KA229 Erasmus+

The Code Of Future: Eco-Friendly Robotics

Nature can help to create robots as well as robots can help to create nature!

E-Book content:

1. Introduction

- The Project The Code Of Future: Eco-Friendly Robotics is written in March, 2020 and applied to Turkish National Agency. Project was granted in September, 2020.
- The project involves six partners, from six different countries: Poland, Portugal, N.Macedonia, Estonia, Spain and Türkiye. These are all vocational schools with students between ages 12-18. It was planned to have six different mobilities, in each mobility having four different students from every country in total of 24 students would join the activities and mobilities. Two teachers from each country would guide the students in every mobility.
- Although the starting date for the first mobility (LLT) was planned to be held in October,2020 because of the Covid regulations it was postponed to October, 2021.
- The main objective of our project is the coorperation for innovation and the exchange of good practices. Here is the summary of our Project:
- Technology is making great progress, especially in the field of robotics.
- Robots will take part in many different industries in the future, and as robotics begins to play a bigger role all over the world and in our own lives, its environmental impact will be more noticeable.
- Environmental problems are among the main problems that concern the whole world.
- Unfortunately, the work of various institutions on this issue is only about raising awareness on this issue.

1. Introduction

- The main idea of this project is to develop 21st century skills of students by challenging environmental problems and strengthening eco-friendly robots
- Robotic activities can be adapted to student needs due to their flexibility.
- That's why educational robots like LEGO and VEX have become popular with secondary school students.
- Teachers, on the other hand, use the effects of technology-oriented STEM (Science, Technology, Engineering, Mathematics) enriched content and skills training in their lessons.
- Turkey, Portugal, Estonia, Poland, Spain and Macedonia experienced in robotics and environment, as six schools, aim to be environmentally friendly schools by serving the EU 2020 targets.
- Climate change and energy targets, which are the main issues addressed in the EU 2020 strategy, are determined as;
  - To reduce greenhouse gas emissions 20% lower than 1990s gas emission
  - To obtain 20% energy from renewable energy sources
  - 20% increase in energy efficiency
- In line with the EU 2020 goals and Erasmus + priorities, we want to increase the cleanliness and protection of the environment inside and outside our educational environment by using educational robots as an important tool in the development of proposed activities to increase digital competence.
- In light of the EU 2020 (to reduce failure in reading, mathematics and science to less than 15%),, with the need of including science and technology in educational work. we want to develop a model in our institutions and contribute to the sustainable growth of our countries.

- Therefore, our goals in this project are:
- 1-Helping students to focus on issues related to the natural environment (renewable energy, recycling, climate change, etc.)
- 2-Working with educational robots to find solutions to environmental problems
- 3-Breaking down negative prejudices about robots and finding solutions to global problems with educational robots
- 4-Sharing good practices / experiences to be environmentally friendly schools
- 5-Strengthening our teachers' professional profiles
- 6-Learning cooperation with different cultures
- 7- Increasing the academic success of students in STEM lessons with educational robots (VEX, LEGO EV3)

2. Partners

2.1 Spain

School: I.E.S CARLOS CANO
Avda. Carlos Cano S/N. Los Barrios. 11370. Cádiz (Spain)
Website:
https://iescarloscano.com

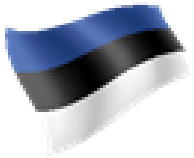
- Our school was born with the century, in the year 2000, we are a Secondary School
- adapted to the new educational needs of the 21st century. Located on Avenida Carlos Cano de Los Barrios. We have about eight hundred students, sixty-seven teachers, and almost a dozen members of the administration and services staff inhabit this universe.
- The educational offer of our center includes Secondary and PostSecondary School, in its modalities of Social Sciences and Humanities and Sciences. It has different plans and educational programs such as bilingualism lessons in English, ICT, Library Plan, Space for Peace School, Equality Program. The use of ICT has spread and generalized in recent years, and especially in recent years we have had a profound educational digital transformation in teaching-learning processes.

