a pen, scissors Worksheet “Angle 1” (instructions how to make the angle measurer) Worksheet “Angle 2” (instructions of the activity) See Attachments.
Timing and learning environment	2x40 min lesson; the park/ the forested area and classroom.
Conclusion	STEAM approach . Hands-on practice which shows the ways how to apply the understanding of the angles and the ways of measuring them through mathematics, biology, art and sport.
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12. Project work “My dream room”



Title	Project work “My dream room”
Content/ Subject areas	The topic: The three-dimensional/spatial bodies Subjects: Math, craft, art and technologies
Target group	Elementary school students, 13-16 years old ~20 students
Learning objectives / competences	To improve understanding of spatial bodies by practical making prisms, pyramids and drum patterns. Competences: <ul style="list-style-type: none"> - Mathematical competence and basic competences in science and technology, - Cooperation and collaboration, - Creativity, - Problem solving
Description of overall activity	Students, working in small groups, create models of their dream rooms going through the all phases from planning and designing of the room by using “Homestyler” till creation of the models by using knowledge about spatial bodies.
Description of the process and teaching/ learning strategies used	The first lesson takes place at the computer classroom. The teacher introduces the task. Students, working in groups, study opportunities offered by the website: http://www.homestyler.com/designer . They choose the furniture, arrange the room and pre-view what it looks like in 3D. Room has to be photographed to be able to use during the next lessons. At the end of the lesson students draw the 2D format room plan on sheet of box paper (A4). The second and third lessons – students are planning project development, the division of responsibilities within the group and the selection of materials. Students draw surface layouts of prism, pyramid and cylinder for desired furniture. Models of the spatial bodies are created in proportion to the real size. The production of models can lead to the conclusion that it is necessary to make corrections of chosen room furniture. It is essential to accurately draw and cut out the surface layout to get the desired body shape. The furniture is glued on A4 cardboard. Their size, arrangement and dimensions has to meet drawn room plan. The fourth lesson – presentations and evaluation of work.
Evaluation/ types of assessment	Assessment consist of several elements: <ul style="list-style-type: none"> • self-assessment: each student individually assess work of their group and pros and cons of carried out project; • peer-assessment: students in pairs, according to the criteria, asses created room models of other groups; • formative assessment is conducted by the teacher taking into account overall esthetical look of the model, use of spatial bodies, the compliance of the model to the drawn plan, etc. As a result, students receive an assessment with a check mark.

Materials and tools	Coloured paper, cardboard, glue, tape, ruler, scissors, a computer with Internet connection.
Timing and learning environment	4 lessons First lesson - at the computer classroom, the rest - at the mathematics classroom.
Conclusion	Interdisciplinary cooperation: mathematics, art and technology Working on this project, students learn to cooperate and collaborate, to listen to the views of others, to make decisions and to be accountable for results. Everyone can express their abilities and creativity. Students learn modelling skills, improve spatial imagination. Students identifies the spatial patterns of bodies around them, know their names. And, they gain insight of the professions which require knowledge of spatial bodies.
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13. Electronic components: capacitors



Title	„Electronic components: capacitors. What it is used for and how it is made“
Content/Subject areas	Subjects: Physics, engineering, constructing, technologies, art. Topics: Electric charge, Working principles of capacitors, Areas of use, Demonstration of charging and discharging capacitors, Technology of capacitor manufacturing, Practical work.
Target group	Age: 16-20 years old students, preferable size of group: 5 persons
Learning objectives / competences	To get a knowledge about one of the most basic and essential elements in electrotechnics and electronics – the capacitors. Competences: <ul style="list-style-type: none"> - Mathematical competence and basic competences in science and technology, - Problem solving, - Critical thinking, - Creativity, - Learning to learn.
Description of overall activity	Basically whole learning process consists of two parts: theoretical and practical. Theoretical part gives overall knowledge and the practical part strengthens the acquired knowledge. All subject areas are placed in order that gives the best way of acquiring information of subjects. During activity students create one of the most modern electrical engineering major components - a capacitor. This activity provides a deeper understanding of capacitor's structure and shows the possibility to produce this kind of detail independently.
Description of the process and teaching/ learning strategies used	At first, the students get to know the use of capacitors, the structure, the characteristics of capacitors and the things that affect them. The second part of classes starts with practical work where students by themselves make fully operational radio detail - capacitor by using everyday things which can be practically used in different constructions. For the practical creation of capacitor it is not necessary to have complicated equipment - it is one of the pluses of such activity. The simplest version of the required materials includes - wires, aluminium foil, paper, adhesive tape. Tools: scissors, clipper, multi-meter with capacitance measurement function. From aluminium foil and paper there are cut two or more electrodes / plates and insulators that overlap each other and are fastened by adhesive tape. The main condition for a successful outcome is to prevent the contact of aluminium plates with each other. The manufactured capacitor's capacity or in simpler terms: charge capacity depends on the size of boards and their proximity to each

	<p>other. During the activity students even organized a competition-who will set up a capacitor with the greatest capacity.</p> <p>Benefits: increased understanding of the capacitor's' construction, construction solutions, as well as students' awareness that they by themselves can create something that might encourage for further experiments.</p>
Evaluation/ types of assessment	Evaluation includes results of both – the test and practical work results.
Materials and tools	Personal computer, projector for presentation of theoretical materials. Different types of capacitors, laboratory power supply, multi meters with capacitance meter, ammeters, voltmeters, connection wires), LED or light bulbs (6V), aluminium foil, paper, wire material, scissors, pliers. For best results for demonstration and practical work there can be used electronic kit of multi vibrator circuit.
Timing and learning environment	Timing- approx. 3-4 hours. Environment- classroom or laboratory with required equipment.
Conclusion	Main innovation here is practical work - hands on activity which makes the best results of acquiring all the topics of different subjects related to capacitors, including technology of manufacturing, electrical parameters of capacitor, things that change these parameters (area of electrodes, isolator materials between capacitor plates, and so on).
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14. My dream city



Title	My dream city
Content/ Subject areas	The topic: The three-dimensional/spatial bodies Subjects: Math, science, architecture, physics, craft and technologies.
Target group	15-16 years old, 18 students
Learning objectives / competences	Learn to distinguish different types of spatial bodies in the environment <ul style="list-style-type: none">- Mathematical competence and basic competences in science and technology- Problem-solving- Creativity- Communication
Description of overall activity	<p>Students, working in small groups, practically create the model of their own dream city, using the knowledge about spatial bodies, gained through geometry, craft and art. In their models of dream city students have to somehow show what is important, valuable and interesting for them. Also, for creating the model, they use knowledge of the different meanings of buildings and their forms, and, to some extent, knowledge of geography.</p> <p>After the model of dream city is created, students have to present it to whole class.</p>
Description of the process and teaching/ learning strategies used	<p>In the first lesson students are introduced with the classical spatial body types which examines geometry, students collect data on what spatial bodies they already know and where they are able to see them in the environment, as well as they have the opportunity to create a spatial bodies by themselves. At the end of the lesson, students get acquainted with the work task - to create the dream city using spatial bodies and to present it to class - , as well as with evaluation criteria. During the next week after school lessons groups of students (2-3 students per each group) create shared vision of their own dream city, agree on what kind of buildings and other urban sites will be created, what will be the shape, etc., distributes duties among themselves and create a model of the city.</p> <p>At the final lesson students present their work to others.</p>
Evaluation/ types of assessment	The group's work is evaluated in 10-point scale, taking into account the students' ability to describe their dream city, to name the spatial bodies used in the model, as well as how thoroughly the job is done.

Materials and tools	Paper, glue, plasticine, Christmas decorations, cardboard, paints etc.
Timing and learning environment	The approximate performance time is one and a half week. The main part of the work (creation of the model) students do out of school lessons.
Conclusion	Learning about the spatial bodies becomes a means of self-expression - the student should know what kind of spatial bodies exist in order to implement their ideas. Created models can be used to study in depth the characteristics of spatial bodies.
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Typical small town



The only model, which has a movement - a child builds a snowman in the foreground



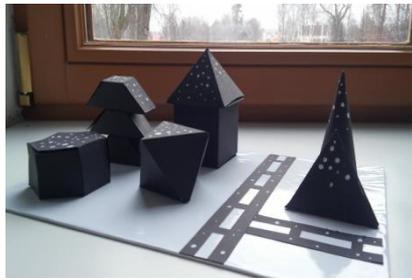
The theater is in the foreground, but the city center has a modern



A futuristic city - cars drive most unusual directions



Suburb of big city



Unconventional color combinations can be

15.Natural colors for dyeing of fabrics and yarns



Title	Natural colors for dyeing of fabrics and yarns
Content/ Subject areas	The project is planned for 4 lessons (40 min.) It integrates many subjects: chemistry, biology, visual art, housekeeping, history, languages, IT and economics
Target group	16 -17 year old secondary school students. The participants are 12 students, who are divided into 4 groups
Learning objectives / competences	<p>The goal is to explore natural colours, find out the information about their historical use, geographical location, features etc. and to apply the acquired knowledge in practical work – dyeing yarn and fabric. During 4 lessons students will master basic competences as follows:</p> <ul style="list-style-type: none"> ■ Communication in mother tongue - students will socialize and communicate with each other while working in groups. They will try to find a compromise, learn to listen to each other, to tolerate each other's opinion, to work in the team, to present their findings and results to other students ■ Scientific and technological competence- competence in science refers to the students 'ability and willingness to use the knowledge in order to identify questions and to draw evidence-based conclusions, but competence in technology is viewed as the application of that knowledge. Before practical classes students study scientific literature and the obtained information is applied in their practical work. ■ Digital skills -in the modern world digital skills are highly valued, therefore students are asked to apply them when searching for the information or preparing presentations. ■ Learning to learn – students develop the ability to pursue and persist in learning, to organise their own learning, including through effective management of time and information, both individually and in groups. Students learn to identify available opportunities and master the ability to overcome obstacles in order to learn successfully. ■ Sense of initiative and entrepreneurship- students develops their ability to turn ideas into action. Practical work includes creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve the goals. ■ Cultural awareness – students learn about the life in the past, culture and history ■ Creativity – it is developed through practical work and is one of the leading competences, because it helps to generate new ideas, find the most suitable solutions and analyse the situation.
Description of overall activity	The project is divided into two main parts. The first one is a theoretical part, but during the second part students apply their theoretical knowledge into practical work. They dye fabric and yarn in chemistry laboratory. In the result of their work the original pieces of art are created, which are afterwards displayed in the exhibition.
Description of the process and teaching/ learning strategies used	During the first lesson students explore the literature about natural colours, raw materials and their use nowadays and in ancient times. Students use internet resources, books and encyclopaedias. Each group is given a different source. In the second part of the first lesson students compare the

