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MAKER EDUCATION

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Project Title: Maker Education

Main objective of the project: Exchange of Good Practices
Project Start Date: 01-09-2019
Project End Date: 31-08-2022
Project Total Duration: 36 months
Applicant Organisation: Colegiul Tehnic „Gheorghe Cartianu", România
Website: https://makereducation6.weebly.com/

Partner Organisations:

- **SABA, The Republic of North Macedonia, partner**
- **Insignare - Associacao De Ensino E Formacao, Portugal, partner**
- **Erbakir Fen Lisesi, Turkey, partner**
- **Iis Alessandro Volta, Italy, partner**
- **Centrum Ksztalcenia Praktycznego w Jastrzebiu-Zdroju, Poland, partner**

I.C6.Craft Education

1.Short-term exchanges of groups of pupils

4th-8thApril 2022

Project title: Maker Education

Project reference number: 2019-1-RO01-KA229-063086_5

School: Centrum Ksztalcenia Praktycznego w Jastrzebiu- Zdroju, Poland

FIRST DAY – 04/04/2022

April 4, 2022 - Discover Erasmus! Discover the Power of Music!

A new exchange of experience, a new Erasmus mobility has begun! We set off again with our students. Even though the road was long and tiring, with many adventures, we arrived safely at our destination.

The agenda of the day included:

-presentation of schools and partner countries in Romania, Italy, Portugal, Poland, Northern Macedonia and Turkey;

-music festival;

-visiting the city;

-a short walk through Zdrój Park, the historic building of the Dąbrówka Hotel


http://ckpjastrzebie.pl/maker-education/

https://makereducation6.weebly.com/c6craft-education.html

https://kompleksdabrowka.pl/

SECOND DAY - 05/04/2022

April 5, 2022 - Discover the Polish heritage in the Unesco World Heritage

Travel in the depths of the earth, at the "Wieliczka" Salt Mine, Mine of Mysteries.

Also known as the Polish Underground Salt Cathedral, the Wieliczka Mine, one of the most famous salt mines in the world, has been a UNESCO World Heritage Site since 1978. The Salt Mine resembles an underground kingdom with 287 linear kilometers of galleries and 2,350 of the chamber dug to a depth of 327 meters.

An extraordinary place - hidden from the world, full of secrets and legends, a magical land! In the salt mine I rediscovered ancient processes of salt exploitation, extraction and recovery!

Walk through Krakow, the former Royal Capital of Poland, a city gem with a special charm. Krakow was one of the most important cities in Europe, once the residence of Polish kings, the city being named after the legendary Prince Krak is today considered the cultural heart of Poland.

Also in 1978, the Old Historic Center of Krakow has been inscribed on the Unesco World Heritage List!

Learning from the past, we project our future!


https://www.wieliczka-saltmine.com/

https://www.youtube.com/watch?v=EW-CttoP2v0

https://dream-experiences.com/cracovia/

https://blogpolonistica.wordpress.com/2016/11/11/descopera-polonia-mostenirea-polona-in-patrimoniul-mondial-unesco/

THIRD DAY - 06/04/2022

April 6, 2022 - Technical Day

The students' activity took place in the mechatronics laboratory of the school. Students participated in classes, simulated and developed pneumatic and electrical applications.

Teachers attended classes in the field of information and communication technology, watched some of the specialized work done by students in the field of IT, observed the practical realization of objects with the help of 3D printers.

A fruitful day, a day in which we all, students and teachers, improved our professional skills, communication and teamwork!

FOURTH DAY - 07/04/2022

April 7, 2022 - Science Day - The job is the gold bracelet!

Today our students spent hours in the mechanics laboratories of the high school, used the numerically controlled machines, simulated and designed various objects.

We focused on the development and evaluation of skills specific to the profession of numerically controlled machine operator technician with a special emphasis on practical applications:

-Professional development;

-Performing teamwork;

-Planning your own activity;

-Ensuring the operation of numerically controlled machine tools;

-Control of the parts executed on machine tools with numerical control;

-Programming of the machine tool with numerical control - establishing the origin of the coordinates;

-Study of the execution documentation.

Knowing a trade leads to getting a job, graduating from high school, developing a career.

FIFTH DAY - 08/04/2022

April 8, 2022 - Day of non-formal education

The last day of mobility included non-formal education activities. Students developed critical thinking, attention to detail, problem solving, focused attention, strategic thinking with the help of logic and insight games.

Chess was one of the favorite games of the students. Chess involves more than knowing the rules while stimulating creativity.

The transfer of skills in everyday life has created bridges for personal development for students.

Music was another highlight of the day, we all listened to the special performances of our students, we discovered their musical talents.

Teachers and students were rewarded for their work by handing out certificates of participation.

Time has passed, this exchange of experience being the last of our project.

Lasting friendships between students and teachers in partner schools have been forged. We all left with the hope that we will meet again, that we will collaborate in other Erasmus projects.