2. Partners

2.1 Spain

- One characteristic of our school is the contact with centers in other countries. For many years we have been developing exchanges with educational centers in Germany,Ireland, Italy, France, Iceland, Turkey, Cyprus, Croatia... and we have been immersed in different Erasmus projects. Recently we have had two Erasmus + projects related to robotics with countries such as Sweden, Poland, Macedonia, Estonia, Portugal, Italy and Turkey.

2.2 Estonia



School: Tallinna Kristiine Gümnaasium
Nõmme tee 32, 13426 Tallinn, Estonia
Website:
www.kristiine.edu.ee

- Interesting facts about our school:
- The school was founded on the 13th of February 1919;
- In 2009 the 84th group of graduates finished the school;
- In 1939 there were no graduates;
- In the academic years of 1964/1965 and 1965/1966 our school had only eight grades;
- In the academic year of 1966/1967 the school became a secondary school again. Two classes started in the ninth grade;
- In 1965-1968 there were no graduates. The 44th group of graduates finished the school in the year on 1969. The teacher was Ms. Helgi Post;
- In 1919-1954 the school had only female students. In 1954 boys and girls started studying together.

- Currently, we are working in the new repaired school building. We have 29 sets of classes, with a total of 830 students. The wisdom shared by our 55 teachers, whose aim is the quality of education, an interesting lesson, and the cultivation of students' ethical values.
- The teachers´ aim is to teach the students to grow well and be successful citizens of the Republic of Estonia. They have listened to and discussed cooperation between our school and the homes of our students, green and attractive learning environment, quality education, foreign language and development plans. There have been a variety of music related events in cooperation with the Estonian Concert, language events in the National Library, spring concerts, various competitions.
- 1990s were very busy, both in teaching and in extracurricular activities. Attention was paid to improving the educational system. Or schools´ athletes were very successfull in various competitions. During these years, our school had two sister schools in Finland – Oulu Kuusiloudo School (Oulu Kuusiloudo Kool) and Aleksis Kivi School (Aleksis Kivi nimeline Kool). Tallinna Kristiine Gymnasium still has a strong relationship with Aleksis Kivi School.

- Since 2010 our school has participated in multiple European projects in the field of innovative new ways of learning and teaching. for example “All me need is a new SY(STEM)”,” Robotics: Universal language for all” etc.
- The early years of 2000 were also very busy. Courses were held among students, parents and teachers. Students have taken part of various knowledge related competitions. Students take substance-professional guided tours, visit museums and theater performances regularly. The tour to Moscow in 2006 was very exciting and educational to the students because of the history. Students have studied the environmental problems with the Finnish students in Ida-Viru County.

2.3 North Macedonia

School: SOU Nikola Karev
Bul. Marshal Tito 170, Strumica
Website:
http://www.nkarev-strumica.edu.mk/

- The beginnings of the school date back to 1956, when for the first time professionally qualified personnel were trained and a Trade School with practical training and a Boarding School based in Strumica were founded. The students who graduated acquired the title: qualified workers in the economic field - trade.
- In 1961, it was verified and a year later, the former Trade School with practical training and the School for students in the economy, were merged into one school with the name: School for qualified workers, "Cvetan Dimov" – Strumica.
- The school building was built in 1978, and during the following years, the school changed its name several times, so that in 2006 it received the current name "Nikola Karev" - Strumica. A driving school also operates as part of the school.

- Today, 6 professions are represented in our secondary school "Nikola Karev"-Strumica: textiles, leather and similar products, mechanical, traffic, electrical, forestry-woodworking and construction-geodetic professions. The school not only educates students from the Strumica municipality, but also students from the surrounding towns who traditionally gravitate arround Strumica. Teaching is conducted in Macedonian language.
- The school has around 120 employees, which includes 90 teachers from every profiles(electrical, mechanic, woodworking, textile, constructions and also native and foreign languages, mathematics, physics, history, sports, etc.). Depending on the school year the total number of students is around 1200.
- The school has 57 classrooms equipped with smartboards and TV sets, 7 workshops with needed equipment for the practical part of students education and 6 offices for the administration personnel.

- Our mission statement is: We are an environment always open to creation and creation. Using modern educational technology, we train personnel capable of responding to modern professional challenges.
- In the last years the school is involved in many Erasmus projects. Beside this project, most recent the school participated in the project Improvement of professional training in the field of textile engineering, application 2019, realization 2020, Inclusion of European professional practice in Macedonian education - for modern design 2022 application, realization 2023, Inclusion of European professional practice in Macedonian education - for energy efficiency, 2023.