	<p>information they have found. During the second lesson students explore school surrounding and gather the raw materials, which can be used for dyeing. When it has been done, they bring the materials to the class and compare their findings.</p> <p>In the beginning of the third lesson students get ready for practical work, preparing the necessary materials and equipment. They start doing practical work – dyeing of fabric using the materials they have gathered.</p> <p>The third lesson is dedicated to the presentation of creative works.</p>
<p>Evaluation/ types of assessment</p>	<p>The evaluation of work has 3 positions. Firstly, the work is evaluated by the group itself. Then all four groups evaluate each other and the teacher also evaluates each group. Each position evaluates the work according to the common criteria. Then all the evaluation positions are summed together. The criteria, which is taken into consideration in the evaluation process, are as follows:</p> <ul style="list-style-type: none"> ■ Presentation of the theoretical material (1- 10 points) ■ The selected raw materials (1-10) ■ Dying process (1-10) ■ Team work (1-10) ■ The outcomes (1-10) ■ Presentation of practical work (1-10) ■ Creativity (1-10) <p>Then all the evaluation positions are summed together and the average mark is calculated.</p>
<p>Materials and tools</p>	<p>For this project it is necessary to have natural colours Linen or cotton fabric, wool, all the tools necessary for dyeing, Computers, tablets, projector</p>
<p>Timing and learning environment</p>	<p>Timing: 4 lessons (4 x 40 min), but it might take more in some groups. Environment: school yard, school surrounding, classroom and chemistry laboratory</p>
<p>Conclusion</p>	<p>The project is innovative because:</p> <ul style="list-style-type: none"> - Many subject are integrated into learning process - Students develop and acquire many competences such as the work with literature sources, practical work, research work etc. - The development of dying with natural colours might solve some environmental problems in the world. - Naturally dyed clothes might be worn by people, who have allergic reaction to chemically dyed materials.
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16. PH level in everyday liquids



Title	PH level in everyday liquids
Content/ Subject areas	Chemistry - the relation of chemistry with real life, chemistry around us, in our everyday life. Technologies - the application opportunities of smart phones, computer science, multimedia. Art and language – preparing of presentation/ film.
Target group	15-16 years old students. The whole class can be involved in this activity. Students may work in groups
Learning objectives / competences	The goal is to measure PH level in everyday liquids Students learn to apply practically their knowledge and measure PH level. Students learn to overcome difficulties and to understand when it is not possible to measure PH level. They develop critical thinking Students learn to plan their activities in order to reach the goal.
Description of overall activity	During the Chemistry class students learn the theoretical material about PH level. At the end of the lesson students are introduced to their homework. Students draw up an action scenario/plan. Students plan how they are going to measure PH level in liquids that they can find at home, elaborate the plan of their activities and film them, process the obtained video and data and present them. Students carry out the work at home. They use video cameras, smart phones or mobile phones to film the PH measuring process and they use computers to summarize the obtained results. The filmed materials, findings and measuring results are presented in the class. They are evaluated by teacher(s).
Description of the process and teaching/ learning strategies used	The main objective of the work: using common household items, substances, dishes and indicator given by teacher acquire skills to prepare and carry out chemical experiments, demonstrating their progress and results to viewers using their mobile phone cameras. Student must prepare the samples of household substances necessary for the experiment. They have to choose appropriate dishes, find the right position for recording and filming and provide monitoring quality results, etc., as well as they have to develop a scenario. In this way, learning chemistry as a science of compulsory teaching content, students do it creatively. During the process students learn to work with the video recording device (smartphone, for example), promote public speaking skills as well as learn to make observations and draw conclusions. Parallel to this, students also gain knowledge of the acid / base balance in nature and in species and substances of everyday life and they learn about the dual nature of the world in general. All the experimental process (according to standard) is divided into the following phases: 1) identify no less than five different liquids which are found in household environment (max - 10); 2) choose the dishes, where substance samples will be placed in the experiment, taking into account that they must be observed from the side scan;

- 3) to plan the order and manner in which materials will be connected to the indicator;
- 4) conduct a demonstration scenario by providing filming shots and demonstrator's comments, emphasizing the attractiveness and grabbing the viewer's attention;
- 5) doing experiments without filming activities and without testing visual effects;
- 6) Conducting experiments with filming and comments. Titters and special effects are at the discretion of each student.

Prior to the activity students were demonstrated experiments with chemical substances and laboratory glassware, therefore, they are familiar with the indicators' colour change in different environments - hence, they have a theoretical base. The result of students' independent work – the connection of the information gained in the laboratory and classroom with real life, emphasizing the fact that chemistry is not torn apart, but, on the contrary, forms part of our everyday life. The created film can be shown to classmates and their relatives, friends and acquaintances.

Evaluation/ types of assessment

A student work is evaluated by teacher(s).The evaluation of work is done according to the common criteria. Students are mainly evaluated from the Chemistry perspective. But there are things which were taken into account: the abilities to use computers in video processing process, complexity and esthetical composition of presentation, attractiveness etc.

Materials and tools

For this project it is necessary to have indicators, mobile device, computers with software necessary for video processing, projector.

Timing and learning environment

Timing: 2 lessons (2 x 40 min) in one week - one for theoretical part and one for presentations. One week between - the biggest part - students' individual work out of lessons.

Environment: classroom, can be chemistry laboratory, home

Conclusion

The project is innovative because:

- It involves students practically into process
- Students work and acquire simultaneously many skills, such as chemistry, computer technologies, art.
- Students develop research skills, film producer skills, critical thinking

Contacts

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17.The road to the movement



Title	The road to the movement
Content/ Subject areas	Subjects: Math, Physics, Engineering, Robotics, IT.
Target group	Primary School, 8-10 year old, 15-20 students
Learning objectives / competences	<ol style="list-style-type: none"> 1. To construct the models of the vehicles using educational sets of WeDo2.0 according the instructions and own ideas. 2. To act in programming environment and check models in moving on the different surfaces. 3. To do the tasks and make conclusions. Competences: Mathematical competence Basic competence in science, technology, engineering Creativity Digital competence Learning to learn Cooperation
Description of overall activity	Students construct the models of the vehicles (Lego models) and program them. Students make prognoses and afterwards test the models in different actions, make measurements, compare the prognoses with results, correct the errors and make conclusions.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. At first students follow instructions and make up models of vehicles using educational sets of robotics WeDo 2.0. Students act both - individually and in pairs. After constructing the models the program is added and models are tested in moving on the different surfaces (linoleum, wooden board floor etc.).Students make prognoses about the speed according to the surface and after testing they make conclusions. Then the models are loaded with weight (some Lego details) and students fix the connections among the speed and the weight, make conclusions (<i>See Worksheet</i>). 2. The second task is to make own model without the instructions provided. The strength of the models are tested in the Sumo fight field against 1-2 models made by other students.. After the Sumo fight students have to ride the models on the balance board. Students verbally raise the hypothesis of model's movement across the balance board and the number of attempts. Students perform the task and in case of failure come up with another solution. If necessary, students correct the errors, carry out improvements to the model and repeat the task.
Evaluation/ types of assessment	For the first task students make self- assessment comparing their prognoses with results gained. Peer-evaluation is conducted through discussion comparing results of different groups and why results are

different. For the second task students make self-assessment on the progress and the reasons for the model performance. In whole group students provide friendly recommendations to other students about mistakes and necessary improvements.

At the end of the activity students individually and in a group assess whether they managed to carry out all the tasks, did they have the ability to make conclusions, did they know how to solve and figure out solutions in case of failure.