The Easter Fair organized in the city was another special event, a pleasant surprise for all of us. I discovered the offer of local culinary art, ex position of folk craftsmen, plastic artists, who made handmade products and handicrafts, especially specific to the Easter holidays: eggs in feathers, floral arrangements, decorative objects and handicrafts.

2.CNC machine

Carmen-Simona Stanciu, teacher

Technical College "Gheorghe Cartianu" Piatra-Neamţ

Highly used worldwide for the advantages they offer, **numerically controlled machine tools** are instruments that allow the precision realization of parts of very varied shapes and sizes, one of the fields in which it is used since its appearance being that of aeronautics (construction of components for airplanes and aircrafts).

What is, in fact, a **CNC machine**?

The CNC machine tool consists of two components: the machine itself and the numerical control equipment (CNC).

The concept of numerical command has an ancient history, appearing in MIT, USA, in the early '50s. The numerical control of such an equipment is the program control in which the system works entirely or partially with information in numerical form.

Initially, for such equipment were used perforated cards to give a specific command but with the advent of micro-controls and computers the situation has changed.

The evolution of these machines has also translated into their performance, both in terms of working time and in terms of productivity and efficiency.

The CNC equipment of these machine tools is available in a very wide range, being designed according to the principle of numerical positioning or contouring controls.

Among them, the most common and used machines are: engraving machine, lathes, milling machines, grinding machines, drilling machines, wire EDM machines, **CNC** control punching centers, chemical and electrical erosion processing machines, plastic injecting machines or plasma cutting machines. A machine-tool executes the predeterminable movements in relation to the specific axes of each one, which the program takes into account.

In the numerical control was introduced the notion of axis as a linear displacement or a rotation. These movements are executed by the moving organs - or parts - of the machine. In general, such a machine has 3 translation axes (X,Y, Z) and 3 axis rotation (A, B,C) around the first 3. To these 6 can be added others, which effectively depend on the device itself. In practice, however, most such machines have only 2 or 3 axes, and obtaining the movements is done either by moving the part or by moving the tool.

Among the advantages of such a **CNC** tool machine we mention the disappearance of the need to use templates or models that can work very hard; much easier and faster modification of numerical programs compared to rigid programs fixed by cams, models, templates; the possibility to adjust in time at least a certain number of identical machine tools, to process the same piece simultaneously.

Siteography:

1. https//internet-si-tehnologie/tehnologie/p-totul-despre-masinile-unelete-cu-comanda-numerica-cnc-1416625;
2. https://www.reven.ro/masini-cu-comanda-numerica-cnc-romania/;
3. https://emasiniunelte.ro/blog/masini-unelte-cu-comanda-numerica-avantaje-utilizare

3.Pneumatic equipment

Carmen-Simona Stanciu, teacher

Technical College "Gheorghe Cartianu" Piatra-Neamt

The term "pneumatic equipment" is used to refer to all the control, regulation and control components in the structure of installations that use compressed air as a carrier of energy and information. These components are used both on the control side and on the drive side, and ensure the operation of the installation in accordance with the established work schedule and the parameters necessary for the technological process served.

In the drive part, the pneumatic devices are located between the power source and the pneumatic motors and control or regulate the two parameters that define the pneumatic power supplied to the motors, respectively the pressure and the air flow. The devices that perform these functions are: the pressure regulator, the main distributor and the track throttles.

The notion of adjustment is used in the sense of changing a quantity, called regulated quantity or output according to a certain law. Manual adjustment involves changing the adjusted size by manually or indirectly actuating the adjusting body. In contrast, automatic adjustment consists in maintaining constant (regardless of the disturbances that occur) or changing the output size according to a predetermined law, without the intervention of the operator.

The notion of control is used in the sense of maintaining a parameter between certain limits (without controlling its instantaneous value) or in the control of the direction and direction of flow on certain circuits (the function of directing the flow). Based on the basic function they perform in the system, pneumatic devices can be grouped into the following main categories:

1.directional-distributor control devices and sense valves;

2.pressure control and regulation devices - pressure regulators, pressure valves;

3.flow control devices - adjustable heaters (drills);

4.devices for automatic regulation of flow or pressure - proportional devices, servo elements.

Pneumatic equipment - advantages in use

The operating principles of pneumatic and hydraulic transmissions are represented by the use of gases and liquids, respectively, for the transfer of energy between inlet and outlet, gases and liquids that are subjected to a double energy transformation. In the first phase, the fluid receives mechanical energy, increasing its specific energy in a pneumatic or hydraulic working machine, later, the fluid transfers the acquired energy to a pneumatic or hydraulic motor.

In a pneumatic transmission, a compressor driven by the force machine supplies gas to a pneumatic motor that starts the working machine. The flexibility offered by the pneumatic equipment is one of the most important advantages. This flexibility lies in the fact that the parameters of the mechanical energy provided by these transmissions can be adjusted continuously, within wide limits, by means of simple means.

