THE POWER OF DISCOVERY

2020-1-PL01-KA229-081775

THE TOOLBOX FOR TEACHERS

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ERASMUS+ PROJECT
2020-2022

The Power of Discovery

LATVIA

POLAND

GREECE

BULGARIA

Co-funded by the
Erasmus+ Programme
of the European Union

2020-1-PL01-KA229-081775

1. ERASMUS+

Erasmus+ is the European Union 's programme to support education, training, youth and sport in Europe for the period of 2014-2020. The aim of Erasmus+ is to contribute to the Europe 2020 strategy for growth, jobs, social equity and inclusion. The program is open to students, teachers, trainees, volunteers, leaders of youth organizations and people working in non-professional sports organizations. It is based on the assumption that investment in education and training is essential to grow people's potential.

Erasmus+ has opportunities for people of all ages, helping them develop and share knowledge and experience at institutions and organisations in different countries. Erasmus+ has also opportunities for a wide range of organisations, including universities, education and training providers, think-tanks, research organisations, and private businesses.

ec.europa.eu/programmes/erasmus-plus

2. THE PROJECT SUMMARY

The Power of Discovery is a 2-year project of 4 European schools from Poland, Latvia, Greece and Bulgaria with the common idea to combine inclusive and innovative education, the schools' and teachers' professional development with the STEAM topics. We intend to equip our students with STEAM knowledge as well as strengthen the qualifications of our teachers. Our strategic partnership aims to exchange experiences and know-how on teaching methods between European schools to produce an innovative 'The Power of Discovery Toolbox – the exchange of good practices'. As a result, we will give teachers our best methods to improve students' key competences. The project is designed for students aged 12-14. However, we will engage actively the whole school community into our activities. The project students will be involved in planning, evaluating, creating products, and disseminating.
The project has:
- activities for students that aim to support social inclusion, STEAM, key competences
- exchange of good practices among teachers
We plan 8 virtual mobilities between our students: one before every LTTA and one during every LTTA. During every LTTA we would like to take advantage of every school's

possibilities to organize STEAM workshops based on the institutions in the surrounding area, the schools cooperate on daily basis. Between LTTAs we will try out good practices related to STEAM topics proposed by the partner countries. We plan to make digital posters, a DISCOVERY film, and work on the project website, eTwinning, school blogs and social media to share our best results. We will also produce the project logo, banner, leaflets, newsletters, posters and videos about the schools and activities.

The Power of Discovery Festival to be organized at the end of the project at each school will be a place to exhibit the results we have produced. All the materials will be collected as Power of Discovery School Portfolio for future use. All the materials created in this project will have an open access so that everyone can consult them and use as a useful tool. The Toolbox will be divided into 5 parts. Four parts will present activities on the 4 project topics in details (subject, target group, objectives, materials needed, timing, description of activities, ways of evaluation). The fifth part will present the schools' policies on social inclusion.

The Power of Discovery Magazine will be the students' tangible product which will be the result of the workshops, project activities, trips, observation of STEAM in our life. It will be divided into five STEAM parts.

This project will be immersed into real-life context of the students' lives. It also offers practical solutions for innovative teaching and enjoyable learning. It will allow to raise the schools' profile as innovative institutions which include all students into STEAM activities, where teachers learn to teach better. We will cooperate with local partners from the STEAM industry too. The activities will be integrated into the curricula of our schools. We intend to inspire other teachers to be reflective professionals who appreciate lifelong learning.

3. THE PARTNER SCHOOLS

Sredno uchilishte "Vasil Levski", Kula – BULGARIA

Website: http://www.soukula.org/

1st Junior High School of Chrisoupolis – GREECE

Website: gym-chrys.kav.sch.gr

Gulbisa pamatskola – LATVIA

Website: www.gulbisaskola.lv/lv/

Szkoła Podstawowa nr 3 z Oddziałami Integracyjnymi im. Adama Mickiewicza – POLAND

Website: sp3lubsko.edupage.org

4. INCLUSION POLICY

Every child is unique in his or her way, differently abled or gifted but all the children are to be treated equally. Education is the right of every child in our partner countries. The principle of inclusive education requires schools to accommodate all learners, regardless of their physical and intellectual capacity, social conditions, emotional status, language skills and other shortcomings. Inclusion is seen as a universal human right, and its main aim is to give access and opportunity to all children to participate equally, confidently, and independently in everyday activities.

Inclusive education is not only accommodating the needs of children with disabilities in mainstream settings. Besides teaching children with SEN, our schools are safe, inclusive and supportive. Special attention is paid to supporting teachers, not only in terms of professional development, but also in taking care of establishing and maintaining a positive atmosphere. Parents are active participants in school life; they are seen as partners and they are welcomed at our schools. In addition, special attention is paid to procedures – for child safeguarding, for early identification of learning difficulties. These procedures are beneficial for the children and for the school staff.

Latvia

A special program for students with learning difficulties is implemented in the school in parallel with general primary education. For students who have special programs in lessons (Latvian, Maths, Russian) individual support is provided by a teacher's assistant. He follows the instructions of the subject teacher. These students use reminders in the learning process. Reminders are: time extension, teachers reading rules of the task. These reminders are recommended by the school psychologist, speech therapist and special pedagogue. the standard to be learned in the subjects is not made easier. At the end of the 9th grade, students of special program have the same state exams in Latvian, Mathematics and English.