Materials and tools	LEGO Education WeDo 2.0, tablet, Lego Sumo field.
Timing and learning environment	4-5 hours Computer room, classroom, school hallway
Conclusion	Students were interested to do all of the tasks but not all of the students were brave enough to make mistakes and show their models. It was interesting to watch students when their models didn't succeed on the balance board and they had to look for the solution for the task. Students were delighted and satisfied after the completing the task. Students got new experience and knowledge.
Contacts	Liga Krumina, Secondary School of Aluksne district likrumina@inbox.lv
Additional information	https://sway.com/PZDHhrSBBY9ITgF0



18. Paper



Title	Paper
Content/ Subject areas	<ul style="list-style-type: none"> • Science: Making paper • Crafts and technologies: Preparing the wooden frame for the paper making • Language: discussion – setting the criteria and writing a letter
Target group	Grade 5-7 (10-13 years old) 20 students
Learning objectives / competences	<ul style="list-style-type: none"> • Understanding how paper is made • Ability to make paper using re-usable materials • Ability to provide arguments • Problem solving, • Communication and co-operation • Critical thinking
Description of overall activity	<p>The overall idea of this activity is to make paper from recycled materials as practical example of paper saving, recycling and sustainability. Activity takes 3 days: Day 1 - preparing of all materials needed; Day 2- the making of paper; Day 3 - presenting of self-made paper followed by discussions.</p>
Description of the process and teaching/ learning strategies used	<p>Day 1:</p> <p>1 The shredded materials are brought to school in the glass or plastic jars; the water is poured over dry mixture in the classroom and left there to soak in over the night.</p> <p>2 Building the frame with a mosquito net: The teacher shows how to do it. Students follow the instructions. Students are encouraged to help each other. Students can use a ready-made frame or build it by themselves using smooth wooden planks (2x30 cm long and 2x23 cm long). The mosquito net is tightly spread over the frame and firmly fixed to it using staples.</p> <p>Day 2. Instruction:</p> <ol style="list-style-type: none"> 1. Pour the content of the jar into a bowl and use the electric blender to blend the mixture until it is smooth. The food colouring `can be added. 2. Put the 2 tablespoons of the prepared mixture into the 1 litre container and add 0.5 l of water. Mix well. 3. Place the wooden frame on top of the bowl. 4. Slowly pour the mixture over the framed mosquito net. 5. When the excess water has dripped into the bowl underneath the wooden frame, move the frame to a tray and cover the fibbers left onto the mosquito net by a piece of a cotton fabric. Use a sponge to dry the surface. 6. Try to lift the piece of fabric by its edge. Paper mixture should have stuck to it. If it hasn't, continue drying the surface by removing the excess moisture with the sponge. 7. Place the fabric to which a paper mixture has stuck onto the spread newspaper the paper side up. 8. Leave it to dry. It takes about 12 hours

Day 3

1. The teacher invites students to take their self-made paper and discuss its quality within the groups of 3 or 4 people.
2. The teacher asks – Why is this a good/high-quality piece of paper? The groups set the criteria of quality. The ideas are brainstormed and the relevant ones are put on the board in front of the classroom.
3. The students find new partners for the next question to discuss. The teacher offers the next question for discussion – How can the paper be used? Students continue their discussion and report the ideas to the class. The best ideas are displayed on the board.
4. Students/The teacher might suggest that paper is rarely used to write letters nowadays as it is replaced by electronic mailing or instant messaging. That might lead to the idea to try to find out the difference between instant messages /what's up/ twitter/ Instagram, etc. and a paper /snail mail/ letter
5. Individual work –teacher invites students to write the letter to their parents and/or grandparents

Evaluation/ types of assessment

Self – assessment: Students evaluate their own paper using criteria of quality set by the group.

Peer - assessment: All self-made papers are exhibited for viewing. Students in pairs have to choose one paper, which they like and have to explain why the selected paper is the best. When each pair has expressed their sympathy, then the authors of those works what have received the most recognition, have to tell how they managed that their job is so well done.

Materials and tools

For each student: a glass or plastic jar; shredded used paper or any other material containing fibbers (fabric, cotton, moss, etc.); an A4 size wooden frame with a mosquito net, a piece of an A4 size cotton fabric; a sponge; a tablespoon; a bowl; a 1 l container; a newspaper; a tray; water

In the classroom - an electric blender; food colouring; a stapler and staples

Timing and learning environment

3x40-min lesson (3 consecutive days, one lesson each day)

Classroom

Conclusion

STEAM approach. Crafts/Science/Technology/History/Ecology/Language
Traditional technologies are used to promote the ideas of sustainability/recycling/bridging the generation gap

Contacts

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19. Let's know our plants and trees with QR codes



XUNTA DE GALICIA

CONSELLERÍA DE CULTURA, EDUCACIÓN
E ORDENACIÓN UNIVERSITARIA



Title

Let's know our plants and trees with QR codes

Content/ Subject areas	Natural sciences, Language; foreign languages
Target group	Students year 1 Secondary.
Learning objectives / competences	To motivate students to learn Understand facts and ideas in the context of a conceptual framework; Be able to organize knowledge being able to apply it in different tasks. Be able to process information and build new knowledge
Description of overall activity	Students prepare some information about all plants and trees that there are in the school and create a QR code for each plant and tree. Each of them will have the code so when student walk in the Schoolyard with their iPads they can see the information about that tree or plant. We are going to publish our school magazine and we are going to make a monograph about the trees and plants at school. Students will write about trees and plants but we'll also include photographs without trees and their QR code and also will include some QR codes for readers see the article and also use their mobiles with QR codes. After creating the information and uploaded it in the school website students learn to create QR codes. The activity is very simple and students love it
Description of the process and teaching/ learning strategies used	Students prepare the information about each tree or plant (common name, scientific name and a photograph and short information about the plants and trees), each one does two or more. They upload the info in the web Students create the QR code using iPad Students put each QR code in the right plant Students check if the QR code works Students write an article for the school magazine about schoolyard trees
Evaluation/ types of assessment	The teacher uses the observation sheet Each student talks about the plant or trees he/she worked with Teacher and students check all works well Students produce a conceptual map of the schoolyard's trees
Materials and tools	iPad, QR code App, Word or other programme to produce the magazine.
Timing and learning environment	Timing depends on how deep you like to go in the topic. 3 classes will be OK, the environment will be the school library.
Conclusion	We propose this activity to motivate students to get to know the biology lesson about plants. Work with QR code is very motivating for students and they learn a lot The activity can be done in any school The same activity can be used with other topics example if education authorities, parents or any visitors come to visit our school we put all the information about the school using QR codes so we take them to the place and they can find by themselves all the information we like they know
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20. The Road to Santiago



XUNTA DE GALICIA

CONSELLERÍA DE CULTURA, EDUCACIÓN
E ORDENACIÓN UNIVERSITARIA



Title	The Road to Santiago
Content/ Subject	History, Art, Language; Math, Physic
Target group	Students year 3 Secondary
Learning objectives / competences	To learn by working in teams To evidence accuracy in gathering and recording information To be able to communicate knowledge using multimedia resources. To create high quality final products: presentation
Description of overall activity	Students in groups solve various tasks and they learn about Art, Math and Physic. They have to explore the Romanesque ART in the Road to Santiago. Students learn about the Romanesque art and do virtual visits to different monuments. Students have to solve a math problem. They have to find out when will the two groups meet. This is a real task to apply math knowledge The “Botafumeiro” is an important element in the Cathedral of Santiago. It is very ancient, in the middle ages the pilgrims use to sleep in the cathedral, to avoid bad smell they used the “botafumerio” nowadays is an impressive ritual that happens in the Cathedral of Santiago. Students have to find out the speed of the “Botafumeiro” (Censor) that works in the Cathedral of Santiago. This is an interdisciplinary project that we can propose in the subject project work that Spanish students study in year 2 Secondary. Students in groups have to solve the 3 tasks. Sometimes in Spain high schools from different regions work together and in this case the approach is to work round” the Road to Santiago” a famous pilgrimage from middle ages and every year more people and famous people do it. The approach is round this fact We can ask students to write about famous personalities in the Road to Santiago (see the work)
Description of the process and teaching/ learning strategies used	1. Search and select information and produce a presentation of the Road to Santiago and its main monuments 2. Draw the French Road and point out the place where the two groups will meet. 3. Have a look at the video, draw up the oscillation and find out how long is the rope. Students work in teams and learn by doing Students follow the WebQuest process
Evaluation/ types of assessment	We use an observation sheet to assess how students work and the e-portfolio
Materials and tools	A blog, HTML or Prezi, the tool students prefer. Internet for research work http://centros.edu.xunta.es/cpiocruce/etm/arhivos/wq/wqsespanol/roadsantiago.htm
Timing and learning environment	3 classes of 50’ will be OK, the environment can be the classroom using 1:1 or tablets, it can be also the computers room.
Conclusion	Students work different transversal skills: look for and research information, problem solving, decision making, apply previous knowledge, It can be used in any school to study ART and at the same time math and physic
Contacts	mtrigo@edu.xunta.es

21. Studying symmetry



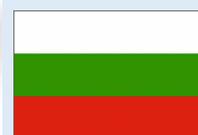
XUNTA DE GALICIA

CONSELLERÍA DE CULTURA, EDUCACIÓN
E ORDENACIÓN UNIVERSITARIA



Title	Studying symmetry
Content/ Subject areas	Literature, Art, Geography, History, Language; foreign languages
Target group	Students year 1 Secondary.
Learning objectives / competences	<p>To learn all about Symmetry in the class of art</p> <p>To get knowledge about the Alhambra of Granada</p> <p>To use the literature round the Alhambra of Granada to introduce the topic</p> <p>Use the architecture of the Alhambra of Granada to explain the symmetry in art</p> <p>Valuing and respecting the different ways of seeing and representing art, own and others.</p> <p>Raise students' awareness of their role in the cognitive process undertaken.</p> <p>Adapt to unforeseen situations by taking risks.</p> <p>Maintain curiosity and interest in the research undertaken (own, of their colleagues, proposed by the teacher).</p> <p>To deepen the students' relationship with each other, with attitudes and contributions favorable to cooperation in research and creation work.</p> <p>To make the student aware of the aesthetic fact.</p>
Description of overall activity	<p>The teacher uses one of the tales of Washington Irving to talk about the monument and then presents the different buildings and gardens and what they were used for. In this way students get familiar with the Alhambra and its history. After they analyze type of symmetry we can find in the Alhambra which according to Marcus du Sautoy (Londres, 1965 "¿Is the palace of the symmetry!" <i>"The Alhambra is a microcosm of the whole problem of symmetry," "Symmetry is a concept that supports many things: in biology, for example, the H1N1 virus is a symmetric object and uses symmetry to replicate itself, in physics it serves to understand the behavior of elementary particles."</i> Laces, such as those found in the Alhambra in Granada or the Alcazar of Seville, are Arab mosaics whose motifs contain intertwined ribbons. Its beauty lies in the symmetry hidden in its mosaics</p> <p>The teacher will use the Alhambra history and art to engage students in learning Symmetry. They 'll get to know all about: Axial symmetry Central symmetry, and will be able to create their own Art works</p>
Description of the process and teaching/ learning strategies used	<p>Students get familiar with the art and story of the Alhambra by reading one or more of the Washington Irving. The teacher introduces the monument using the white board</p> <p>Students learn about symmetry and how to apply it to the art and they produce their own art works.</p>
Evaluation/ types of assessment	<p>We do formative assessment by asking students to present (individually) a Padlet with all concepts they learnt in the lesson</p> <p>We'll also do pair assessment one group assess other group after the presentation of their work and debate on it</p> <p>Teacher use the e-portfolio for assessment.</p>
Materials and tools	Whiteboard, notebook, Padlet, Annex Nr1.
Timing and learning environment	We' ll use 4 classes to do the activity , we can do it in the classroom if we have 1:1 in the classroom
Conclusion	<p>Students work different transversal skills: reading, creativity, decision making, apply previous knowledge, communication skills...</p> <p>It can be used at any school in worldwide</p>
Contacts	mtrigo@edu.xunta.es