Pneumatic equipment, more precisely, pneumatic drives have found applications in extremely varied fields of industry and technology, in fulfilling a wide variety of purposes.

The widespread use of pneumatic drives is due to their advantages:

• pneumatic drives can be very fast. In the case of the use of pneumatic equipment, the duration of operations is reduced due to the fact that they have high working and feed rates, as well as low moments of inertia;

• pneumatic drives provide high productivity. Automatic cycle operation of pneumatic systems is possible due to the use of logic elements or electropneumatic converters;

• the pneumatic equipment has a small size. The possibility of placing the pneumatic elements in any position simplifies the design of the machines, which allows to reduce their size;

• easy to use. The forces, torques and speeds of pneumatic motors can be easily adjusted using simple devices;

• safety in use. Overloading the pneumatic motors does not cause a risk of damage, and the risk of injury at the time of use is reduced;

• reliability and flexibility in use. Pneumatic transmissions allow starts, frequent stops and sudden changes of direction, without danger of damage;

• pneumatic equipment uses affordable fuels. Compressed air - the fuel used by pneumatic drives - is relatively easy to produce and transport through networks, is not polluting and is not flammable;

• maintenance of pneumatic installations is easy if qualified personnel are available.

Siteography:

http://www.smcromania.ro;

http://www.smctraining.com;

https://www.cerob.ro/noutati/aparatura-pneumatica-avantaje-in-utilizare-22

4.Divisors of zero in a ring

Daniela Pavăl, teacher

Technical College "Gheorghe Cartianu" Piatra-Neamt

Definition. Be $(A,*,\circ)$ a ring and 0 the null element of the ring. We say that *the ring has divisors of zero*, if there are $x, y \in A$, cu $x \neq 0$, $y \neq 0$ so as $x \circ y = 0$. In this case , x and y are called *divisors of zero* in ring A.

Examples

1.The ring (Z_12 , + , ·) has divisors of zero . The divisors of zero are $\hat{2}, \hat{3}, \hat{4}, \hat{6}$, because $\hat{2} \cdot \hat{6} = \hat{0}$ și $\hat{3} \cdot \hat{4} = \hat{0}$.

2.The ring ($\mathcal{M}_3(\mathbb{R})$, + , ·) has divisors of zero.

Matrices $A = \begin{pmatrix} a & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$ and $B = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & b \end{pmatrix}$, a ,b$\in \mathbb{R}^*$have the product A · B = O_3, so they are divisors of zero.

Definition. A nonzero A ring, commutative and without divisors of zero is defined as an *integrity domain or an integral ring*.

Example. Rings (Z, +,.), (Q, +,.), (R, +,.), (C, +,.) are domains of integrity.

If ***n*** is a compound natural number, then the ring ($\mathbb{Z}_n$, + , ·) is not a domain of integrity.

Theorem. Be $(A,+,\cdot)$an intact ring. For any elements $a, x, y \in A$, cu $a \neq 0$, with $a \neq 0$, we have the equivalences **1)** $a \cdot x = a \cdot y \Leftrightarrow x = y$; **2)** $x \cdot a = y \cdot a \Leftrightarrow x = y$; **3)** x·y=0⇔ x=0 sau y=0 .

Theorem.A body K does not admit divisors of zero.

Theorem. If ring A is nonzero, then any invertible element in A is not a divisor of zero.

Demonstration. Suppose that x ∈ A is an invertible element in A and is a divisor of zero. Then there is $y \neq 0$ so as $x \cdot y = 0$. If $x^{-1}$is the inverse of x, then we have $x^{-1} \cdot (x \cdot y) = (x^{-1} \cdot x) \cdot y = 1 \cdot y = y$. Since $x \cdot y = 0$ results in y = 0, contradiction.

●In particular, 1 being an invertible element, is not a divisor of zero.

Theorem

Be n∈ $\mathbb{N}^*$ and $\hat{x} \in \mathbb{Z}_n$. The class $\hat{x}$ is a divisor of zero if and only if (x , n) = d > 1.

Examples.1.In $\mathbb{Z}_9$:(3 , 9) =3 , (6 , 9) =3 $\Longrightarrow$ the divisors of zero in $\mathbb{Z}_9$ are $\hat{3}$ *and* $\hat{6}$.

2.I n $\mathbb{Z}_{12}$:(2 , 12) =2 , (3 , 12) =3 , (4 , 12) =4 , (6 , 12) =6 ,(8 , 12) =4 , (9 , 12) =3 ,

(10 , 12) =2 $\Longrightarrow$d the divisors of zero in $\mathbb{Z}_{12}$ are $\hat{2}$, $\hat{3}$, $\hat{4}$, $\hat{6}$, $\hat{8}$, $\hat{9}$, $\widehat{10}$.

