NEWSLETTER

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TESLA

TOGETHER IN ENVIRONMENTAL SOLUTIONS LEARNING ACTIVITIES

ERASMUS+ & eTwinning project

2019-1-HR01-KA229-060810

Inside this issue

Foreword of the project coordinator

Because of the great influence of climate change on the individual, nation, country, world community and planet Earth, we understand how much emphasis should be placed on the great importance of the theme of the project.

Climate change does not know the boundaries between continents and countries, between rich and poor, EU countries and countries outside the EU. The use of renewable energy sources is a key factor in security of supply and the fight against climate change. The project will stimulate the student's awareness of sustainable development through the use of renewable energy sources and conscientious energy use.

Nikola Tesla was a citizen of the world - so is a great contribution to humanity. He actually marked the beginning of global electrification of the planet. He was a great ecologist, very concerned about the fact that people are spending too much on the resources of our planet, which has been fueled by renewable sources of energy. Therefore, we decided to dedicate the project to the scientist Nikola Tesla, his life, work and inventions. It will be another way of linking the content of physics, energy, electrical engineering and ecology.

The aim of the project is to acquire skills and key competences using digital technologies and tools, and is planned to be achieved through the studying of environmental and renewable energy sources. Through teaching and project activity students develop different types of functional literacy and build personal and national identity.

Project activities can be carried out within the teaching of physics, energy, ecology, electrical engineering, foreign language and information technology. The age of the students in project is 15 to 17 years. Education and co-operation will be realized through the search and creation of films on power plants and renewable energy sources, the development and exchange of digital content through web 2.0 tools (quizzes, presentations, online games, brochures).

Through our transnational partnership, we will also cooperate with local associations and educational institutions. The project will enable the expansion of knowledge from the STEM area, and enhance motivation and interest. Through the use of IT tools, students will develop digital competencies, critical thinking, and problem-solving skills. Along with the development of communication skills and teamwork, they will have the opportunity to experience intercultural environments and to get to know different cultures, as well as to improve the knowledge of English in real-world situations. With the development of self-confidence, students will develop awareness of ecological problems and the importance of their solution.

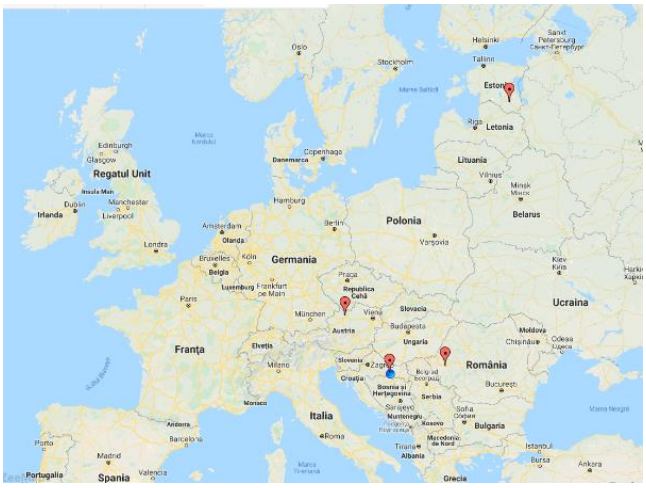
In the project we have 4 mobilities:

Mobility in Croatia: Renewable sources for generating electricity

Mobility in Estonia: Oil shale, peat and wood as energy sources

Mobility in Romania: Hydro-electric power and photovoltaics

Mobility in Austria: Sustainable Housing, Lighting, Heating, Smart Power Grids



The workshops will make it possible to popularize the teaching of natural sciences through experiments and independent research, to encourage and develop the interest in studying science, to enable students to better understand the nature of natural and physical legacies.

The research type of teaching will be popularized, the development of independent access to scientific content as well as the interest of research work. We plan to use the eTwinning platform at various stages in our project.

We share our best practices, strengthening cooperation between high schools and institutions important for energy and ecology and exchange of good practice at European level. We expand the potentials of social networks and platforms (eTwinning, Google apps) for teaching, sharing and learning.