2.4 Türkiye

School: Afyon Lisesi
Dumlupınar Mh., Ordu Bulvarı cad,
03200 Afyonkarahisar, Turkiye
Website:
https://afyonlisesi.meb.k12.tr

- Afyon Lisesi is one of the oldest schools in Turkey. Our school was founded in 1894. In 1923, it was named as Sultani's School and started to serve as both elemantary and secondary school. However, since 1930 our school has been serving as a secondary school under the name of Afyon Lisesi (Afyon High School).
- There is a principal and 2 vice principals in our school's administrative staff. Our school has 50 teachers and 568 students. Afyon Lisesi is the primary choice of the students because our school can be identified as a democratic, participatory and collaborative school. Furthermore, our school is well-known for growing active, innovative and sensitive citizens and its participation in social and cultural events. Until today, many important names , including 2 Presidents of Republic of Turkey, graduated from our school.

- Afyon Lisesi is situated in the city center and it is easy to get to the important buildings such as the Municipiality, Provincial National Education Directorate, Public Education Center, Counselling and Research Center, Museums and other educational buildings.

- Our school has a large conference hall, a gym, 2 seperate buildings including 33 classrooms, 2 music and 2 art classrooms, 3 science and 2 computer technology laboratories. It also has a school museum.

- Our school participated in the 2018 FLL İzmir Regional Tournament as a spectator.
- Within the scope of Afyon Coding project, 5 of our teachers received coding and robotics training.
- Our school was the 1st in the Ministry of National Education and club competition organized by the Turkish folk dance federation.(2018)
- Our School Coordinated the EU project 'The Secrets of Artistic Symbols in Cultures' (2014)
- Our school cooperates with all its staff to actively participate in the projects implemented both in our province and throughout Turkey.
- With Afyon High School Theater Club, our school was home to the EU youth exchange project "Afyon High School Youth Meets with Their History"
- Afyon Lisesi participates effectively in the teacher and student platforms on the "CODE.ORG" platform and used these modules certified its following students
- In April 2019, our school hosted the TUBITAK 4006 project 5 with the guidance of IT teacher Mustafa Değirmenci and realized a number of robotics projects.

2.5 Portugal

School: Agrupamento de Escolas da Portela e Moscavide
Escola Secundária da Portela, Av. Das Escolas N.º 20, Portela Lrs, Lisbon, Portugal
Website: http://www.agepm.pt

- The Portela and Moscavide School Group is composed of five schools belonging to two parishes in the municipality of Loures, Moscavide and Portela.

Escola E.B. 1/JI da Portela

Escola E.B. 1/JI Quinta da Alegria

Escola E.B.1 Dr. Catela Gomes

Escola E. B. 2, 3 de Gaspar Correia

Escola Secundária da Portela

- The E.B. 1/JI da Portela School is located at Avenida dos Descobrimentos, nº6, 2685 - 184 PORTELA LRS. It welcomes students from the parish of Portela but also from other neighbouring parishes such as Moscavide, Sacavém and Olivais.
- This school has 4 pre-school classrooms, 3 1st year classes, 4 2nd year classes, 3 3rd year classes and 3 3rd year classes.
- Escola E.B. 1/JI Quinta da Alegria is located at Rua do Seminário, 1885-035 Moscavide. It welcomes students from the parish of Moscavide and others.
- In addition to the school library, this school has 1 pre-school room and 7 classes of the 1st cycle, with the distribution of classes varying according to the school year.
- Escola E.B.1 Dr. Catela Gomes is located at Rua Almirante Gago Coutinho 1885-035 Moscavide. It welcomes students from the parish of Moscavide and also from other parishes.