Exercises. Solve the equations:

a)$\hat{4}x^2 + \hat{2}x + \hat{1} = \hat{0}$, in $\mathbb{Z}_7$; b)$x^2 + \hat{2}x + \hat{9} = \hat{0}$, in $\mathbb{Z}_{12}$.

Solution.a) The ring$(\mathbb{Z}_7, +, \cdot)$ has no divisors of $\hat{0}$.$\hat{4}x^2 - \hat{5}x + \hat{1} = \hat{0} \Leftrightarrow$

$(\hat{4}x - \hat{1}) \cdot (x - \hat{1}) = \hat{0} \Leftrightarrow \hat{4}x - \hat{1} = \hat{0}$ or $\hat{4}x - \hat{1} = \hat{0} \Leftrightarrow x \in \{\hat{1}, \hat{2}\}$.

b) The ring $\mathbb{Z}_{12}$ has divisors of zero. These are $\hat{2}$, $\hat{3}$, $\hat{4}$, $\hat{6}$, $\hat{8}$, $\hat{9}$, $\widehat{10}$.

$x^2 + \hat{2}x + \hat{9} = \hat{0}$, in $\mathbb{Z}_{12} \Leftrightarrow x^2 - \widehat{10}x + \hat{9} = \hat{0} \Leftrightarrow (x - \hat{1}) \cdot (x - \hat{9}) = 0 \Leftrightarrow$

$x - \hat{1} = \hat{0}$ or $x - \hat{9} = \hat{0}$ or $\begin{cases} x - \hat{1} = \hat{2} \\ x - \hat{9} = 6 \end{cases}$ or $\begin{cases} x - \hat{1} = \hat{3} \\ x - \hat{9} = \hat{4} \end{cases}$ or $\begin{cases} x - \hat{1} = \hat{8} \\ x - \hat{9} = \hat{3} \end{cases}$ or $\begin{cases} x - \hat{1} = \hat{9} \\ x - \hat{9} = \hat{4} \end{cases}$ or

$\begin{cases} x - \hat{1} = \hat{6} \\ x - \hat{9} = \hat{2} \end{cases}$ or $\begin{cases} x - \hat{1} = \hat{4} \\ x - \hat{9} = \hat{3} \end{cases}$ or $\begin{cases} x - \hat{1} = \hat{3} \\ x - \hat{9} = \hat{8} \end{cases}$ or $\begin{cases} x - \hat{1} = \hat{4} \\ x - \hat{9} = \hat{9} \end{cases}$ or

or $\begin{cases} x - \hat{1} = \hat{6} \\ x - \hat{9} = \widehat{10} \end{cases}$ or $\begin{cases} x - \hat{1} = \widehat{10} \\ x - \hat{9} = \hat{6} \end{cases} \Leftrightarrow x \in \{\hat{1}, \hat{3}, \hat{7}, \hat{9}\}$.

2.Be $M = \left\{ \begin{pmatrix} a & 0 & b \\ 0 & 0 & 0 \\ b & 0 & a \end{pmatrix} \mid a, b \in R \right\}$. Show that the commutative ring (M ,+,·) has divisors of zero.

Solution. Be $A = \begin{pmatrix} a & 0 & b \\ 0 & 0 & 0 \\ b & 0 & a \end{pmatrix}$ și $B = \begin{pmatrix} x & 0 & y \\ 0 & 0 & 0 \\ y & 0 & x \end{pmatrix}$,

$A\cdot B = O_3 \Leftrightarrow \begin{pmatrix} ax+by & 0 & ay+bx \\ 0 & 0 & 0 \\ ay+bx & 0 & ax+by \end{pmatrix} = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix} \Leftrightarrow \begin{cases} ax+by=0 \\ ay+bx=0 \end{cases}$

$$\Delta = \begin{vmatrix} a & b \\ b & a \end{vmatrix} = a^2 - b^2$$

The system has a non-trivial solution if $\Delta = 0 \Leftrightarrow a^2 - b^2 = 0 \Leftrightarrow b = \pm a$

$b=a \Rightarrow a\cdot(x+y)=0$, $a \neq 0 \Rightarrow x+y=0 \Leftrightarrow y = -x$

$A = \begin{pmatrix} a & 0 & a \\ 0 & 0 & 0 \\ a & 0 & a \end{pmatrix}, = \begin{pmatrix} x & 0 & -x \\ 0 & 0 & 0 \\ -x & 0 & x \end{pmatrix}$, $a, x \in \mathbb{R}^* \Rightarrow$

$A\cdot B = O_3 \Leftrightarrow \begin{pmatrix} ax-ax & 0 & -ax+ax \\ 0 & 0 & 0 \\ ax-ax & 0 & -ax+ax \end{pmatrix} = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$

Proposed problems

1.Solve the equations:a) $\hat{4}x^2 + \hat{7}x + \hat{7} = \hat{0}$, $in\ \mathbb{Z}_9$; b) $x^2 = \hat{5}x$, $in\ \mathbb{Z}_{24}$.