Greece

The inclusion department operates as a separate department within the school and during school operations and has its own teacher who must have additional professional qualifications and training in Special Education. The students take some courses in this department (such as mathematics, language and literature) and the rest in the general education department.

Bulgaria

In the Bulgarian school , there is a personal development support team for every student with special educational needs (SEN). It includes a psychologist, resource teacher, speech therapist, class teacher and a parent. They have built two offices for resource support, where specialist work and additional support is provided to students with SEN. They have an appointed psychologist, two resource teachers, one of whom is also a speech therapist . In the school, there are students with milder form of SEN who study in classes with other students, only in the classes for additional support (which are in Bulgarian language and mathematics, as well as work with the psychologist) do they visit the resource offices. They also have students with a more serious form of SEN, with multiple disabilities, who are in an individual form of education. They have their own curricula for the subjects and they monitor their individual progress. They have separate lessons with subject teachers, they are not taught in classes. They are dealt with individually. These students also have additional support from a psychologist, a resource teacher and if necessary, a speech therapist.

Poland

We have a pedagogue, a psychologist, special educational needs pedagogue, a speech therapist and SEN teachers to support students with special needs. A students with autism is taken care by a SEN teacher or a guardian. Students with more serious disabilities are supported by a SEN teacher in almost every lesson. Special needs students attend lessons with their classmates and they have two extra rehabilitation classes with a SEN teacher. The school have two students who are unable to attend classes at school due to health problems , so the subject teachers have lessons with them in their houses. But the number of lessons is reduced. Teachers prepare an individual plan for every child with SEN which intend to organize the work with the child to support her or him. Students with serious forms of SEN are taught in a different kind of school where they learn how to adopt and cope with basic everyday activities.

5. GOOD PRACTICES

5.1. SCIENCE

Topic:	Science
Country:	Bulgaria
Name:	Iron - a lot of science in a small piece
Age:	14 and more
Duration:	1 hour
Objectives:	To show the connection between theory and practice. - Explain basic concepts such as: magnetic forces, physical and chemical properties, simple and complex substances, chemical bonding, decomposition and replacement, combustion, rust and rust; - To experimentally establish some of the physical and chemical properties of iron; - To determine whether the substance is pure or has impurities, calculating its density; - To construct a compass based on knowledge of the properties of iron; - To connect the areas of application of iron with its properties; - To acquire skills for conducting experiments and recording the obtained results; - Develop practical skills and abilities to construct; - To develop key skills such as creative thinking, critical analysis, teamwork, initiative, communication, mathematical literacy, collaboration, time management.
Equipment:	iron pieces, needle, styrofoam or cork, iron nails, permanent magnets, iron shavings, paper, scales, measuring cylinder, water bowl, iron wool, alcohol lamp.
Description:	The students are divided into four teams. Each team performs each task. Task 1. List as many iron objects as possible. Task 2. Experimentally check that the pieces of metal are made of pure iron. Make the necessary measurements and calculations. By calculations to find out whether the metals are pure or contain impurities. Task 3. Investigate the magnetic properties of iron - experimentally establish the magnetic properties of iron and find their application in practice. Task 4. Make a compass using the magnetic properties of iron. The students themselves construct a compass with handy materials with which to orient themselves in the directions. Task 5. Check if the iron can burn. Task 6. Study of the process of rusting of iron. Expression with an appropriate chemical equation. Conclusions about iron deficiencies. Task 7. Explore the easiest way to clean iron rust on the Internet. Task 8. students draw conclusions about the importance and disadvantages of iron.
Comments:	Through experience, students themselves gain knowledge not only about the properties of iron, but also learn how to perform a chemical experiment, how to apply the properties of iron in practice, construct a compass, make mathematical calculations and learn the technique of safe work in the science laboratory.

Subject:	Math, Biology
Country:	Latvia
Title:	The amount of salt and sugar in student's favorite snacks
Age:	12<
Duration:	1 hour
Objectives:	- Making research for recommended daily salt and sugar intake - Calculating the amount of salt and sugar in student's favorite snacks - Weighing the amount of salt and sugar obtained in the calculations - Setting up a display stand
Equipment:	Smart phone, tablet or a computer with an Internet connection - for finding the information about recommended daily intake of salt and sugar Labels and/or packaging of favorite foods and drinks (various kinds of sweetened beverages, chips, chocolates, candies) Salt, sugar, electronic scales, squeeze bags
Description:	Task overview: Comparison of the amount of salt and sugar added to popular snacks with the recommended daily salt and sugar intake 1) clarify the recommended daily sugar and salt intake 2) determine the amount of added sugar or salt in 100 g of student's favorite snacks, look for information on the product label 3) calculate the quantity of added sugar or salt for the relevant product, considering its weight or volume 4) weigh the recommended daily salt and sugar intake and the amount of sugar or salt added to each product in individual bags 5) compare the calculated amount of salt or sugar with the daily recommended salt and sugar intake, draw conclusions on healthy diet 6) Create a poster and introduce your research to other students 7) In addition, it is recommended to find information on the beneficial effects and risks of salt and sugar to the human organism
Comments:	The weighted amount of sugar and salt gives a better picture of the salt and sugar level from favorite products/snacks than plain calculations.