Marina Mirković, project coordinator

Our schools

Technical school in Pozega is a high school that educates students in 12 professions in the education sectors of electrical engineering and computer science, mechanical engineering and metallurgy, a three-year or four-year education. The school has 29 classes with 592 students.

Technical School of Požega has a total of 83 employees, out of which 67 teachers. School has all the necessary technical, material and human resources to perform regular activities. Due to the requirements of economic factors in the environment school has acceded to organization and implementation of adult education.

Kanepi Gymnasium is a country school located in South Estonia, Kanepi, which is a municipality with 2500 people. It is a rural living environment with lots of forests and lakes. There are 183 students in Kanepi Gymnasium at the age of 7-19 years in grades 1-12 and 27 teachers. The school logo depicts the statue called "Hope" by famous Estonian sculptor August Weitzenberg originated from Kanepi. The students are involved in regional environmental and science projects. The experience in international projects is gained through eTwinning and students' exchange programs with partner schools in Germany and Italy and Erasmus KA1 and KA2 projects. The students study English, Russian and German as foreign languages within Estonian standard curriculum. Extra-curricular activities include folk dance, choirs, sports, IT- based activities. The main objective of our school is to provide the education which helps to manage in the developing national and European environment. The key-points: Projects on and in the nature, International and national projects, Open to educational projects of universities, Innovation and development, Student-centered environment, National heritage. The main goal of the school is to provide education that helps in managing the development of national and European environments. Development of student entrepreneurship, initiative and analytical skills by creating internal and external opportunities is considered necessary for them. The school provides career counseling and supports community activities, cultural diversity and tolerance.

BHAK Linz International Business School is a Secondary Vocational School/business academy and it trains students to work in offices and for further studies at universities. We teach 5 languages at school, 2 of which are compulsory for all students. The number of staff amounts to about 70, about 700 students both at day school and at night school. Many students have multicultural roots. Their parents come from former Yugoslavia and the former USSR and the Middle East: Croatia, Bosnia, Macedonia, Serbia, Kosovo, Chechnya, but also Albania, Iran, Irak and so on. Very often they live in social disadvantaged circumstances. Students with Romanian, Hungarian, Bulgarian, Croatian or Serbian roots discover that their native language can help in other countries and they help a lot to translate or organize for their colleagues and even their teachers. This gives them a lot of self-confidence.

Recently celebrating 180 years of existence, **Liceul Teoretic Coriolan Brediceanu** from Lugoj, Romania, is a theoretical high school with approximately 700 students: 200 in the middle school (11-15 years old) and about 500 in high school classes (15 - 19 years old). We mainly prepare our students for higher education, for attending universities in Romania or abroad. Our students live in Lugoj and the surrounding villages or smaller towns. A lot of them have parents working abroad. Our high school classes follow two different directions: realistic and humanistic. Two classes per level study computers, one with intensive programming profile and one with intensive English language learning and two other classes study sciences. There is another class in each level that follows a humanistic profile, with bilingual Romanian - English curriculum. One class per level (usually one with science profile) teaches students in their German mother tongue. At the end of their high school time, most of our students prepare for the final exam (baccalaureate) and obtain one or more certificates for their digital or communication skills. We have about 60 teachers and staff.

Nikola Tesla – citizen of the world

Tesla was born on July 10th, 1856 in Smiljan. Tesla's father, Milutin Tesla, was a priest in the Serbian Orthodox Church. His mother was a housewife who was of serbian descent. Both parents were born in Croatia. He was the fourth child out of five. He had one older brother Dane, two older sisters, Angelina and Milka, and one younger sister, Marica.

Tesla had a job in telephony and electrical engineering before moving to the United States in 1884 to work for Thomas Edison. They quarreled and soon Tesla started working on his own with other people investing in his work. He set up laboratories and companies to develop a range of electrical devices. His patented AC electric motor (induction motor) and transformer were licensed by American industrialist George Westinghouse.