2. Be $M = \left\{ \begin{pmatrix} a & 0 & b \\ 0 & c & 0 \\ -b & 0 & a \end{pmatrix} \mid a, b, c \in R \right\}$. Show that the commutative ring $(M, +, \cdot)$ has divisors of zero.

Bibliography

1. Marius Burtea-Textbook for 12th grade, Carminis Publishing House, Bucharest

2. Mircea Ganga – Textbook for 12th grade, Mathpress, Bucharest

3. MirceaBecheanu, C. Niță, MirelaȘtefănescu, - Algebra for Teachers' Training, Didactic and Pedagogical Publishing House, Bucharest

4. Ion D. Ion, ConstantinNiță, NicolaeRadu – Algebra Problems, Didactic and Pedagogical Publishing House, Bucharest

5.National Contest "Made for Europe"

Gabriela-Brandusa Horlescu, teacher

Technical College "Gheorghe Cartianu" Piatra-Neamt

National Contest"Made for Europe", county stage, March 31, 2022

The products made within the projects designed and created with the contribution of students and teachers from each partner school in the project, are educational resources whose benefits are unlimited, both for teachers and students.

Promoting and capitalizing on these educational products stimulates creativity and innovation and contributes to enrichment and diversification of support materials for learning activities.

The "Made for Europe" competition is organized in the form of a fair/exhibition of educational products that have been carried out in European projects. In the context of the pandemic of the last two years, skillsformed in European projects and the products created have supported the resilience of the education system and havefacilitate the adaptation of the educational process to the current challenges.

1. The national competition "Made for Europe" aims to enhance and promote positive experiences in carrying out projects funded by European education programs, stimulating creativity, innovation and entrepreneurship.

2. The Made for Europe competition is an annual competition with the following objectives:

 Valorization of the products made by students and teachers within the projects financed by programs European;

 Increasing the visibility of products made in projects funded by European programs;

 Increasing the quality of products realized within the projects financed by European programs through stimulating the creativity of students and teachers;

 Creating an alternative information system on the products of the projects financed by programs European;

 Ensuring opportunities to promote products resulting from projects funded by programs European;

 Increasing the transferability potential of final products in other educational contexts;

 Promoting the image of pre-university education institutions participating in the competition.

Our school presented the results obtained within the Erasmus projects of the school, organizing an exhibition of educational products made within the European projects.

The results obtained by our students:

-Prize II, Tomescu Vlad-Costin, class 10C, Erasmus + project "Maker Education", coordinator Horlescu Gabriela-Brandusa

Project website: https://makereducation6.weebly.com/

-Prize III, Nicoleta-Daniela Gradinaru, class 12E, eTwinning project "The Break Out City", coordinator Dragomir Eleonora

-Prize III, Trifan Dacian-Ștefan, class 10C, "Creative Opinions Differentiated Education In Maths" project, coordinator Horlescu Gabriela-Brandusa

Project website: https://codeinmaths.weebly.com/

Congratulations to the students for the results obtained in the competition but also for the special involvement in the school's Erasmus + projects!

https://www.edu.ro/concursul-na%C8%9Bional-%E2%80%9Emade-europe%E2%80%9D

II.Other Erasmus+ projects

1.Science and Art - Rediscover, Research and Creative Recycle

Gabriela-Brandusa Horlescu, teacher

Ana-Irina Secara, teacher

Project website: https://projectscienceandart.weebly.com

Facebook group: https://www.facebook.com/groups/537811507773601

Participating organizations

1.SPRIJIN+, Romania, coordinator

2.Room For Art, Cyprus, partner

3.CrowdAid A.P.S. - Ente del Terzo Settore, Italy, partner

4.Erdemli Ilce Milli Egitim Mudurlugu, Turkey, partner

5.VIBE Slovakia, Slovakia, partner

6.Eko Tim Istok, Macedonia, partner

The objective of the project

The objective of the project is to develop the capacity of adults to intervene in the environmental education, by training adult skills and by developing strategies for approaching environmental education in context formal and non-formal.

In this context, our project and the partnership between the 6 associations aims to develop a transnational program for the development and exploitation of creativity of adults for protecting the environment and finding new ways to creatively recycle waste.