Group No. 3 – Salt and Sugar

Objective:
• To find out new facts about the emergence of salt and sugar and daily use

Tasks:
• Find out the recommended daily allowance of sugar and salt for a person
• Find out how many grams of sugar and salt are in the students' most popular snacks, create visual material
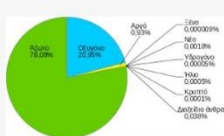
Conclusions:
• Excessive use of salt, causes obesity, as it prevents the elimination of bad substances from the body

Topic:	Science
Country:	Greece
Name:	Science is in the 'air'
Age:	13 – 14 year old students
Duration:	20 minutes per experiment
Objectives:	-Students learn about the 'air' that surrounds us -Does 'air' exists ? -Has the air mass and weight ? -the 'air' consists of….. -forces acted by the air
Equipment:	a pot , a plastic glass , a balloon , a tube , liquid paint , a scale and other instruments from the laboratory.
Description:	The students are in the school laboratory. We use the method of brainstorming to reach knowledge . We ask them the following questions : a. How can we understand the existence of the air? b. Does it have mass , weight…? c. Which are its components? d. Does it act forces ? We write all their answers on the board . Then , they do experiments under the supervision of the teacher and write the results of them on a piece of paper. Finally , they compare the answers they first gave and circle or complete the right ones.
Comments:	Everybody is eager to take part in the activity and when asked what they have learnt , we realize that our goal has been achieved.

The good practices
SCIENCE

The Greek good practice was about the air.
Does air have weight?
Is an empty glass really empty?
What does air contain?
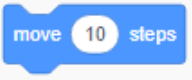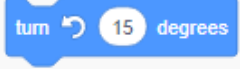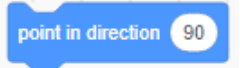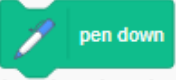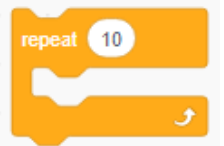
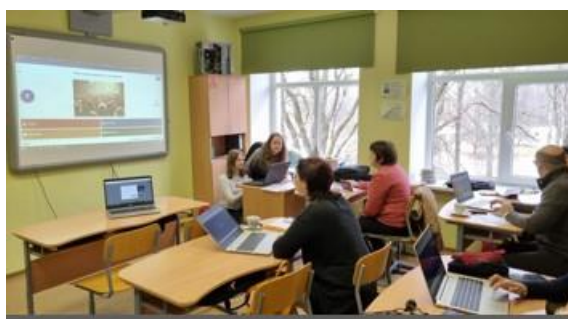| Topic:	Science
Country:	Poland
Name:	Nutrients in food
Age:	12 and more
Duration:	1 hour
Objectives:	-detecting fats, starch and vitamin C in food -putting knowledge into practice
Equipment:	detecting fats: sheets of white paper, some oil, a hammer, sunflower seeds, pumpkin seeds, boiled egg, etc. detecting starch: a glass, some water, potato flour, wheat flour, pasta, potato, apple, iodine, teaspoon, dropper, 5 plates. vitamin C : cutting board, a knife, some apple, a grater, orange, lemon, water, iodine, starch, 4 glasses.
Description:	1.Detecting fats. Research problem: What products contain fats? We put oil on a piece of paper - control test. Then crush each product on a different sheet. Leave the paper to dry. Next, compare the results with the control sample. **Detecting starch** Research problem: Do pasta, flour, potato and apple contain starch? Pour water into a glass and put some potato flour on a plate. Pour a few drops of iodine into the flour and water. The colour of water does not change, while the potato flour, under the influence of starch, iodine changes its colour from brown to purple-black. Put the other products on the separate plates and sprinkled them with iodine. **3. Detecting vitamin C.** Research problem: Is there vitamin C in fruit? Mix water and potato flour to make some starch gruel (pouring). Pour the same amount of water into each glass. Drip 10 drops of the starch gruel and 1 drop of iodine into each glass of water. Leave one glass as a control sample. Then squeeze the orange juice into the second glass and lemon juice to the third. Grate the apple and squeeze it into the fourth glass. Observe the colour.
Comments:	