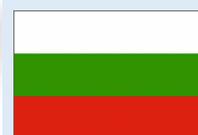
22. Entrepreneurship - Management Project Development (in the field of production)



Title	Entrepreneurship - Management Project Development (in the field of production)
Content/ Subject areas	Entrepreneurship and Management
Age range and size of the group	Age range: over 14 years old, Group size: 2-5 students
Learning objectives / competenc es	Gain entrepreneurial and primary management skills
Descriptio n of overall activity	Develop a starting business idea in the field of production using a scenario and given guidelines in the form of a project
Descriptio n of the process and teaching/ learning strategies used	<p>For students:</p> <ol style="list-style-type: none"> 1. Students divide in groups and receive a scenario with guidelines about developing a startup business idea in the field of production. Scenario is providing equal initial conditions for all groups in the course (i.e. each team's idea has to cover a part or the entire production process of a product, each team has 80000 Euro, which they can use to fund their business idea, etc.) 2. Students work in teams for 4 weeks developing a business idea, business model, business plan and financial plan for the realization of their business idea in the field of services. 3. Students prepare a document, following the requirements from the teachers and present their projects at the end of the month. 4. All other student groups and the teacher are asking questions to the presenting team and are starting a discussion on how to improve the plan. <p>Tips for teachers: Follow the structure of the given scenario and guidelines in the project and give clear tasks for the students on every meeting, while working on the project.</p> <p>Learning strategies:</p> <ol style="list-style-type: none"> 1. Collaborative problem solving while working in team on the creative task 2. Interdisciplinary approach due to the usage of knowledge from many different areas in this Management Project 3. Honey and Mumford Learning Styles 4. Daniel Kolb's Experiential Learning Cycle 5. Learning by doing
Evaluation / types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work

Materials and tools	Annex . Initial Scenario and Guidelines for the Management Project, given in advance from the teacher to the students http://www.innovative-teacher-motivated-student-project.com/materials.html
Timing and learning environment	The methodology is suitable for any timing and duration of the training between 2 and 12 weeks and it is applicable in any learning environment
Conclusion	https://drive.google.com/open?id=1AyR8whKyvp5SGqvMJ89QIbuHAjJNpyQZ Innovation: The Management Project on production business is providing opportunity for students to develop their business idea working in team and applying knowledge from different knowledge areas and school disciplines i.e. it allows interdisciplinary education (STEAM) through collaborative problem solving (CPS) and learning by doing. If adding points it can also foster Gamification in class.
Contact	www.bfc-bg.com

23. Entrepreneurship - Management Project Development (in the field of services)



Title **Entrepreneurship - Management Project Development (in the field of services)**

Content/ Subject areas	Entrepreneurship and Management
Age range and size of the group	Age range: over 14 years old, Group size: 2-5 students
Learning objectives / competences	Gain entrepreneurial and primary management skills
Description of overall activity	Develop a starting business idea in the field of services using a scenario and given guidelines in the form of a project
Description of the process and teaching/ learning strategies used	<p>For students:</p> <ol style="list-style-type: none"> 1. Students divide in groups and receive a scenario with guidelines about developing a startup business idea in the field of services. Scenario is providing equal initial conditions for all groups in the course (i.e. each team has 10000 Euro and a car, which they can use to fund their business idea, etc.) 2. Students work in teams for 4 weeks developing a business idea, business model, business plan and financial plan for the realization of their business idea in the field of services. 3. Students prepare a document, following the requirements from the teachers and present their projects at the end of the month. 4. All other student groups and the teacher are asking questions to the presenting team and are starting a discussion on how to improve the plan. <p>Tips for teachers: Follow the structure of the given scenario and guidelines in the project and give clear tasks for the students on every meeting, while working on the project.</p> <p>Learning strategies:</p> <ol style="list-style-type: none"> 1. Collaborative problem solving while working in team on the creative task. 2. Interdisciplinary approach due to the usage of knowledge from many different areas in this Management Project. 3. Honey and Mumford Learning Styles. 4. Daniel Kolb's Experiential Learning Cycle 5. Learning by doing
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	Initial Scenario and Guidelines for the Management Project , given in advance from the teacher to the students http://www.innovative-teacher-motivated-student-project.com/materials.html
Timing and learning environment	The methodology is suitable for any timing and duration of the training between 2 and 12 weeks and it is applicable in any learning environment
Conclusion	Innovation: The Management Project on services business is providing opportunity for students to develop their business idea working in team and applying knowledge from different knowledge areas and school disciplines i.e. it allows interdisciplinary education (STEAM) through collaborative problem solving (CPS) and learning by doing. If adding points it can also foster Gamification in class.
Contacts	www.bfc-bg.com

24. Hotel Business Analysis



Title	Hotel Business Analysis
Content/ Subject areas	Any area
Target group: age range and size of the group	Age range: any, Group size: 2-5 students
Learning objectives / competences	Improve tourism business analysis and management skills, improve presentation skills
Description of overall activity	Students present a hotel in their city and provide feedback, analysis and proposals for improvement of the hotel business management
Description of the process and teaching/ learning strategies used	<p>For students:</p> <ol style="list-style-type: none"> 1. Student divide into groups 2-5 people. 2. Students as homework for 2 weeks on business analysis of a hotel in their city and provide feedback, analysis and proposals for improvement of the hotel business management. Students use guidelines document given by the teacher in advance, including points to be included in the business analysis and presentation documents 3. Students present their presentations in front of the class and a receive questions and comments from other students and teacher. <p>Tips for teachers: Provide students with initial guidelines document with points to be included in the business analysis and presentation documents.</p> <p>Learning strategies:</p> <ol style="list-style-type: none"> 1. Collaborative Problem Solving 2. Honey and Mumford Learning Styles 3. Daniel Kolb's Experiential Learning Cycle 4. Learning by doing
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	<p>Annex. Hotel business analysis. Initial Scenario and Guidelines for the Management Project, given in advance from the teacher to the students</p> <p>http://www.innovative-teacher-motivated-student-project.com/materials.html</p>
Timing and learning environment	The methodology is suitable for any timing and duration of the training and it is applicable in any learning environment
Conclusion	<p>Innovation: The Good practice on Hotel Business Analysis is focused towards applying theoretical knowledge in real world business sphere. It applies STEAM, CPS and learning by doing. If points are introduced it could foster gamification in class.</p>
Contacts	www.bfc-bg.com

25. Management Project International Trading



Title Management Project International Trading

Content/ Subject areas

Entrepreneurship and Management

Target group: age range and size of the group

Age range: over 14 years old, Group size: 2-5 students

Learning objectives / competences

Gain entrepreneurial, business and management skills

Description of overall activity

Develop a business idea in the field of services or production and including international trading development plan using a scenario and given guidelines in the form of a project

Description of the process and teaching/ learning strategies used

For students:

1. Students divide in groups and receive a scenario with guidelines about developing a business idea in the field of services or production including international trading development plan. Scenario is providing equal initial conditions for all groups in the course.
2. Students work in teams for 4 weeks developing a business idea, business model and business plan, financial plan and opportunities and legal frames for starting of international trading as part of the business idea.
3. Students prepare a document, following the requirements from the teachers and present their projects at the end of the month.
4. All other student groups and the teacher are asking questions to the presenting team and are starting a discussion on how to improve the plan.

Tips for teachers:

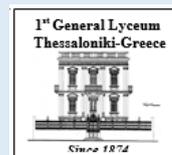
1. Follow the structure of the given scenario and guidelines in the project and give clear tasks for the students on every meeting, while working on the project.