- In this school there are 6 classrooms in double time, in a total of 12 classes. In the morning there are 2 classes of 1st grade, 1 of 2nd grade, 1 of 3rd grade and 2 of 4th grade. In the afternoon, there are 1 1st year class, 2 2nd year classes, 2 3rd year classes and 1 4th year class. There is also a multipurpose building and a school library.
- The E.B. 2,3 de Gaspar Correia School is located at Avenida das Escolas, nº 9, 2685-204 PORTELA LRS. It welcomes students mainly from the parishes of Portela and Moscavide but also from other parishes.
- The school operates in seven pavilions, one of which has sports facilities, as well as outdoor sports areas. Pavilions A, B and C are essentially classrooms. In Hall C there is also the SPO office and a functional curriculum room. In Hall A there is a special education room. In hall B there is the CRTIC Loures. In block D, in addition to the classrooms, the School Library is installed. Hall E includes the teachers' and students' bar, the stationery shop, the teachers' room and the students' lounge. There is also a pavilion housing the canteen, kitchen, DT room and school coordination. The pavilions are connected by a covered gallery and surrounded by open spaces.
- There is an even gender distribution across all years of schooling. The average age in Year 5 is 10 and in Year 6 it is 11. The average age in the 7th and 8th grades is around 13 years. The average age in Year 9 is 14.

- Portela Secondary School is located at Avenida das Escolas, nº 20, 2685-202PORTELA LRS.
- The school consists of eight pavilions, one of which is a sports hall. Pavilion A houses the Administration, Administrative Services, School Library, Teachers' Room, Class Directors' Room, Medical Office and Reprographic Services. Distributed throughout the other pavilions, the School also has spaces for the Arts, Science rooms with a Bioterium, Physics and Chemistry laboratories, Computer rooms, audiovisual room, a space for Theatre, Office of the Psychology and Guidance Service, stationery, bar and cafeteria.
- The school has a capacity for about a thousand students, spread over two cycles of education - 3rd cycle and secondary. It welcomes students from the parishes of Portela and Moscavide, but also from other parishes.
- The five school have 250 teachers and around 3000 students in total.
- The school is involved in many Erasmus+ projects. Most recent are DAWN OF SCHOOLS WITH EDUCATION 4.0 (KA229 – 2018/2020), Educational Robotics to Scientific Learning Teaching Process (KA201 – 2020/2022), Robotics 4 Schools (KA229 – 2020/2023), WERWORLD (KA201 – 2020/2022), Best Achievable Results in Coding (KA229 – 2020/2023).

2.6 Poland

School: ZESPÓŁ SZKOLNO-PRZEDSZKOLNY NR 6 W RZESZOWIE
Ul. Krzyżanowskiego 24, 35 - 329 Rzeszów, Poland
Website:
http://www.zsp6.rzeszow.pl

- The first part of our school was built in 1987 in the centre of one of a big housing estates in Rzeszów called Paderewski. It consisted of 2 segments. The next 3 ones were being built in the duration of 3 years (1990). It was the school for primary students, then - eight year primary school. Starting with 1st September 1999, according to the new educational reform, the institution was transformed into a six – year primary school.
- In 2011 our school became The Primary and Kindergarten Complex No 6 . At present 920 children attend this school and there are 102 employees. It consists of the Public Kindergarten No 21 and the Primary School No 27 named after Ignacy Jan Paderewski. The children that attend kindergarten are between 3 and 6 years old. 220 children learn in 9 age groups. There are 18 kindergarten teachers who take care of them. In the Primary School No 27 there are 690 students and 70 teachers. The students are between 7 and 15 years old.

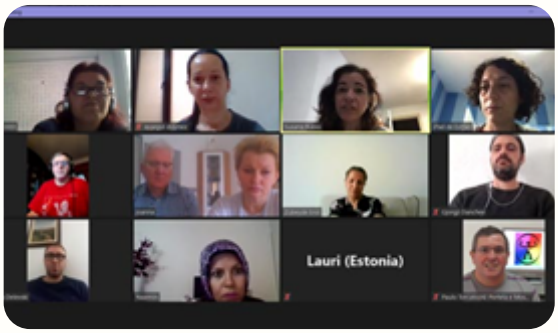
- In the school complex the emphasis is put on motivating and activating children in the process of learning. The students with special educational needs, children of refugees and emigrants from Ukraine and Spain are surrounded by special care. They are provided with pedagogical, psychological and didactic support. The children at school take part in various competitions and succeed in them. The teachers organize additional classes, such as classes developing students' interests, workshops, artistic classes, cultural, sports, touristic and commemoration events.
- The school equipment looks as follows: the school has got 3 sports fields and a playground. The building consists of 4 segments – in one of them there is a kindergarten. In the last 4 years it was renovated, the LED lighting was installed in the school corridors and in the classrooms. The driveway for the handicapped using a wheelchair was built. In each classroom there is a computer for the teacher. In the whole building there is a WI-FI net. We have got 2 computer classrooms with 45 computers and one robotics classroom which is equipped with Makeblock mBot robots, VEX IQ robots, LEGO Mindstorms EV3, LEGO Mindstorms Inventor and SPIKE PRIME, Abilix Krypton 8 robots, DJI Tello Edu drones and Arduino UNO sets.