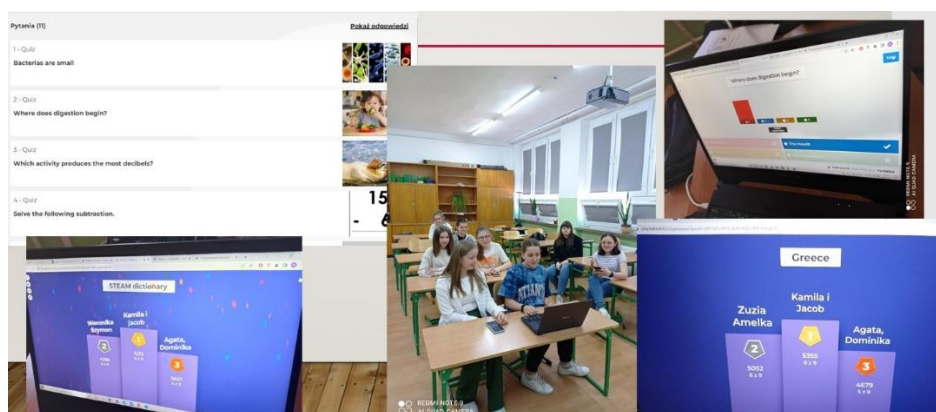# 5.2. TECHNOLOGY

Topic:	Technology
Country:	Bulgaria
Name:	Bottle Cap Decoration
Age:	Any age
Duration:	1-2 hours
Objectives:	- developing imagination - applying accuracy and precision in planning the activity - improving creativity - enriching general knowledge about traditional motives and symbols -
Equipment:	Vinyl canvas, various colours of plastic bottle caps, glue, or transparent silicone, scheme drawing or pattern of a national embroidery
Description:	- This is an idea that can be realized on different surfaces – wall, carboard, plexiglass etc. - Students will have to decide what folk emblem, national symbol or traditional figure will present as a decoration wall - Students are given various colours of bottle plastic caps which they will need to sort out and arrange in a particular order so that they can come out with the pattern wanted. - Each cap should be stuck up to the decorated surface with the use of glue or silicone
Comments:	Through experience, students are encouraged to recycle their waste and learn to reuse different redundant materials such as plastic bottle caps. The creation of these boards includes mathematics, art and specific technology. The hardest part is drawing the scoreboard and figure out what and how many caps are needed for the project. Samples:

Topic:	Technology
Country:	Greece
Name:	Scratch
Age:	Any
Duration:	From 2 minutes
Objectives:	-Learning programming -Learning and practicing of logic -Practice of creativity
Equipment:	-Computer, laptop, tablet or smartphone -Internet access -Create account (optional)
Description:	1. Open the website: https://scratch.mit.edu/ 2. Click the Create button on top of the screen 3. Click the globe button on top to select the preferred language. 4. View the related video and then close it. 5. Click the Add Extension button on the left bottom corner of the screen and add the Pen extension. 6. Start to create your programs.
Examples:	Square: https://scratch.mit.edu/projects/677044865/#editor Triangle: https://scratch.mit.edu/projects/677046492/#editor House: https://scratch.mit.edu/projects/677046492/#editor Circle: https://scratch.mit.edu/projects/677047637/#editor Star: https://scratch.mit.edu/projects/677048074/#editor Flower: https://scratch.mit.edu/projects/677048864/#editor
Needed blocks:	

when [flag] clicked	Runs the program when the green flag is clicked.
move 10 steps	Moves the sprite a certain number of steps (pixels).
turn ↻ 15 degrees	Turns the sprite clockwise the specified degrees.
turn ↺ 15 degrees	Turns the sprite counterclockwise the specified degrees.
point in direction 90	Makes the sprite face the specified direction.
erase all	Erases all pen marks and stamps from the stage.
pen down	Puts down the pen to start the drawing of the sprite.
pen up	Pulls up the pen to end the drawing of the sprite.
repeat 10	Blocks held inside this block will loop a given amount of times, before allowing the script to continue.

Topic:	Technology
Country:	Latvia
Name:	Kahoot
Age:	Any age
Duration:	Making quiz and playing it depends on how many questions you put
Objectives:	-Helps to remember interesting or important facts about the topic that it's about -Increases motivation to study -Helps to strenghten any subject it's made for
Equipment:	Phone, computer, laptop or a tablet Google account (will need to register) Access to Internet
Description	o Open https://kahoot.com/ o If you already have an account made in kahoot than sign in, if not than sign up o Press "create" o You can choose themes (winter, summer or standard) o Make your questions and choose time limit, correct answer and points on every question o When thy are done press "save" When you want to present it • Go to library and press "play" than "start", "classic mode"
Comments:	It's helpful and fun even if the kahoot are made in a class by students. We usually play them all too so we learn to appreciate our classmates work and learn important stuff.

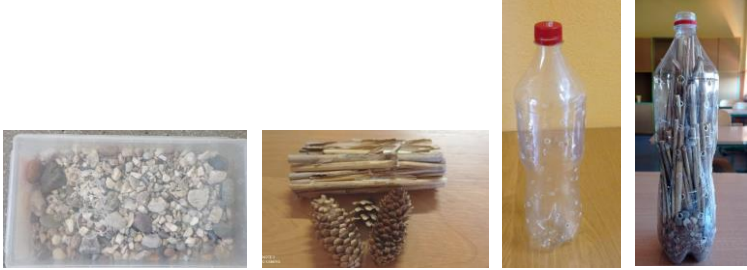|	
Topic:	Technology
Country:	Poland
Name:	Wordwall
Age:	Any age
Duration:	About 10 minutes to create one exercise and 5 minutes to play
Objectives:	-improving ICT skills -practising creativity -working on general knowledge
Equipment:	laptop or computer email address, login and password are required Internet access
Description	1.Open the website: https://wordwall.net/ 2.Make sure English is the chosen language 3. Read all the information on the page 4.Create an account – signed up 5. Read the information about this application –https://wordwall.net/features 6.Watch the short tutorial https://www.youtube.com/watch?v=GwYlo1W84Ko&ab_channel=EtacudeEnglishTeachers 7. Choose some exercises made by other teachers to check the possibilities, for example: https://wordwall.net/resource/16660336 https://wordwall.net/resource/27511433 https://wordwall.net/resource/30017126 8. Create your own activity. 9.You can use the activity online during the lesson or send it to your students.
Comments:	You can log in with your data, create up to 5 exercises for free and use all the exercises created by other teachers. You can switch a template using the same activity. It is possible to choose other languages, for example Polish.