Main activities of the project

1.project logo contest

2.creation and updating of the project website

3.online project management meetings

4. organization of training workshops after returning from mobility

5.organization of Erasmus project presentation sessions

6.Creative Recycling Guide

7.dissemination of information

8.2 press releases for the launch and completion of the project

9.creation of promotional materials

10. Other events - throughout the project

Creative Recycling Guide

Module 1- Creative Recycling, Sprijin+, România

Module 2 - Science and art, ROOM FOR ART, Cyprus

Module 3 - Science, Technology, Engineering, Art and Mathematics, CrowdAid A.P.S. - Ente del Terzo Settore, Italy

Module 4 - Science & Nature, ERDEMLİ İLÇE MİLLİ EĞİTİM MÜDÜRLÜĞÜ, Turkey

Module 5- Splash Trash Art, VIBE Slovakia, Slovacia

Module 6 –Environment and climate change, Eko Tim Isok, Macedonia

Online management meetings

Transnational meeting no. 1– 2022, May

Transnational meeting no. 2 - 2022, September

Transnational meeting no. 3 – 2023, December

Transnational meeting no. 4 – 2023, April

Transnational meeting no. 5- 2023, July

Transnational meeting no. 6 - 2023, October

Transnational meetings

Transnational meeting no. 1 - Sprijin+, România – 2022, June

Transnational meeting no. 2, ROOM FOR ART, Cyprus, 2022 October

Transnational meeting no. 3, CrowdAid A.P.S. - Ente del Terzo Settore, Italy, 2023, January

Transnational meeting no. 4, Erdemli İlçe Milli Eğitim Müdürlüğü, Turkey, 2023 May

Transnational meeting no. 5, VIBE Slovakia, Slovakia, 2023 August

Transnational meeting no. 6**,** Eko Tim Isok, Macedonia, 2023 November

Project logo contest – march 2022

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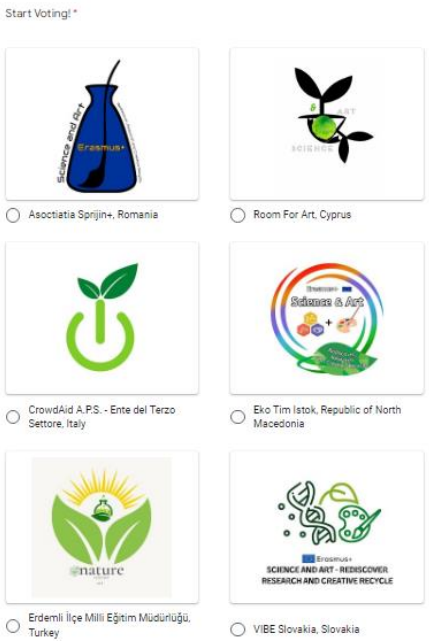
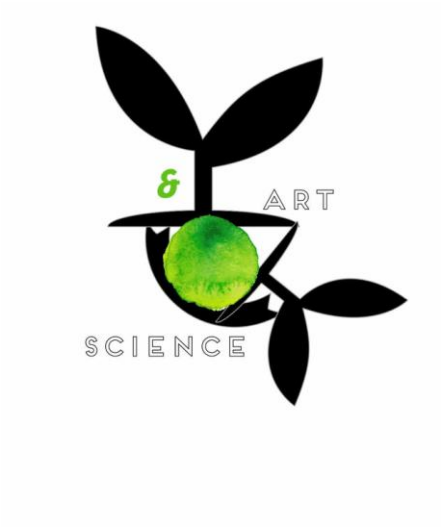
<tr>
<td> 
</td>
<td>The winner of our contest is Room for Art from Cyprus!
 
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2.Future Language is Robotic Coding

Gabriela-Brandusa Horlescu, teacher

Ana-Irina Secara, teacher

Learning teaching training, Vaasa, Finland,

April 27-29 2022

School: YA-Vocational College of Ostrobothnia

April 27, 2022 – Welcome to YA!

With a wide range of forest resources, Finland's current issues in the digital age include the penetration and use of new technologies in forestry, the automation and robotization of woodworking facilities, which significantly contribute to increasing labor productivity.

During today's meeting, in addition to the presentation of the college and the school campus, various demonstration workshops were held, applications of new technologies in forestry:

-simulation of wood exploitation operations

-woodworking using numerically controlled machines

-stages of construction of wooden cottages

-maintenance, maintenance of off-road vehicles

-use of green energy -solar and photovoltaic panels -to ensure the electrification of homes

The college has a modern teaching base and offers training courses:

-Health and first aid courses

-Courses in the field of technology and nature management

-Logistics and professional competence courses

The conclusion of today's activities once again demonstrated the importance of acquiring and developing the professional skills of technical high school students in using new technologies to easily enter the labor market after graduating from high school.


April 28, 2022 – Technique day

The main activities focused on the development of IT and technical skills, the analysis of solutions for the integration of robotics in school curricula and the presentation of methods and models of good practice that contribute to the development of entrepreneurship at the local level.

-Presentation and testing of applications in the field of Information and Communication Technology;

-Presentation of Lego Mindstorms EV3 robots;

-Presentation of Gambit, a company that offers high quality digital services: systems development, data analysis, mobile and web applications;

-Exhibition with sale, an event that contributes significantly to the development of local entrepreneurship.

https://www.gambitgroup.fi/about-us/

https://education.lego.com/en-us/downloads/mindstorms-ev3/software

April 29, 2022 – Innovation and Technology Day

A global leader in innovative technologies and life-cycle solutions for the marine and energy markets, Wärtsilä presented some of the company's activities today. The company places special emphasis on innovation in sustainable technology and services to help continuously improve its environmental and economic performance.