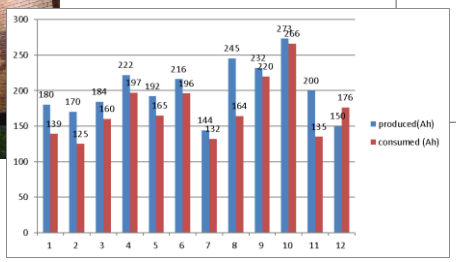
Westinghouse also hired Tesla for one year to help develop a power system using alternating current. The advantage that popularized alternating current is the use of transformers for long distance electric power transmission. Tesla is also known for his high-voltage, high-frequency power experiments in New York and Colorado Springs, Colorado which included inventions and ideas used in the invention of radio communication, for his X-ray experiments, and for his unsuccessful attempt at worldwide wireless transmission in his unfinished Wardenclyffe Tower project.

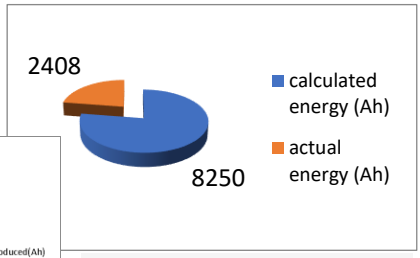
Tesla's achievements made him very famous. So did his abilities as a showman, demonstrating his seemingly miraculous inventions. Although he made a great deal of money from his patents, he spent a lot on his experiments. He lived for most of his life in a series of hotels in New York City. The end of his patent income and eventual bankruptcy led him to live in much poorer circumstances. Tesla still continued to invite the press to parties he held on his birthday to announce new inventions he was working and make (sometimes unusual) statements. Because of his wonderful pronouncements without results or proof, Tesla gained a reputation in popular culture as the archetypal "mad scientist". He died in room 3327 of the New Yorker Hotel on 7th January 1943.

Croatian team

Solar Panel Lecture & Exercise

On date 11/11/2019 students from Austria, Croatia, Estonia and Romania had a lecture named: "LED EDUCATIONAL LIGHTING POLE SUPPLYED WITH THE SOLAR ENERGY".
The lecture was delivered by Marijan Živković from the Technical School in Požega (Croatia).
The aim of this lecture was to explain how to calculate energy and economic efficiency for the system who use solar energy to supply LED light for the public lighting.





After that lecture students had an exercise named: "*Measurement idle voltage and short circuit current of the PV module at maximum daylight radiation*"
In this exercise, students were tasked with connecting a photovoltaic panel to a measuring instrument and measuring the electrical magnitudes of voltage and current on a photovoltaic panel.

The exercise was performed outside in front of the school. The day was cold (about 10 ° C) and cloudy.

After the measurement, the students had to calculate the current power of the photovoltaic panel and compare it with the rated power of the panel.

At the end of the exercise, the students concluded what the current efficiency of the solar panel is in % according to the external conditions that was on that day.

Impressions from Požega

The first day of the project started with the welcoming ceremony of the participating countries, continuing with the presentation of the projects designed by the students who took part in this project. Then a series of workshops regarding alternative energy took place.

During the breaks between activities a school tour was organized. The presentations gave us the opportunity to discover something about each participating country as well as about the alternative energy in those countries.

Workshops organized by the Croatian teachers not only helped us get to know each other better and work as a team, but it also helped us to gain new knowledge about alternative energy as well as digital and linguistic knowledge.

Briana & Raluca, Romanian team

We left excited to know more about one of the most famous European personalities, namely Nikola Tesla. Given that the road was long enough, we were offered the opportunity to get to know ourselves better. We played different games, learned more about the countries each of us come from, and at the same time, what future plans we had. The music and the well-being of the students was indefinable, the time flying without us being well aware of it. At the first stop, we had the opportunity to learn more about Tesla, a genius from a large family; he had three more brothers. Ever since he was a child, he was passionate about reading, discovering new things, due to which he would stay up the entire night reading. At the same time, he was just another child, like everyone else, who was doing the fuss(mischief). He jumped off the house, breaking his leg. To find out more about him, you can visit this site.

Towards the end of the day, we visited the Aquatika Aquarium, where we were able to observe a variety of freshwater fish species. This aquarium has helped to develop the city's economy, attracting a considerable number of visitors.