5.3. ENGINEERING

Topic:	Engineering
Country:	Bulgaria
Name:	Water Dispenser
Age:	Any age
Duration:	1-2 hours
Objectives:	- developing imagination - improving creativity - enriching general knowledge in terms of engineering and technology - applying accuracy and precision in planning and doing the activities
Equipment:	For a hand-made beverage dispenser you will need: ● Empty Pringles can ● Empty Nutella jar ● Empty toothpaste tube ● drinking straw ● glue, or transparent silicone, pencil and scissors ● decorating paper
Description:	- This is an idea that can be realized with the help of different materials – carboard, empty can etc. - Students will have to decide on what size, shape or materials they are going to use in their project according to their own preferences - Students need to follow a particular order of measuring, cutting, fixing, and covering the sample so that they can come out with the wanted water dispenser - Do the following steps: empty Pringles can, empty toothpaste tube and cut the top, circle, measure and cut a hole onto the can, equal to the toothpaste cap, draw and cut a hole underneath the circle to the bottom of the Pringles can - - The dispenser surface may be decorated with coloured paper, stickers or paintings
Comments:	Through the experience, students are encouraged to recycle their waste and learn to reuse different redundant materials such as empty cans, jars or plastic bottle. They also develop their creativity, engineering abilities, handicraft skills and innovative thinking. This is a way to make best out of waste!

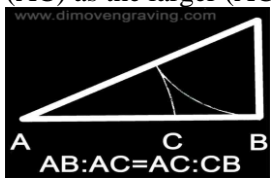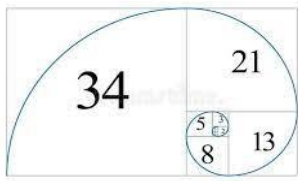|	
Subject:	Engineering
Country:	Greece
Title:	Solar house (energy conversion)
Age:	>12
Duration:	6 hours
Objective:	- gaining knowledge on STEAM subjects - applying science on everyday subjects - creating a construction - using artistic skills -learning how to cooperate
Equipment:	To make a solar house students had the chance to use any material they wanted. So, they used: • A piece of cardboard or wood • Glue, pencils, colours • A lamp, pieces of wire, solar panel • Materials to decorate their construction
Description:	The solar house can be realized with the use of different materials. Students decided about it. They also decided about the shape and dimensions of their construction. Some students couldn't find a solar panel and made a construction with a battery. Below there is the procedure they followed: Step1:We bought the wood and we started assembling the little house while we painted it Step2:we gathered all the materials we would need and started the construction Step3:we glued the lamp to the house since we first connected it to the battery cable Step4:We make sure that what we have created works and we glue the wires to the wooden base Step5:we decorate the imperfections to have a more beautiful result Step6: this is how we did our excellent work, with a lot of love. This work was done exclusively by us 4 students Zoe, Stella, Eleni, Dimitra
Comments:	The purpose of the creation was to learn how we can use solar energy, which is renewable energy source, and prevent environmental pollution. Through this work, students developed their creativity, and their engineering abilities.

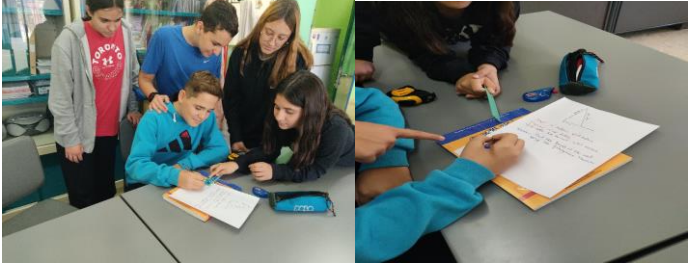|	
Subject:	Design and technology
Country:	Latvia
Title:	Birdhouse
Age:	>12
Duration:	1 hour
Objective:	- explore different types of birdhouses - understand measurement steps - make a scaled birdhouse mock-up - apply knowledge acquired in practice
Equipment:	Types of birdhouses: Internet sources for researching the variety of birdhouses, A4 sheet for sketches, pencil, eraser. Dimensions of birdhouses: pencil, eraser, A4 sheet for writing down the dimensions. Birdhouse model: pencil, eraser, ruler, L shaped ruler, fine saw, drills of various diameters, PVA B3 glue, small nails, various wood materials, clamps.
Description:	**Types of birdhouses** Study problem: What types of birdhouses are available in internet sources, what are their varieties and key differences? Task: Explore the diversity of birdhouses using Internet sources, choose the type of birdhouse for the implementation of scaled mock-up. **Dimensions of birdhouse** Study problem: Are all birdhouses the same size? Task: Create a sketch with appropriate dimensions of the chosen birdhouse model. **Birdhouse model** Study problem: What is mock-up and how to make it? Task: Choose an unplanned board, mark required dimensions on the material on the selected scale (e.g., M-1:2). Carry out the intended drills. Cut out the necessary parts using a fine saw. Glue the prepared parts (fine nails may be used to secure the parts). Make corrections to the visual imperfections of the mock-up if necessary.
Comments:	