Learning strategies:

1. Collaborative problem solving while working in team on the creative task
2. Interdisciplinary approach due to the usage of knowledge from many different areas in this Management Project

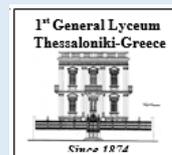
	<p>3.Honey and Mumford Learning Styles</p> <p>4.Daniel Kolb’s Experiential Learning Cycle</p> <p>5.Learning by doing</p>
Evaluation/ types of assessment	Peer-to-peer team evaluation, individual self-evaluation and teacher evaluation of the group work
Materials and tools	Initial Scenario and Guidelines for the Management Project, given in advance from the teacher to the students http://www.innovative-teacher-motivated-student-project.com/materials.html
Timing and learning environment	The methodology is suitable for any timing and duration of the training between 2 and 12 weeks and it is applicable in any learning environment
Conclusion	Innovation: The Management Project International Trading is providing opportunity for students to develop their business ideas and include further opportunities for international trading. Students are working in teams and are applying knowledge from different knowledge areas and school disciplines i.e. it allows interdisciplinary education (STEAM), collaborative problem solving (CPS) and learning by doing. If adding points it can also foster Gamification in class.
Contacts	www.bfc-bg.com

26. Artificial intelligence



Title	Artificial intelligence
Content/ Subject areas	Mathematics, Physics, Engineering, Information Technology
Target group: age range and size of the group	16-17 years old students
Learning objectives / competences	To learn what artificial intelligence means, when and where it was invented and its applications in science and in everyday life.
Description of overall activity	The creation of a model robot which will execute basic orders
Description of the process and teaching/ learning strategies used	<ul style="list-style-type: none"> • Ask students to establish groups of 5 people and undertake roles. • Explain to students their responsibilities: • The first group is responsible for finding information on the web • The second one is responsible for the construction of the model robot, following the principles of modeling • The third group is responsible for the programming of the model • Participation in a robotics competition, competing other schools
Evaluation/ types of assessment	The evaluation of results from the performance of the team in the competition
Materials and tools	Tools needed: computer network, Internet connection, modeling materials
Timing and learning environment	School, 4 months
Conclusion	Students acquired knowledge useful for University studies Cooperative learning Experience of model construction
Contacts	1 st General Lyceum of Thessaloniki mail@1lyk-thess.thess.sch.gr Dikarou Chrisanthi chdikaro@gmail.com

27. Students in action



Title	Students in action
Content/ Subject areas	Mathematics, Physics, Engineering, Information Technology, Aerodynamics
Target group: age range and size of the group	16-17 years old students
Learning objectives / competences	To know Mathematics and Physics in depth To develop their ability of cooperating and being creative To have the chance to turn their ideas into actions
Description of overall activity	The creation of a virtual business that targets to the construction of a model F1 car
Description of the process and teaching/ learning strategies used	<ul style="list-style-type: none"> • Ask students to establish groups of 3 people and undertake roles. • Explain to students their responsibilities: • The group responsible for finding resources, search for sponsors willing to finance the team • The “Social Media” group is asked to create a web page for the team, communicate with other teams through social media, and publicize the team. • The third group is responsible for the design of the F1 model. • The last group, in cooperation with the third one is in charge of the application of the principles of Aerodynamics and the appearance of the model • Participation of the whole team in F1 races with F1 models created by other teams
Evaluation/ types of assessment	The evaluation of results from the performance of the team in the competition
Materials and tools	Tools needed: computer network, CAD software “Solid Works”, Internet connection
Timing and learning environment	School, 4 months
Conclusion	Students acquired knowledge useful for University studies Cooperative learning Ability of money management Experience of model construction
Contacts	1 st General Lyceum of Thessaloniki mail@1lyk-thess.thess.sch.gr Dikarou Chrisanthi chdikaro@gmail.com

28. eNature



Title	eNature
Content/ Subject areas	Science, Biology, Technology, Geography, Chemistry, Physics, Math
Target group: age range and size of the group	14-19 years old Work in groups of 3-5 students.
Learning objectives / competences	Promoting a proactive students' approach to scientific subjects learning
Description of overall activity	Epimorfotiki Kilkis has a direct collaboration with Directorate of secondary education of Kilkis. In the frame of that collaboration we invited schools to cooperate in an innovative STEAM project.
Description of the process and teaching/ learning strategies used	Every associated school selected a geographical area of interest from our prefecture. They made a research on that area in the classroom. Then the students visited that area with the supervision of their science teachers. They made a research on different topics, such as geography, physics, chemistry, mathematics etc. Then they gather the results and put them in a platform created for that purpose. After that, with the help from their teachers, they produced a small video lessons regarding that different subjects (of studies).
Evaluation/ types of assessment	The whole process is supervised and monitored by the teachers. There will be peer assessment: one group assesses another group's work after the presentation of their work and debate on it
Materials and tools	Photos, drawings, videos (Annex)
Timing and learning environment	The implementation of the activities taking part outside the school area. The duration is one working day (6-7 hours).
Conclusion (Innovation what makes it good practice, further application)	The results are available as a good practice but also as an integrated e-lesson (CPS – STEM – EBSI). Students learn maths, geometry, biology etc. through nature. Teachers use the nature to present their scientific subjects through observation, calculation and collection of evidence by the students. Recording the process and the results giving an added value to the practice.
Contacts	Epimorfotiki Kilkis sm llc, epimorf@otenet.gr , https://www.epimorfotiki.gr/eu

29. Music in the liturgy



Title	Music in the liturgy
Content/ Subject areas	Language, Music, Geography, History STEAM
Target group: age range and size of the group	Secondary High school.
Learning objectives / competences	To know the musical moments of the liturgy. To work from teams Students are able to communicate their knowledge and produce their work collectively
Description of overall activity	Students design a music page on a liturgical occasion. Two groups will develop on the web two pages: 1 Liturgy of the Synagogue - 2 Liturgy of the Eucharist The common points of the two liturgies are highlighted
Description of the process and teaching/ learning strategies used	Each group of students must create a web page. The content of the page will be photographs, texts and music that provide information. These pages are used to turn students into teachers in other classes
Evaluation/ types of assessment	Formative evaluation with questionnaire to evaluate the students themselves. Teachers use the e-portfolio for evaluation.
Materials and tools	CSS4, Gimp, Voting System
Timing and learning environment	12 hours. The environment can be the classroom using the tablets and being the computer room.
Conclusion (Innovation what makes it good practice, further application)	Students work in different cross-disciplinary skills Students produce materials for other students Students learn the materials they produce from their colleagues
Contacts	http://www.istitutoimmacolata.it/

GAMIFICATION

1. Characterize a person from a photo



Title	Characterize a person from a photo
Content/ Subject areas	Mother language, foreign languages, History, Sciences, Religion
Target group	8-16 years old students
Learning objectives / competences	To compare how people, differ in their initial impressions of others. To experiment reading the message of a photo.
Description of overall activity	How difficult is to characterize somebody using very little information. How different people see the same person differently.
Description of the process and teaching/ learning strategies used	<p>Instructions</p> <ol style="list-style-type: none"> 1. Ask students to look on the photo, and write a short (not more than 200 words) characterization of the person from the photo. 2. Ask each group to present its characterization in front of the class. 3. Conduct a discussion about comparing the characterizations. <p>Tips for the teacher</p> <p>It is important to give the same photo for each group, to compare the characterizations.</p> <p>Variations. The teacher gives a form to the students with the characteristics, they should give about the person from the photo. In this way each group give the same characteristics, so it is easier to compare the characterizations.</p> <p>Suggestions for follow up</p> <p>Encourage people to express their opinions about a topic. Annex)</p> <p>Reflection and Evaluation</p> <p>Each group present their characterization. Comparing the different characterizations Using Kahoot questionnaire to self-evaluate online the work done. https://play.kahoot.it/#/k/0485503d-9e5f-41aa-82a3-7c575251fd97</p>
Evaluation/ types of assessment	<p>Tools needed: A digital photo (Or in paper if necessary, with an intercultural message).</p>
Materials and tools	50 minutes
Timing	To encourage people to express their opinions about a topic. Collaborative group work. Learning how to read a photo.
Conclusion	CREF – Centro de Recursos Educativos e Formação crefsesimbra04@gmail.com, refsесesimbra04@gmail.com, www.cref.pt
Contacts	



2. Addition and subtraction (1-100)



Title	Addition and subtraction (1-100)
Content/ Subject areas	Mathematics
Target group:	2nd class students
Learning objectives / competences	Students <ul style="list-style-type: none"> ▪ are able to count by memory (addition and subtraction); ▪ improve logical thinking; ▪ can use different internet tools for learning.
Description of overall activity	Students do different math tasks and improve their ability to count by memory.
Description of the process and teaching/ learning strategies used	<p>- A teacher speaks about main rules of addition and subtraction. A lesson is made in the computer class, where students can do different math exercises: -“Addition and subtraction 1-20”: http://www.miksike.ee/en/gtests2.html?test=9056&start=1 Addition and subtraction in http://miksike.eu, where students can do as many attempts as they know and are able. Training field: http://miksike.eu/#pranglimine/training (sprint or normal field)</p> <p>7. Students are put in groups and they have different addition and subtraction operations written on papers (same number of papers for each group). Now one student takes an exercise and asks the answer of the operation from the other member of the team. In that way all the students should be able to take exercises and to solve them. A teacher is guiding.</p> <p>8. Students are now in pairs and they use their tablets (one for 2 persons). They have an application called Math Duel. They choose addition or subtraction and play in pairs. https://play.google.com/store/apps/details?id=com.mathduel2playersgame.mathgame</p> <p>9. A conversation about the process is done so that students themselves are talking about the troubles they had and about the experience of using different internet tools to learn addition and subtraction. Teacher also gives verbal feedback of the process where he/she was guiding.</p>
Evaluation/ types of assessment	Self-assessment Pair assessment
Materials and tools	Computers and tablets (1 for each group) with internet connection. Papers, pens
Timing and learning environment	45 minutes http://miksike.ee , http://miksike.eu https://play.google.com/store/apps/details?id=com.mathduel2playersgame.mathgame
Conclusion	Students learn by doing, learn from each other, explore new internet tools for learning and use them, students are active, critical and motivated
Contacts	kristiina@miksike.ee OÜ Miksike Kristiina Rattasepp

3. Tangrams



Title	Tangrams
Content/Subject areas	Math: fractions. Craft-technology: paper folding- preparing tangrams; tangrams in cooking. Biology: human structure Art: human body in motion.
Target group	Grade 5 (max 25 students)
Learning objectives / competences	Increasing awareness about the fractions To develop a logical thinking Initiative Critical thinking Creativity Communication and co-operation Problem solving
Description of overall activity	Students strengthen their knowledge of the fractions using Tangram game -.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none"> 1. The teacher asks students to make tangram game – 7 figures - following the written instructions. Each of the tangram figures consists of the different number of the basic fractions – small triangle. 2. The students are making different shapes - figures of human body - in motion using 7 tangram figures. 3. When the one shape is ready, students draw it on the paper, and then try to make another new figure. 4. The teacher invites students to paint figures in various colors. Students talk about fractions in tangram game – which fraction of all shape is in green, in red etc. 5. The teacher divides the students into the groups of 4 people in each. 6. Each group makes a big picture from the best tangram figures and sticks it on the paper also noting number of fractions in each color for whole picture. 7. <i>Homework – use tangram game in cooking, for example, bread, cake, cookies etc. (See Attachments).</i>
Evaluation/ types of assessment	Evaluation is conducted taking into account such criteria as: <ul style="list-style-type: none"> - Are all prepared geometrical figures used? - Overall esthetical view of the drawings.