Organizational issues were debated and educational activities were established that will be implemented with students upon return from mobility.

Free time allowed us to admire the beauty of the landscape specific to the city of Vaasa!

We thank the host college for organizing the special training activities, for the hospitality offered and for the rich exchange of experience!

https://www.wartsila.com/

3.Erasmus + Project - School Education

2021-1-RO01-KA121-SCH000003507

Student mobility no. 1

Carmen-Simona Stanciu, teacher

Anca Pavel, teacher

Technical College „Gheorghe Cartianu" Piatra-Neamț

Host High School: Ataturk MeslekiveTeknik Anadolu Lisesi, Izmir, Turkey

Period: February 28 - March 4, 2022

Participants: 18 students, 3 accompanying teachers: Carmen-Simona Stanciu, Anca Pavel and Eleonora Dragomir

March 1, 2022 - Knowledge Day

The agenda of the day included:

-General culture contest

-Woodworking workshop - CNC wood jewelry and decorations, practical applications

-CAD-CAM and connections between art and technology

- Metallurgy and art from historical times to the present. Practical activity in the school workshop and the study of ancient heritage objects.

-Outdoor activities

-Visiting the city of Izmir

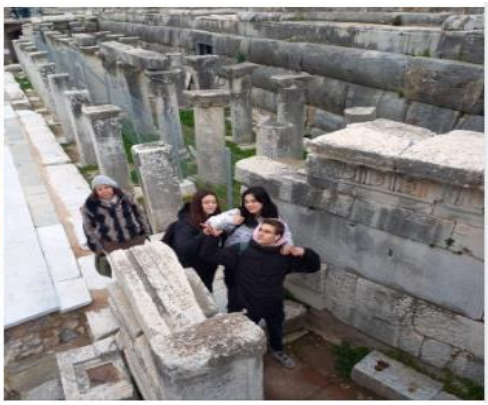
March 2, 2022 - Day of Cultural Discovery, trip to Ephesus-Sirince

-The ancient city of Ephesus (Ephesus) is part of the UNESCO World Heritage Site. Ephesus is a famous city in Turkey, home to the famous Library of Celsus and a huge amphitheater.

-Sirince village - traditional village, with very beautiful landscapes, old houses, narrow streets and a special charm

The name of the village has a slightly funny history, because almost 100 years ago, it was known as "Cirkince", which in translation means "ugly". Starting with 1926, at the insistence of the locals, the authorities changed the name to "Sirince" (which means "cute"), and a short visit here will also give you the explanation why the first of the names did not fit in any way.

https://www.turismcultural.ro/turcia-altfel-4-efes.html

March 3, 2022 - Science and Technology Day

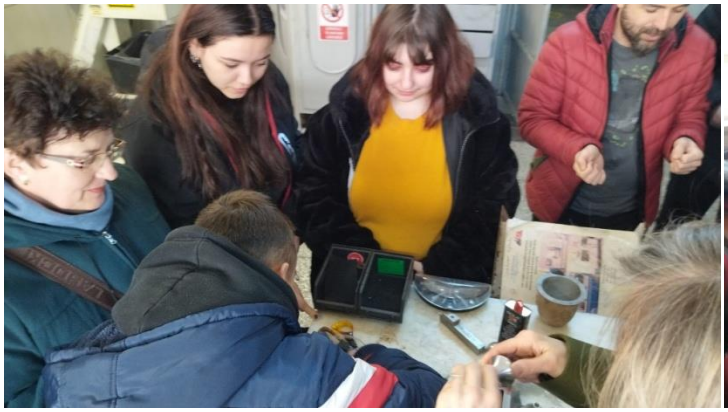
The students were trained in a diverse range of attractive science and technology activities. Thus, they visited the Museum of Technology and Culture, the Economic, Administrative and Pedagogical High School and the elevator. This is one of the most visited tourist attractions in the city, which in the past has helped the residents of the area to reach their homes more easily.

At the same time, the students enjoyed outdoor activities in the city park


March 4 2022 - Science and Technology Day

A new day of science and technology has taken place today. The students discovered renewable energy sources, penetrated the secrets of robotics, made gas lamps and participated in the ceremony of handing over the participation certificates!

For many of them it was a first opportunity to participate in school education activities in the field of STEAM.




March 5, 2022 - Environment Day

One of the educational activities prepared on ecosystems, the importance of combating pollution and climate change that have an effect on the entire natural balance was held at the Izmir Zoo. This is one of the largest zoos in Turkey, home to over 1,500 species of wildlife.



The activities carried out were diverse and interesting. Our students did excellent job, they were active and receptive and did everything well! Many thanks to our hosts!