Topic:	Engineering
Country:	Poland
Name:	Insect House
Age:	12 and more
Duration:	1 hour
Objectives:	- to explain the importance of insects in nature - to put theory into practise - to construct an insect house - to acquire skills for engineering - to develop practical skills and abilities to construct; - to develop key skills such as creative thinking, critical analysis, mathematical literacy, collaboration, time management.
Equipment:	- natural materials such as straw, dry grass, dry leaves, sticks and hollow plant stems -some cone (strobilus) - a plastic bottle - some wood, old wooden pallets, bamboo, reeds and drilled logs - some bricks, stones
Description:	1.This activity can be realized in different ways 2.Frst, students should learn about different insects 3.Later, you need to decide where the insect house will be placed 3.Here is an example: students are given plastic bottles with small holes. 4.They put inside some stones, dry grass, leaves, sticks, bamboo etc. For more ideas you can see the website: https://www.rspb.org.uk/get-involved/activities/nature-on-your-doorstep/garden-activities/build-a-bug-hotel/

5.4. MATHS

Topic:	Maths
Country:	Bulgaria
Name:	Golden Ratio
Age:	13 years old
Duration:	40 minutes
Objectives:	- ratio of two numbers - the ratio 1:1,618 - applying math into real life
Equipment:	- a notebook - pen - compass - line - calculator
Description:	The Golden Ratio is the division of a segment into two unequal parts, in which the sum of the two resulting segments (AB) is related to the larger (AC) as the larger (AC) is to the smaller (CB). An explanation of the Golden Ratio without giving the exact number. Students must measure with a compass and line the corresponding segments and calculate the corresponding ratios. For the last figure, they find the ratio of corresponding numbers. Students find that in different cases, the ratio is the same - 1.618. Students are given a homework assignment to research the application of the Golden Ratio.
Comments:	

Topic	Maths
Country:	Greece
Name	The Pythagorean Theorem in everyday life
Age	Any age
Duration	15minutes
Objectives	-Applying Maths in real life -Being able to combine knowledge with practical matters -Practising Maths -Enriching knowledge
Equipment	-a calculator -a piece of paper -a pen -a tape measure
Description	The aim is to find what the height of the wall is. We count the length of the ladder and the distance from the bottom of the ladder to the wall. We use this measurement and the Pythagorean theorem to find the solution.
Comments	Students can understand that through this Theorem they can solve problems of everyday life. For example, -if we want to take down heavy items from a block of flats, we must use a belt. Using the Theorem, we can find out the length of the belt we will need. -if we want to find the distance from the one side of a lake to the other, we can draw a rectangular triangle and knowing the two sides we can calculate the distance.

Topic:	Maths
Country:	Latvia
Name:	Practical test work "Geometric bodies"
Age:	<13
Duration:	20 minutes
Objectives:	Strengthening the knowledge gained in carrying out practical tasks.
Equipment:	Mathematics formula sheet for calculating volume and surface area for geometric bodies, measuring tape, ruler, calculator, smartphone for taking photos, pen, white paper.
Description:	It takes about 5.6 m^3 or 3.5 tons of wood to make about 1 ton of office paper. Go outside, make appropriate measurements, and calculate how many m^3 of wood would be obtained from a 3 meter long log (assume that the diameter is constant along the entire length of the log), if it is cut from a tree growing in the vicinity of your house (spruce, birch, larch, aspen). Calculate how many *Inacopia elite* (see picture) A4 paper sheets sized 210x297 mm can be made from this log? Send measurements, the progress of the calculations and a photograph of the measured tree to the teacher.
Comments:	Student's comment about the task: To complete task, I had a problem to determinate precise ratio for calculating number of *Inacopia elite* 4A pages that could be made from chosen tree, because I was careless and not investigating the photo attached to the task. Addressing such tasks was a pleasure and created an even more accurate understanding of the theory's need to deal with practical problems.

The good practices in Maths

The Latvian good practice

It takes about 5.6 m^3 or 3.5 tons of wood to make about 1 ton of office paper. We went to the school yard and took measurements.

Tree height=1,7m
Tree perimeter=1,8m
We have to find the radius P=2πr
r=0,28m

Base area A=πr² A=0,24m2
Volume V=A h V=0,4m3
We found that we can take 250Kg of wood
Then we calculate that the mass of the paper is 71,5Kg
If a piece of paper weights 4,7g we can take about 15000 sheets of A4.