- In 2015 we succeeded in gaining funds for the Erasmus Plus KA 1 project in the framework of the Operating Programme Knowledge Education Development for our project “New experiences, knowledge and international cooperation as a chance for the development of the Primary and Kindergarten Complex No 6 in Rzeszów.
- At the moment we are in the process of carrying out another Erasmus Plus KA 219 project entitled “ Reading Teaching for Social and Educational Inclusion” and we are cooperating with European schools in Erasmus + KA229 realizing the project “STEM through robotics” and “Eco-friendly robotics for a future perfect world”, Code of the Future, Pick Up STEAM, Technology for Education - Alternative Methodologies and STEAM and new KA110 project Green Energy – Clean Future
- We participated in Code Week 2022. We take part in a nationwide educational project; “We teach children to program”. We implement a pedagogical innovation in a group of 5-6-year-olds children “Coded preschoolers”.
- We are also prepared students to take part in First Lego League Competition, VEX IQ Challenge - Baltic Open 2019 European Contest and to international contests in programming SCRATCH.


6

3. Meetings of partner schools

- At the beginning of the implementation of the project, communication between partner schools in this project took place through scheduled meetings, mostly through the ZOOM platform. Coordinators and teachers representing schools from each country held several online meetings under the guidance of the project coordinator from the lead partner Türkiye, Meral Hitit.
- At those meetings, the details of the implementation of the planned activities of the project were agreed upon. Due to the Covid19 pandemic and all the covid restrictions, which were mainly different in each of the participating country, all planned activities that were supposed to take place with physical presence were postponed and prolonged. Online activities were the only opportunity during this period to carry out some of the activities.
- Although at this time online meetings were the easiest way of communication, organizing such activities with the participation of students was very difficult because each country organized the educational process differently.



Ex: zoom meeting of coordinators

Ex: Google meet online workshop

- However, even in such conditions, we managed to carry out such activities, as for example, the Presentation of schools and cultures - an online workshop through the Google meet platform. with the participation of at least four students and two teachers from each partner school.
- Before and after each of the learning, teaching and training activities, online meetings of the coordinators were held, where the activities for the upcoming mobilities were agreed upon, and analyzes were made after they were completed.
- During the LTT mobilities, meetings of the coordinators and teachers were held at which the results achieved from the implementation of the project were reviewed.

Ex: Teachers meeting - Türkiye

4. Choosing logo and slogan

4.1 Logo of the project

- At the beginning of the project, every country was asked to submit their proposal for the official project logo. The following proposal were submitted