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- Creating of the models on a box sheet where the number of the boxes corresponds to the number of the same small fractions - triangles used in the figure. Record the number of drawing's fractions colored in each color and the same portion represent in the model. If the entire model is colored, the task is completed correctly.

Materials and tools Colored paper, color pencils, a pencil or a pen, scissors, glue
Worksheet "Tangram 1" (instructions how to make the tangram game - *See Attachment*).
Worksheet "Tangram 2" (ideas) *See Attachments*

Timing and learning environment 40 min lesson; classroom

Conclusion STEAM approach (Math/Biology/Applied Art/Cooking):
Using of gamification elements improves student's engagement in learning, class productivity, educational process, learning, students' motivation, evaluation, ease of education, etc.

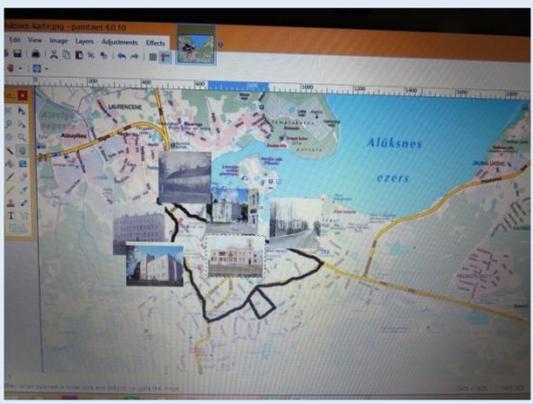
Contacts Sanita Eglīte, Valmiera Primary school
eglitesanita@inbox.lv

4. Identification of the historical heritage of my city



Title	Identification of the historical heritage of my city
Content/ Subject areas	Subjects: History, Geography, Social studies, Math, Language, IT, Natural sciences
Target group	Elementary school students, Group of ~20 - 25 students
Learning objectives / competences	Cultural awareness and expression competence Social and civic competences Mathematical competences and basic competences in science and technology Linguistic communication competence Cooperation
Description of overall activity	Students working in small groups get to know their city's history and culture by creating touristic routes "City guide" and train their linguistic competences (native or foreign language) presenting them to their peers.
Description of the process and teaching/ learning strategies used	A group of students is divided in 4 -6 smaller groups. For the activity, each group needs to have a map of the city and image cards. Each group of students chooses several image cards. Groups have to recognize the objects on the cards and find information about them. Then students have to choose an appropriate map and to find location of the each object in it. Groups have to create a route "City guide" on software "paint.net" or on the map, including in the route all objects what group has chosen. Students have to create a story, plan the duration and length of the route, and present the work to others in Latvian (or - in English, Russian or other foreign language). After the presentations of the routes by all groups, the students strengthen their newly acquired knowledge by playing the game "Get to know Aluksne municipality!"
Evaluation/ types of assessment	The group presentations are evaluated by peers and teacher, paying attention to such criteria: <ul style="list-style-type: none"> - all members of the group are involved in the work and responsible for result; - information is presented clearly, visual information is added to the story; - presentation includes information from history and now-days of the city; - presenters have eye contact with the audience; - students speak with confidence and are able to answer audience questions. If presentation is made in foreign language, the additional criteria are used: <ul style="list-style-type: none"> - Vocabulary used; - Correct usage of grammar.

Materials and tools	Image cards with city buildings and important places in history and nowadays. City maps, access to internet for obtaining information, computers for creating the route in paint.net, other information sources: encyclopedias, information brochures, V.Blūma photo exhibition “Reflection of the historical and present Alūksne city” in the school library.
Timing and learning environment	The time is maximum 6 hours. Place- library, school hallways, classrooms, premises with internet access.
Conclusion	Pupils studied the image cards with a deep interest, compared city objects in past and present, and got acquainted with new facts about the city they live in. Activity also strengthens the sense of belonging to their city. Students learned new words in foreign language, improved their presentation skills. While working in groups, pupils learned to split tasks, listen to other opinions and come to common solution and decisions. By playing the game “Get to know Aluksne municipality!” students improved their knowledge not only about city but also about whole municipality.
Contacts	Liga Krumina, Secondary School of Aluksne district likrumina@inbox.lv
Additional information:	https://sway.com/arj2uVZ2F2kUT9OS



5. Tour in my city



Title	Tour in my city
Content/ Subject areas	Subjects: Geography, Arts, Sport, Math, Natural sciences, Language, History, IT
Target group:	-Primary School -Secondary School
Learning objectives / competences	Cultural awareness and expression competence Social and civic competence Mathematical competence and basic competence in science and technology Linguistic communication competence Physical activity and health competence Learning to learn Initiative-taking
Description of overall activity	Project work during which students in small groups or in pairs through various activities get acquainted with their city, and by using the map, make their own route of the city, which is jointly walked and then analyzed and performed.
Description of the process and teaching/ learning strategies used	Pupils are divided into groups or pairs. Each group/pair is given a map of the city, paper sheets, and letter sheets. Task 1 – By using a city map, correctly write down the street names in alphabetic order. Task 2 – To create a crossword puzzle from the given regulations - the letter sheets; Task 3 – To imagine character or an animal and draw it in the map using lines of the city streets by including already known city culture objects. Task 4 – To calculate estimate length of the drawn route, and estimated walking time. Task 5- To go around the drawn route in small groups or pairs by recording it with the mobile application ‘Endomondo’. Task 6 – Students of the secondary school additionally have to analyze the tour (duration, length, accuracy, meeting the requirements, etc.), record other readings as speed, calories, the time taken, average speed, lap length. Students have to compare the readings, analyze and justify the measurements and calculations and expres the results in the conclusions.
Evaluation/ types of assessment	For primary school formative assessment and peer-evaluation can be used taking into account such criteria as: correct spelling of the street names; right alphabetical order; correct crossword puzzle; transcript of topographical marks. For secondary school the quality of route analysis, the measurements and calculations, as well as conclusions are evaluated.

Materials and tools	The map of the city, paper sheets, crossword puzzle requirements, letter sheets, topographical maps and their legends, mobile phone with application <i>Endomondo</i> .
Timing and learning environment	The time is allocated according to the age group – maximum 6 hours. Place – schools hallways, classrooms, and city spaces.
Conclusion	Pupils revised and strengthened the use of language in different domestic situations. By using the map of the city, they learned the orientation in city environment, verified and confirmed the relationship between the process of planning and actual result. The activities were very motivating: even students with learning and behavior difficulties willingly and with creativity engaged in these activities which promote such transversal skills as ability to learn and initiative-taking. Interesting routes around the city were created with pupils' initiative.
Contacts	Liga Krumina, Secondary School of Aluksne district likrumina@inbox.lv
Additional information	https://sway.com/7vKxh4QVS3gy9tRF



6. Water cycle



Title	Water cycle
Content/ Subject areas	Natural sciences, foreign languages
Target group	Students year 1 Secondary.
Learning objectives / competences	<p>To learn all about the water cycle</p> <p>To catch the main point in short clear and simple messages/ to read simple texts and find the specific information.</p> <p>To use phrases and sentences to make a presentation about the theme. c)</p> <p>To create test from ones worked previously.</p> <p>To raise the awareness on the importance of acquisition new technologies in education to improve students' opportunities for further education.</p> <p>To get a better knowledge in other subjects through foreign languages (CLIL Project)</p> <p>Competences: Learning to learn, select information, decision making, produce new knowledge, creativity.</p>
Description of overall activity	<p>This is a CLIL activity were the teacher introduces the water cycle in English We include interactive activities to students learn about the water cycle</p> <p>The approach also includes language activities in order students get knowledge in language skills.</p>
Description of the process and teaching/ learning strategies used	Students get familiar with the water cycle and from that they learn vocabulary, language skills. The teacher introduces interactive activities to students reinforce their knowledge
Evaluation/ types of assessment	<p>We do formative assessment by making a questionnaire</p> <p>Students do self-assessment</p> <p>Teachers use the e-portfolio for assessment.</p>
Materials and tools	<p>Front Page, Power point, Jclick, Hot Patatoes</p> <p>http://centros.edu.xunta.es/cpiocruce/etm/arhivos/water/cuestionario1.htm</p> <p>http://centros.edu.xunta.es/cpiocruce/etm/arhivos/water/water1/index.htm</p>
Timing and learning environment	Four sessions will be OK, the environment can be the classroom using 1:1 or tablets, it can be also the computers room.
Conclusion	<p>Students implement language skills in foreign languages and get knowledge about the water cycle</p> <p>Students learn sciences building up their own knowledge</p> <p>It's innovative because at the same time students learn sciences they are learning foreign languages CLIL. Students acquire important transversal skills while they acquire science competences</p>
Contacts	<p>mtrigo@edu.xunta.es</p> <p>http://centros.edu.xunta.es/cpiocruce/etm/arhivos/water/index.html</p>