Topic:	Maths
Country:	Poland
Name:	Trail mix
Age:	12 years old
Duration:	10 minutes
Objectives:	- awareness of diet, good and bad snacks - improving math calculations - applying maths into real life
Equipment:	- a notebook - pen
Description:	The snack 'Trail mix', in Poland called "Student mix' includes: 25% peanuts, 30% golden raisins, 15% sultana raisins, 10% cashews, 8% cranberries. The rest are almonds. a) calculate the weight of the almonds in a 250 gram packet of the mixture. b) are there more raisins or nuts in the student mix?
Comments:	

6.PARTICIPATION IN MOBILITIES

We organized 4 LTTAs in our partner countries and here are the MINUTES

The first Learning, Teaching, Training Activities at Gulbisa pamatskola, Gulbitis, Jaungulbenes pagasts, Latvia from 4th to 8th April 2022

Participating schools:
Bulgaria, Sredno uchilishte "Vasil Levski", Kula
Greece, 1st Junior High School of Chrisoupolis
Latvia, Gulbisa pamatskola, Gulbitis
Poland, Szkoła Podstawowa nr 3 z Oddziałami Integracyjnymi im. Adama Mickiewicza, Lubsko

<div align="center">

Coordinators' Meeting
Minute
</div>

1.Welcome ceremony at Gulbitis school.

3.The second topic TECHNOLOGY will start after this meeting and it will be evaluated isa pamatskola with the presence of the headmistress, the Staff and the students. Introduction of participants.

2.Presenting the work done at every school before the 1stLTTA – evaluation of the good practices on the fir16 to 20 May 2022

9. The project coordinator will make questionnaires

during the 2nd LTTA in Greece.

4. Each country needs to prepare a good practice on Technology by 15th April 2022

5. The project website will be updated.

6.Dissemination should continue in each partner school. The school coordinators are asked to post information about the local dissemination on eTwinning.

7.The mobility Tool should be updated after the 1stLTTA in Latvia

8.The second LTTA will take place in Greece from

for teachers and students after each mobility. The forms will be filled in by the participants after every LTTA within one week after coming back.

10. Activities for teachers

- class attendance (Physics with 8th grade, Science with 4th or 6th grade)

- technology lecture

- art lecture

- math lecture

11. Activities for students

- practical work (experiments) in STEAM subjects

- technology workshops (working in groups)

- Engineering workshops: various engineering activities, experiments, small practical projects

- work on the STEAM inspired pieces of art, creative workshop (make your own bag, working with a tree)

- STEAM tests

12. Educational trips:

- tour in Gulbene historical station depot.

- trip to Stameriena with narrow-gauge railway

- tour and session at Stameriena castle

- visit of the educational and interactive "Railway and Steam" center in Gulbene

- outdoor learning activities – using math in real life

- expedition in the pine forest of Latvia

13. Visiting local businesses with an automated production process

14. Virtual mobility: the participating students with their colleagues at their schools in Poland, Greece, Bulgaria

15. Evaluation after every day and the final evaluation of the 1st LTTA

16. Team building activities. Physical activities

17. Certificate ceremony.

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The second Learning, Teaching, Training Activities at 1st Junior High School of Chrisoupolis in Greece from 16th to 20th May 2022

Participating schools:
Bulgaria, Sredno uchilishte "Vasil Levski", Kula
Greece, 1st Junior High School of Chrisoupolis
Latvia, Gulbisa pamatskola, Gulbitis
Poland, Szkoła Podstawowa nr 3 z Oddziałami Integracyjnymi im. Adama Mickiewicza, Lubsko

Coordinators' Meeting
Minute

1.Welcome ceremony at 1st Junior High School of Chrisoupolis**.** Introduction of participants.

2. Presentations of pictures of the 1st LTTA and the work done at every school after that.

3.Evaluation of the good practices on the second topic "TECHNOLOGY".

4.The second topic ENGINEERING will start after this meeting and it will be evaluated during the 3rd LTTA in Bulgaria.

5. Each country needs to prepare a good practice on ENGINEERING by 30th May 2022

6. The project website will be updated after the 2nd LTTA.

7.Dissemination should continue in every school. The school coordinators are asked to post information about the local dissemination on eTwinning.

8.The mobility Tool should be updated after the 2nd LTTA in Greece.

9.The 3rd LTTA will take place in Bulgaria from 26th September to 1st November 2022.

10. The project coordinator will send the questionnaires for teachers and students after this mobility. The forms should be filled in by the participants within one week after coming back.

11. Activities for teachers:

- class attendance of Science lessons

- making traditional Greek figures

- technology class-workshops

12. Activities for students:

- science activities (experiments)

- Engineering-Technology workshops

- Maths workshops

- Physical activities

- modern and traditional dances in the schoolyard

- team building activities

- in Thessaloniki :

visit to the Science center and technology museum: watching the 3D film"From Earth to the universe"

Cosmotheatre, watching the film "Dream Big-the wonders of engineering 3D"

visiting the Technopark

- visit to the Technical University in Xanthi

- learning activities at the Centre of Environmental Education of Filippi

13.Educational trips:

- Walk around Chrysoupolis. Visit to the local museum learning about the history of the town

- Walk through the centre of Thessaloniki

- Walking through the old town of Xanthi

-Expedition of the banks of the river Nestos

- Visiting the ancient theater of Filippi

- Visiting the old town of Kavala

14. Virtual mobility: the participating students talked to their colleagues in Poland, Greece, Bulgaria to inform them about their Erasmus+ experience.