4.Erasmus + Project - School Education

2021-1-RO01-KA121-SCH000003507

Student mobility no. 2

Ana-Irina Secară, teacher

Host High School: Özel Antalya Vision High School Anadolu Lisesi, Antalya, Turkey (https://www.visionkoleji.k12.tr/)

Accommodation: Corner Park Hotel (https://www.thecornerpark.com/)

Period: March 28 - April 1, 2022

Participants: 18 students, 3 accompanying teachers: Secara Ana-Irina, Istrate Monica and Agafitei Ana-Maria

Partner: ÇEKDEV International Education and Development Academy

March 28, 2022 - Science for all - a captivating and challenging foray into the fascinating world of science, held by teacher Hilmi Doğan, Ph Doctor of Science, a teacher with extensive pedagogical experience. The workshop focused on both theoretical and especially practical aspects, through which students were involved in various application activities, which stimulated their curiosity, inventiveness, creativity and last but not least, highlighted their imagination, all this being done in an interdisciplinary manner.

We visited the host school, the students socialized and made friends, they joined their Erasmus colleagues in recreational activities.

We spent the afternoon exploring part of the coast near our accommodation, a walk along the Adriatic seafront, among the imposing palm trees that guard the location.

March 29, 2022 - Applied Science, a day dedicated to STEM activities

Students worked in teams, together with their Turkish colleagues, to make decorative objects from plants, flowers, shells, etc. The activities involved Maths and Physics calculations, use of specific molds and materials, necessary for the proposed objectives.

The second part of the workshop took place in the middle of nature and involved two sessions:
-awareness of the importance of environment in general and forest in particular in our psycho-social life. The aspect related to the respect that each of us must show towards nature was also emphasized.
-making "rockets" from recyclable materials (plastic pets), according to preliminary calculations, sketches and specialized guidance. The beauty of science can only be discovered by combining theoretical information with practice. "Students must be allowed to work, to strive to complete their assignments. Only then will they have the satisfaction of successful completion or dissatisfaction. Failure is part of science and can create special things," concluded Mr. Hilmi Doğan.

March 30, 2022 - Day of Cultural Discovery

The agenda of the day included a thematic trip to the city of Side, located on the southern coast of the Turkish Mediterranean, a resort unique for its cultural and historical richness. Once an important trading harbour, Side was also a market for slaves brought from Africa and a center for pirates. The architecture of the old part of the city preserved the same style - nice, with two-storey stone buildings, with wooden balconies, along the labyrinthine alleys.

The sites we visited impressed by the multitude of cultural treasures:

-the amphitheater dating from the Helen Period - capacity of approximately 15.000 people

-the Roman temples of Apollo and Artemis

-the two beautiful beaches that flank the Side resort

-Aspendos Theater, a wonderful archeological site, with an immense historical significance, which includes several historical vestiges: a stadium, agora, basilica from the 3rd century, remains of the city walls and some alleys and last but not least, the aqueducts the ancient city.

Visiting Side Resort gave us a broad picture of city life 2000 years ago.

March 31, 2022 - Day of Applied Science, STEM

Students attended a new workshop, led by Mr. Hilmi Doğan, which instilled in them confidence, curiosity, and a desire to build "machines", using materials such as vegetables, food, wooden sticks, and tape.

Successful completion of the construction process involved completing the following technical steps: identifying needs, researching needs or problems, finding and developing possible solutions, selecting the best solutions found, building the prototype, testing and evaluating solutions, communicating solutions, rebuilding or correcting certain technical errors.

The afternoon was dedicated to visiting the Old Town (Kaleiçi), an extremely important site in the country where Europe and Asia meet, reminiscent of a rich past. Touristic objectives visited:

-Tekeli Mehmet Pasha Cami, a beautiful Ottoman mosque, built in the 18th century

-the great ruins of Hadrian's Gate, built in 130 A.D.

-the ruins of Kesik Minar Cami (mosque of the broken minaret), a former Roman temple built in the 2nd century

-the ancient harbour, built by the Venetians who occupied Antalya in the 15th century

-the narrow and cobbled streets where you can admire the houses from the Ottoman era, many of which had been restored and transformed into small hotels.

April 1, 2022 - Science, entertainment and the award ceremony of certificates

The agenda of the day included a visit to the Antalya Science Festival (Antalya Bilim Festivali) and the closing ceremony of the mobility.

The topic of the workshop, Robotics and Coding, involved specific activities, which took place in an appropriate setting, among Turkish and European students of all ages. The atmosphere was an exciting one, the Antalya Science Festival being famous for its interesting and interactive stands, for the fact that it manages to bring together young people with science in a very applicable way.

The second part of the day was dedicated to handing over the training certificates and sharing impressions, all of which took place in a festive and emotional setting.

We returned home with a rich experience in the field of STEM, with pleasant memories, with new European friends and strong feelings towards everything that meant intercultural development and exchange of good practices.

Contents