7. Where Am I



XUNTA DE GALICIA

CONSELLERÍA DE CULTURA, EDUCACIÓN
E ORDENACIÓN UNIVERSITARIA



Title	Where Am I
Content/ Subject areas	Language, ICT, Art, Geography, History, Literature, Music.
Target group	Students Secondary. The difficulty will be according to students age
Learning objectives / competences	<p>To learn all about European countries</p> <p>To work in teams</p> <p>To evidence accuracy in gathering and recording information to integrate previous knowledge</p> <p>To create high quality final products: Website, as final product</p> <p>Students are able to communicate their knowledge and produce own works in collaborative way</p>
Description of overall activity	<p>Students in pairs design a Webpage about a country. Each pair of students look for information about the country and pictures, they choose a monument and they take a photo of the two students (they put the photograph as if they are in front of the monument. They put other photos and also a test eg. This morning I have been in the Tate gallery; I have visited an Art Gallery where I visited “the Sun flowers of Van Gog.” Where am I?</p> <p>With all websites we create a game for other students to solve</p>
Description of the process and teaching/ learning strategies used	<p>Each pair of students has to create a webpage o a page in a blog. The content of the page in with photographs and texts provide relevant information but not evident, because the idea is students do a game for other students. We can do a page for each European county. This game is used to teach other students about European countries</p>
Evaluation/ types of assessment	<p>We do formative assessment by making a questionnaire for students and students vote the in the whiteboard</p> <p>We’ll also do pair assessment one group assess other group after the presentation of their work and debate on it</p> <p>Teachers use the e-portfolio for assessment.</p>
Materials and tools	HTML or Blog, Photoshop, Voting System of Promethean
Timing and learning environment	<p>Timing depends on how deep you like to go in the topic. Two weeks will be OK, the environment can be the classroom using 1:1 or tablets, it can be also the computers room.</p>
Conclusion	<p>Students work different transversal skills: creativity, decision making, apply previous knowledge, communication skills...</p> <p>Students produce materials for other students</p> <p>Students learn with materials produced by their colleagues</p> <p>The project is innovative because students build their own knowledge and because they learn from another’s</p>
Contacts	mtrigo@edu.xunta.es

8. The witch



Title	The witch
Content/ Subject areas	Integrated lesson of Lithuanian language, Mathematics and Natural science
Target group	2 nd grade
Learning objectives / competences	<p>Learning objectives:</p> <ul style="list-style-type: none">• To promote students' motivation;• To develop overall view of the world;• To develop communication and problem solving skills; <p>Learning to learn, communication, knowledge, initiative, creativity and personal skills are developed during lesson.</p>
Description of overall activity	<p>Introductory part of lesson – 4 minutes Main part – 37 minutes Lithuanian language – 15 minutes Mathematics – 12 minutes Natural science – 10 minutes Final part – 4 minutes</p>
Description of the process and teaching/ learning strategies used	<p>Introductory part of lesson – 4 minutes Intrigue. Presentation No. 1 prepared by Smart program. Students are asked, what is hidden? Teacher provides hints to make it easier. It is a person. It is an old woman. It is an angry woman. She lives in fairy tales. She lives in a hut on a chicken leg. Students guess. After every guess one box is opened up. The remaining are opened when the students tell the right answer and the topic of lesson reveals after that. Presentation No. 2 The question is raised – Who is the witch? The students express their thoughts. After hearing all their thoughts, the cat is pulled away. Students read that the witch is an evil sorceress, enchantress. The teacher clicks on the area above the grey circle and below the raven. The lesson's objective lights up. The lesson's objective is announced. Presentation No. 3 The evaluation criteria are discussed. It is explained that students will have to guess the magic spell. Following the task students will find out one magic word. The teacher explains that the witch is an evil sorceress, and today children will be good fairies. The fairies have magic wands. Following each task students will have to colour the part of the wand. If they succeed in colouring all the wand and finding out the magic spell - the miracle will happen. All students have evaluation sheet on their desks (magic wand). (Annex No. 1). Main part – 37 minutes Lithuanian language - 15 minutes</p>

The teacher clicks on the inscription “Book of magic”. It reveals the presentation which portrays the best friends of witches.

It is clicked on the cat. The questions that is needed to be answered light up. Students find the number from 1 to 4 on the other side of the sheet portraying the magic wand (expert method is applied). All first numbers gather around one table, the seconds around the next one, etc. Part of the text is read there; it is discussed (Annex No. 2). Later everyone returns to their seats and tell their group friends what they have found out. Checking. The answers are revealed on the board.

Following the task students discuss the contribution of each member of the group in achieving the objective (to answer the questions correctly) and colours one part of the magic wand or the half of the part.

It is clicked on the cat. Returning to the book of magic. The first word of the magic spell is opened (by clicking on it).

Clicking on the inscription “Book of magic”.

Clicking on the image of the book. The grammatical task is opened. The students carry out the tasks on the sheets individually (Annex No. 3)

The screensaver is pulled away. The students check their work. It is discussed why the task should have been done in this way.

The student colours the one part of the wand for each task carried out correctly. If the student made 2-4 mistakes, then he/she colours only half of the part. If there are more mistakes – the wand is not coloured.

Clicking on the image of the book. Returning to the book of magic. The second word of the magic spell is opened (by clicking on it).

Mathematics – 12 minutes

Clicking on the inscription “Book of magic”.

Clicking on the image of the broom. The mathematical task is opened. Students carry out the task on finding the unknown multiplier which is on the sheets (Annex No. 4).

The teacher pulls the broom on the actions. The answers light up.

The screensaver is pulled away. The students read the text based task. Teacher encourages students to find two solutions. After the exercise is done it is checked. The solutions of the task are revealed on the board. Two solutions are clarified.

For the both mathematical tasks carried out correctly the students colour 1 part of the wand. If they made 1-3 mistakes – colour the half of the part. If more – the wand is not coloured.

Clicking on the yellow circle. Returning to the book of magic. The third word of magic spell is opened (by clicking on it).

Natural sciences – 10 minutes

Clicking on the inscription “Book of magic”.

Clicking on the image of the raven. The presentation with the word “Experiment” is opened. Clicking on the raven and listening to the audio recording which contains raven asking for help to separate salt from pepper. Teacher listens for students’ thoughts on how to help the raven. Further, the experiment is conducted. Plastic plates with

	<p>salt and ground pepper mixture, plastic teaspoons and woollen fabric strips are placed on the table of every group. Students rub teaspoons to the fabric. Then the teaspoon is maintained above the plates. The pepper will stick to the teaspoon and in this way they will be separated from the salt.</p> <p>We discuss why this has happened. The teaspoon got electrified and attracted peppers as they are lighter than the salt.</p> <p>All students colour the last part of the magic wand.</p> <p>Clicking on the inscription “Experiment”. Returning to the book of magic. The last word of the magic spell is opened (by clicking on it). Teacher asks students to raise their wands. Whereas the wands are not fully coloured the teacher expresses a doubt if the miracle will happen. Then the teacher offers everyone to read the magic spell and wave a magic wand. Teacher clicks on the right page of the book. The inscription lights up saying that the witch will not be able to harm anyone.</p> <p>Final part – 4 minutes</p> <p>Clicking on the star, which is on the top of the magic wand. Then clicking on the white area bellow the raven. Returning to the objective of the lesson.</p> <p>Reading the objective again and reminding which tasks were carried out by the students.</p> <p>Clicking on the small grey circle. The presentation on the reflection is opened. Students discuss and decide whether the lesson was useful in groups. The representative of the group clicks + or – and explains their group’s choice. The teacher gives thanks to the students for all the work and finishes the lesson.</p>
Evaluation/ types of assessment	Students are evaluated for every task that is carried out (each has an evaluation sheet – a magic wand)
Materials and tools	Presentations, evaluation sheets (magic wand), text for reading, grammatical task, sheet with mathematical tasks, necessary items for experiments (plastic plate, pepper and salt mixture, plastic teaspoon, woollen fabric strip), prepared using Smart program.
Timing and learning environment	45 minutes
Conclusion	Active learning methods (expert method, experiment, group work), student motivating evaluation is used during the lessons. The lesson is playful, encouraging students to cooperate and work together to find the joint solution of the problem.
Contacts	Rolanda Miškūnienė, primary school teacher methodologist, rolandamiskuniene@yahoo.com,. Romuva progymnasium, Šiauliai, Lithuania

9. The circulatory system



Title	The circulatory system
Content/ Subject areas	Integrated lesson of Natural science, Mathematics
Target group	4 th grade
Learning objectives / competences	Learning objectives: <ul style="list-style-type: none"> • To promote students' motivation • To develop communication and problem solving skills; Learning to learn, communication, knowledge, initiative, creativity and personal skills are developed during lessons.
Description of overall activity	Introductory part of lesson – 5 minutes Main part – 35 minutes Natural science Mathematics Final part – 5 minutes
Description of the process and teaching/ learning strategies used	Introductory part of lesson – 5 minutes Intrigue. Audio record (Annex No.1) Audio record is turned on. The students are asked to think what sound do they hear (heartbeat). Presentation No. 1 is demonstrated after student's guess. The screensaver is pulled away and the lesson topic and challenge are announced. Presentation No. 2 The evaluation criteria are discussed. It is explained that students will have to colour one part of the drop of blood after they complete each task (Annex No. 2). Presentation No. 3 Students are sitting in groups. They are divided into sub-groups. Students have to learn what their numbers are. Main part – 35 minutes Presentation No. 4 The questions that are needed to be answered are shown on the screen. Expert method is applied. All the first numbers from each group have to gather to the table number 1, all the second numbers from each group have to gather to the table number 2 and etc. The part of the text is read and discussed there. (Annex No. 3). Then, students of each temporary group answer to the question assigned to the group (Annex No. 4). Later everyone comes back to their previous places and tells to the friends of the group what they have found out. Checking. Answers are being revealed on the board. Presentation No. 5 Students colour 1 part of the droplet after each task, which they have done correctly. (Annex No.5). If they answer the questions incorrectly then they have to colour only a half of the droplet. Teacher presses the bottom part of the drip and explains that all the students' droplets are poured in here.