15. Evaluation after every day and the final evaluation of the 2nd LTTA

16. Certificate ceremony.

**The third Learning, Teaching, Training Activities
at Sredno uchilishte "Vasil Levski", Kula, Bulgaria
from 26th to 30th September 2022**

Participating schools:

Bulgaria, Sredno uchilishte "Vasil Levski", Kula

Greece, 1st Junior High School of Chrisoupolis

Latvia, Gulbisa pamatskola, Gulbitis

Poland, Szkoła Podstawowa nr 3 z Oddziałami Integracyjnymi im. Adama Mickiewicza, Lubsko

Coordinators' Meeting

Minute

1. Welcome ceremony. Introduction of participants. Presentations about the work done at every school before the LTTA project**.**

2. The Magazine for students prepared by the Greek students was presented.

3. Evaluation of the good practices on the second topic "ENGINEERING".

4. The fourth topic Maths will start after this meeting and it will be evaluated during the 4th LTTA in Poland.

5. Each country needs to prepare a good practice on Maths by 5th October 2022

6. The project website will be updated after the 3rd LTTA.

7. Dissemination should continue in every school. The school coordinators are asked to post information about the local dissemination on eTwinning.

8. The mobility Tool should be updated after the 3rd LTTA in Bulgaria

9. The 4th LTTA will take place in Poland from 17th September to 21st October 2022.

10. The project coordinator will send the questionnaires for teachers and students after this mobility. The forms should be filled in by the participants within one week after coming back.

11. Activities for teachers:

- class attendance of Science lessons

- Vector Graphic Programming Vector Graphic Programming

12. Activities for students:

- practical work (experiments) in STEAM subjects

- STEAM workshops: various engineering activities, experiments, small practical projects, art activities

- work on the STEAM

- Maths workshops

- Visiting local businesses with an automated production process

- team building activities

- BE ACTIVE (competitive games and sport activities)

- in Vidin:

- 3D Cinema - Educational Movie on Engineering

- Outdoor workshop (embroidery on the entire surface)

13. Educational trips:

- walk around Kula

- visit of the local Museum, learning about the history of town

- visit of Rakovishki Monastery

- visit of Magura Cave, inspiring the amazing stone age drawings and prehistorical facts about the cave

- expedition of Belogradchik Rocks

- visit of historical places and architecture sightseeing of Vidin: Baba Vida Castle, Krastatata Kazarma Museum, Epigraphic Center etc.

14. Virtual mobility: the participating students talked to their colleagues in Poland, Greece, Latvia to inform them about their Erasmus+ experience.

15. Discussing the final product: The magazine for teachers.

16. Coordinators meeting: previous activities evaluation, planning next steps

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The third Learning, Teaching, Training Activities
at Szkoła Podstawowa nr 3 z Oddziałami Integracyjnymi im. Adama Mickiewicza,
Lubsko, Poland from 16th to 21st October 2022

Participating schools:
Bulgaria, Sredno uchilishte "Vasil Levski", Kula
Greece, 1st Junior High School of Chrisoupolis
Latvia, Gulbisa pamatskola, Gulbitis
Poland, Szkoła Podstawowa nr 3 z Oddziałami Integracyjnymi im. Adama Mickiewicza,
Lubsko

Coordinators' Meeting
Minute

1. Welcome ceremony. Introduction of participants. Presentations about the work done at

every school before the LTTA project.

2. The Magazine for students prepared by the Bulgarian students was presented.

3.Evaluation of the good practices on the second topic "MATHS".

4. The project website will be updated after the 4th LTTA.

5. Dissemination should continue in every school. The school coordinators are asked to post

information about the local dissemination on eTwinning.

6.The mobility Tool should be updated after the 4th LTTA in Poland

7. Each country needs to sum up the project at school

8. Each country needs to work on the final report till the end of December

9. The project coordinator will send the questionnaires for teachers and students after this

mobility. The forms should be filled in by the participants within one week after coming back.

10.The end of project questionnaires will be filled in

11. The Polish students will work on the 4th issue of the Magazine for students

12.The Polish coordinator will prepare the final version of the Magazine for Teachers

12. Activities for students:

- practical work (experiments) in STEAM subjects

- STEAM workshops: various engineering activities, experiments, small practical projects,

- art activities

- Maths workshops

- visiting local STEAM institutions: Kepler Science Center in Zielona Góra: Educational Movie, Science workshops and interactive activities

- scientists from partner countries: searching for information, making a poster and presenting

- team building activities

- games and sport activities

13.Educational trips:

- walk around Lubsko learning about the history of town

- visit of the local Museum,

14. Virtual mobility: the participating students talked to their colleagues in Bulgaria, Greece, Latvia to inform them about their Erasmus+ experience.

15. Discussing the final product: The magazine for teachers.

16. Coordinators meeting: project activities evaluation, the final report, the final questionnaires, SWOT analyses

Conclusion

This has been an interesting journey to search for the STEAM methods. We have learnt from each other, shared teaching methods and our inclusion activities. The discussions during the project work were inspiring and helped us to reflect on our own teaching. We feel that it was necessary to meet face to face to know each other, our schools, countries, inclusion policies and educational systems in each country. We found differences, similarities, shared values and passions. We proved that the teaching methods can be adopted according to the needs of a school. What is more, the whole school community became integrated around The Power of Discovery and we also involved local institutions into our project activities. We can strongly recommend this type of project to other European schools.

The results of the project you can find on the project website:

https://the-power-of-discovery.jimdofree.com/

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Thank you for your fruitful collaboration, dear partners!