Spain

North Macedonia

Türkiye

Poland

4.1 Logo of the project

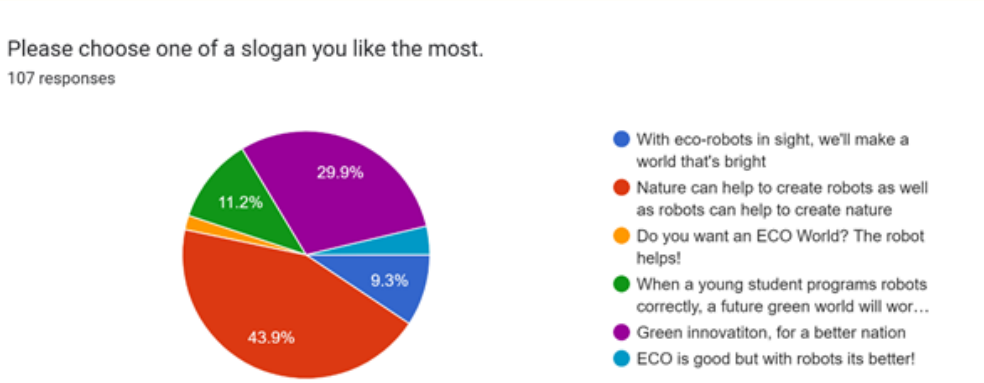
Estonia

Portugal

- An online voting was organized where teachers and students had the chance to vote for one of the proposals, and the winning logo was the North Macedonian proposal which was selected as the official logo of the project.

4.2 Choosing slogan

- For the official slogan of the project, every country organized an internal survey and selected one proposal. The following proposals were submitted:
- 1. ECO is good but with robots its better! - Estonia
- 2. When a young student programs robots correctly, a future green world will work perfectly! - Poland
- 3. Do you want an ECO World? The robot helps! - Portugal
- 4. With eco-robots in sight, we'll make a world that's bright! - North Macedonia
- 5. Nature can help to create robots as well as robots can help to create nature! - Spain
- 6. Green innovatiton, for a better nation – Turkye



- After an online voting, which once again involved teachers and students from every partner country, Spanish proposal was selected as official slogan of the project

5. LTT Mobilities

- As great part of this Erasmus+ project, each country hosted a Learning, teaching and training activity as a student/teacher mobility, according to the project time table and schedule.
- Due to COVID19 restrictions, the scheduled dates were postponed and the first two LTT's hosted by Estonia in November 2021 and Portugal in February 2022 were organized under heavy COVID19 regulations. We are happy to say that despite the difficulties we came across in that period, everything went well and no students or teachers were infected with the Covid virus.

- Every LTT activity, as given in the project, was organized with a different topic:
- Estonia – Green Roads;
- Portugal – Blue Oceans;
- North Macedonia – Green Schools;
- Turkiye – Eco-Friendly Homes;
- Poland – Blue Sky;
- Spain – Green Nature.

5.1 Estonia

- 1st of November to 5th of November 2021
- Tallinna Kristiine Gümnaasium, Tallin, Estonia
- Robot sets used: Lego Spike Prime
- Number of students: 24, 4 from each country
- Number of teachers: 12, 2 from each country

School Tour

Schools and countries presentations by students

5.1 Estonia

Lego Spike Prime introduction

Students work on the problemsolving robot

Project teachers meeting

Students work on the problemsolving robot

Lego Spike workshop for all students and teachers

City tour in historical old town of Tallinn

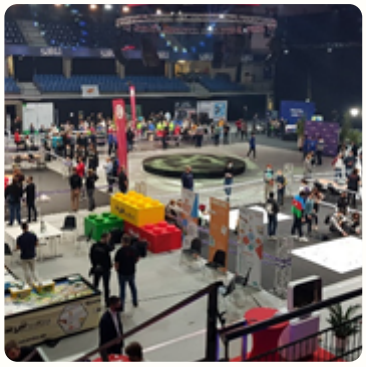
5.1 Estonia

Visit of Proto discovery factory- hot air balloon workshop

Visit of Proto discovery factory: VR

Students present their problemsolving robot

Students presenatations of their programming sollutions



Visit at Robotex fare

Short presentation about FIRST LEGO League

Closing ceremony, certificates

5.2. Portugal

- 14th to 18th of February 2022
- Escola Secundária da Portela, Lisbon, Portugal
- Robot sets used: Mbot
- Number of students: 24, 4 from each country
- Number of teachers: 12, 2 from each country

Opening meeting

School tour challenge

5.2. Portugal

Robots and Math

mBot: locomotion activities

programming in mBlockusing sensors

Teachers workshop

Migratory bird watching

Visit of Knowledge Pavilion

5.2. Portugal

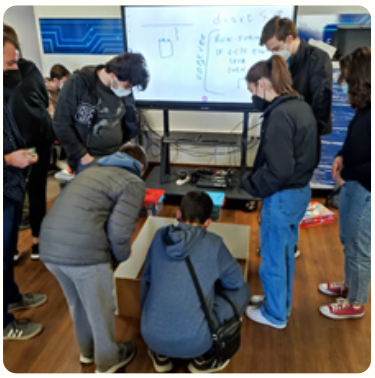
Visit to Lisbon (downtown)