They are asked to show in which part of the body the heart is. The students usually say that heart is on the left side. The ZygoteBody program is turned on (<https://zygotebody.com/>). It is explained that 1/3 of the heart is on the right side and 2/3 are on the left side. The heart, blood vessels are examined from all sides of the body.

The students colour the part of the droplet and teacher squeezes the drip above the already lit up red colour. “Blood” increases in the drip.

Presentation No. 6

Experiment

The students count their pulse. Then do 10 sit ups, jump and count pulse again. The pulse in resting state is compared with the state after a workload. They are asked why the pulse increased. It is clarified why it is increased.

Teacher shows the stethoscope to the students. They try to listen to their heart rate with this medical device.

Presentation No. 7

Students colour the part of the drop and the teacher continuous filling in the drip- presses over the already lit up red colour. “Blood” increases in the drip.

Presentation No. 8

The students are given the sequencing of actions. First numbers calculate the first sequencing of actions, second numbers - the second, etc. When work is carried out, students are asked to regroup to temporary groups. The first numbers gather around one table, the second numbers around the next one, etc. The students check if they all received the same answer. If the answer does not match, then they have to find a mistake. Later the representative from the first group comes to the board, blows up the number one balloon and checks if their answer is right. Other groups have to do the same. Then teacher explains that students were not just counting. Each number means something. The students are offered to find out MO prepared by QR Generator program in which the answer of their group is written and decode it. (Sheets with codes are hung up on the wall in the class, Annex Nr.6). Students use QR program on the tablets. By decoding the information students find out that there are approximately 5 litres of blood in human’s organism and the heart of a grown person weighs around 240 grams, etc.

Final part – 5 minutes

Presentation No. 9

The students colour the part of the droplet and teacher finishes filling in the drip. The problem question is given. Why do they need to fill in the drip? The teacher listens to the students’ thoughts, and then clicks over the blood droplets. The inscription appears that says that the drop of blood is a gift of life. The importance of donation is discussed about briefly. We click on the blood droplets and return back to the object of the lesson. The objective is read one more time and the students’ thoughts on the implementation of the object are listened. We click on the inscription “Circulatory system”. The presentation on reflection is opened. The students discuss and decide

	<p>if the lesson was useful in groups. The representative of each group clicks + or – and explains their choice.</p> <p>The teacher gives thanks to the students for the work they carried out and finishes the lesson.</p>
Evaluation/ types of assessment	The students are evaluated for every task that is carried out (each has an evaluation sheet – droplet, which was being colored).
Materials and tools	Presentations, evaluation sheets (droplets), heart rate sound recording, text for reading, sheet with questions, mathematical tasks prepared using Smart program, codes, tablets, stethoscope, codes created using QR Generator.
Timing and learning environment	45 minutes
Conclusion	Active learning methods (expert method, experiment, group work) and student motivating evaluation are used during lesson. The lesson includes many various activities. The teacher carries out the function of a consultant. It promotes students to communicate and search for a joint problem solving.
Contacts	Rolanda Miškūnienė, primary school teacher methodologist, rolandamiskuniene@yahoo.com, “Romuva“ progymnasium, Šiauliai, Lithuania

10. Duolingo



Title	Duolingo
Content/ Subject areas Target group:	Teaching of foreign languages Primary & Secondary Schools 7-18 years old, Individual and team work
Learning objectives / competences	Duolingo is an online platform for learning a language. It supports over than 20 languages. And best of all is fun and addictive.
Description of overall activity	<p>Duolingo for Schools is a platform created exclusively for educators, allowing them to access and keep track of each learner’s Duolingo progress. It allows teachers to track their students’ language learning in one place, and gives them special access to parental controls and Duolingo activities designed specifically for the classroom.</p> <ul style="list-style-type: none"> • Many teachers and even entire governments around the world already view Duolingo as the perfect blended learning companion for their classrooms. Duolingo lessons give each student personalized feedback and practice, preparing them to get the most out of classroom instruction. <p>Now teachers can track all their students in one place through our brand new dashboard.</p>
Description of the process and teaching/ learning strategies used	<p><u>Gamification is poured into every lesson.</u></p> <ul style="list-style-type: none"> • Read, Listen, Speak – each lesson includes a variety of speaking, listening, translation, and multiple choice challenges • In-Lesson Grading – Instantly see which answers you get correct. When you miss a challenge, we'll quickly show you how to improve • Streak Count – Duolingo motivates you to stay on track by recording how many days in a row you spend learning a language • Hearts – hearts keep your lessons alive! You lose them when you answer incorrectly. When you're out of hearts, start over and try again <p><u>Moreover, Duolingo is perfect for use in schools, tracking students’ progress!</u></p>
Evaluation/ types of assessment	Duolingo offers a wide variety of evaluation tools. Self-assessment, teacher statistics, and much more.
Materials and tools	Duolingo for iOS, Android, Windows phone and any web browser.
Timing and learning environment	Learn anytime, anywhere. Duolingo supports all available electronic platforms: Ios, Android, Windows phone any Web browser http://www.duolingo.com/
Conclusion	Duolingo is the perfect tool for foreign language teachers to attract students interest to learn a new language, by using their mobile devices or computers at any time of the day. Teachers can create virtual classes, assign lessons to the students and easily monitor their progress.
Contacts	Epimorfotiki Kilkis sm llc, epimorf@otenet.gr , https://www.epimorfotiki.gr/eu

11. The Virtual Architecture Project



Title	Traditional games
Content/ Subject areas Target group: age range and size of the group	Informal learning Primary & Secondary Schools 7-18 Group work
Learning objectives / competences	-Intergenerational learning and cooperation. -Cooperation between a) students and teachers b) students and students c) teachers and teachers d) students and parents d) teachers and parents -Exchange of knowledge and ideas -Acquaintance of knowledge and experience about history, art, music, culture e.tc.
Description of overall activity	Reviving the Traditional Games
Description of the process and teaching/ learning strategies used	Teachers and parents informed children about the old games, the few ways and means in entertainment. There were discussions between educational groups to bring together all members of the family and school. In the frame of the project implemented a tour in the places of Museum, in which students observed the exhibit objects and learned about objectives from different sectors of everyday life
Evaluation/ types of assessment	Use of questionnaires. Self-evaluation and discussion with teachers.
Materials and tools	Means and tools that were used for traditional games. E.g. sacks, marbles, handkerchiefs, traditional musical instruments, books etc. (Annexes)
Timing and learning environment	The method is part of the school's activities program.
Conclusion	It provides incentives for intergenerational learning. Young people learn the manners and customs of the country.
Contacts	Epimorfotiki Kilkis sm llc, epimorf@otenet.gr , https://www.epimorfotiki.gr/eu

12.Alice



Title

ALICE – LA VIE D'UNE JEUNE FRANÇAISE

Content/ Subject areas	Conversation – le rôle da la famille en France
Target group:	+15 years old A2.B1 (CPS)
Learning objectives / competences	This lesson plan has the objective to motivate students to reflect and communicate in French language about the young people's life. This lesson plan is also useful for developing ideas about people from different cultures living together, the inclusion of students from different cultures in the classroom, based on the class reflection and acceptance of the cultural differences. The purpose of this lesson it's also to draw up a possible future and the skills the young people develop to get what they think they are able to.
Description of overall activity	✓ Le professeur passe le video "ALICE" pour "Introduire le problème » https://www.youtube.com/watch?v=zOq2H_TcdAU <ol style="list-style-type: none">1. Students will be divided in 6 groups2. Each group will work one chapter of the dialogue3. The groups make prepare a synthesis of the dialogues and present It in a real situation (dramatization)4. Dialogues will be registered in the mobile phones.5. Students listen their work and make corrections.6. Finally each group registers their dialogue in the tablets and send to the teacher, by email.
Description of the process and teaching/ learning strategies used	<ol style="list-style-type: none">a) Firstly the teacher presents the dialogue, so that the students can listen and understand what`s happening.b) They will use mobile phones to translate any word that they don`t understand.c) The teacher analyses the dialogues with the students, based on a prezzi presentation:d) http://prezi.com/s8toflwshqek/?utm_campaign=share&utm_medium=copy&rc=ex0sharee) Than they have to spell the dialogues so that they can pronounce the words in a correct way.f) After that, the teacher presents a PowerPoint in prezzi, so that the text can be explored, including verbs and adjectives in a real situation.g) They will register the correct phrases in their tablets and will spell it.h) Finally, the students will make a synthesis of the story observed.
Evaluation/ types of assessment	Self-group evaluation and formative evaluation based on the Materials sent to the teacher by e.mail, by each group
Materials and tools	Internet, prezzi and you tube

Timing and learning environment	2 lessons (50 minutes)
Conclusion	Learning by doing in real situation. Students feel motivated when they have to talk and write in foreign language for something useful and creative. The ICT tools could help them because they could listen real people talking and not only the teacher. Finally the group work presentation was also creative because, before presenting the work for evaluation, they could listen themselves and understand what could be wrong and correct it in a formative way.
Contacts	CREF – Centro de Recursos Educativos e Formação, www.cref.pt

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