In conclusion, this day was a success, which increased our interest in science and helped us to understand various physical phenomena, having the opportunity to see them right in front of our eyes.

Tonia & Miruna, Romanian team

Wednesday started in an interactive and productive way. The Croatian team organized an Escape Room game which had the purpose of finding impressive facts about our host country, Croatia using QR codes as links for each riddle.

When the game came to an end, we had an informative meeting which involved a platform where we will be able to upload articles and photos regarding our international meetings. Therefore, we had the chance to build up a wonderful site serving as an agenda of the time we spent together.

The day not being over yet, we paid a visit to a Mini Hydro Power Plant and a large Solar Power Plant. There we had the occasion to meet the executive manager and gain knowledge about the Power Plant industries.

At the end of the day, we had some spare time to spend together and share stories and to get to know each other even better.

Amanda & Maria, Romanian team

The 4th day of the project began with the visit to Sveta Nedelja – Rimac Automobili There we had the opportunity to see and understand the fabrication process of sport cars produced by this company. We were also able to discover more about the electrical bicycles produced in partnership with the Rimac company.

The visit to Technical Museum Nikola Tesla in Zagreb fascinated us especially because we were given the opportunity to closely observe the experiments created by Nikola Tesla while understanding the principles on the basis of which they were created.

After lunch, we walked through the center of Zagreb, the capital of Croatia. In this short visit we were able to observe a part of the impressive architecture of the capital. We also had time to buy some souvenirs with traditional patterns, specific to the area.

Briana & Raluca, Romanian team

We started Friday in a productive and wonderful way.

We had the opportunity to meet the mayor of Pozega, an open-minded man who answered to our curiosities about the city and school. After this meeting, the teachers from Croatia showed us the surroundings and the beauty of the city, thus discovering part of the history of the place. Lunch was a special one because we had it as a single community, sharing our impressions of the time we spent together. This week was not only meant to build relationships, but also to learn more about the brilliant Nikola Tesla and his discoveries.

In the end, we were honored to receive an Erasmus+ certificate and a small significant gift. To sweeten the moment of departure, we served a cake specifically decorated.

Amanda & Maria, Romanian team

”Erasmus and Croatia, I love them both!” (Merike, Estonia)

”I have already had the chance to participate in Erasmus and exchange projects before, but I must say that TESLA project is a splash of happiness” (Amanda, Romania)

”I want to thank everyone for making this one of the best weeks in my life.” (Filip, Croatia)

”I had a great time learning new things about Nikola Tesla and renewable energy sources, learning about cultures around the world and spending time with all of you.” (Briana, Romania)

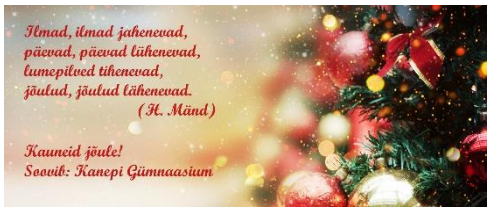
”TESLA has started successfully! New friendships, great students, a school-enriching collaboration!” (Marina, Croatia)

”I like how these projects bring together different people in one place” (Maria, Romania)

Christmas wishes

One month after our first meeting in Croatia, we felt the need to express ourselves through art. We created Christmas and New Year cards and our best wishes for our partners traveled to their schools in Europe. We used a lot of colored paper, crayons and creativity and enjoyed every moment designing, decorating and writing the wishes in English and in our partners' languages.

We also prepared virtual Christmas cards and displayed them on our twinspace.



But some really joyous moments occurred when we received our partners' beautiful cards and we realized that they also spent a lot of time preparing, decorating and writing their best wishes for us. Thank you, dear partners! It was a beautiful activity, creating beautiful bonds between us.

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We're on the web: https://www.teslaerasmus.eu/

https://twinspace.etwinning.net/97317/home

Partners:

Tehnička škola, Požega, Croatia

Bundeshandelsakademie und Bundeshandelsschule Linz, Austria

Kanepi Gümnaasium, Estonia

Liceul Teoretic "Coriolan Brediceanu" Lugoj, Romania

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