Visit to Lisbon (Белйм)

Visit to the Oceanarium

mBot: line follower challenge

Cultural evening



mBot: Maze Challenge

Certificate Ceremony

5.3 North Macedonia

- 18th to 22th of April 2022
- SOU Nikola Karev, Strumica, North Macedonia
- Robot sets used: Lego Spike Prime
- Number of students: 24, 4 from each country
- Number of teachers: 12, 2 from each country

Opening words

Schools and countries presentations by students

5.3 North Macedonia

Lego Spike Prime introduction

Workshop - building and programming of robot

Teachers workshop robot activities

Country market

visit of the NI institute for cultural protection of monuments and museum

Visit of the Natural museum in Skopje

5.3 North Macedonia

Students work on the problemsolving robot: garbage disposal

Students present their problemsolving robot

Visit - Skopje ZOO

Visit of the Kolesino Waterfall

Closing ceremony, certificates

Skopje city tour

5.4. Türkiye

- 17th to 21th of October 2022
- Afion Lisesi, Afyonkarahisar, Türkiye
- Number of students: 24, 4 from each country
- Number of teachers: 12, 2 from each country
- Robot sets used: Mbot

Welcoming words, presentation of schools

Introduction to mBot

5.4. Türkiye

Mbot: Locomotion Activities

Teachers meeting

mBot: Anti-Theft Alarm

Presentation of a smart house control board

Visit Musical Instrument Museum

Visiting historical places in the city center

5.4. Türkiye

mBot: Line follower challenge

Training: Using light and ultrasonic sensor

Visiting Phrygian Valley

Visit to Medical and Aromatic Plants Center

Certificate Ceremony

Visiting Afyon Kocatepe University

5.5. Poland

- 13th to 17th of February, 2023
- ZESPÓŁ SZKOLNO-PRZEDSZKOLNY NR 6 W, Rzezsow, Poland
- Number of students: 24, 4 from each country
- Number of teachers: 12, 2 from each country
- Robot sets used: VEX IQ

Welcoming guests: presentations - system of education in Poland

Blue Sky presentations - air pollution in our countries

5.5. Poland

Coding with kindergarten pupils

Familiarizing students with building blocksand robots of the VEX IQ system

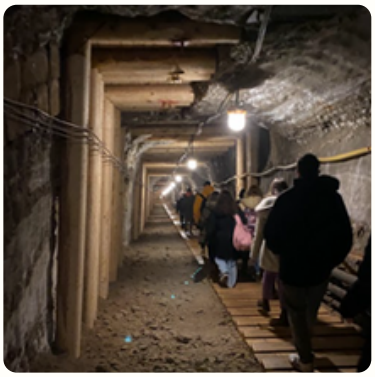
Workshops – strong constructions(tower , windmill)

A visit to Chief Inspectorate of Environmental Protection

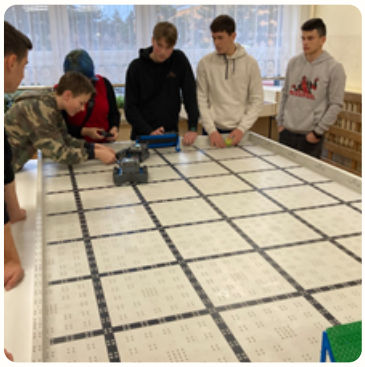
Visiting the Market Square

Country Market

5.5. Poland



A trip to Bochnia (Bochnia Salt Mine)



Workshop – football match playing by robots

Evaluation of the visit, giving certificates

A trip to Łańcut – visiting the castle

Workshop – drones (mini DJI Ryze Tello Edu)

Workshop – programming robots VEX IQ

5.6. Spain

- 8th to 12th of May, 2023
- IES Carlos Cano, Los Barrios, Spain
- Number of students: 24, 4 from each country
- Number of teachers: 12, 2 from each country
- Robot sets used: Lego Spike Prime

Welcome at school and opening words

Cultural tradition exposition

5.6. Spain

Spike prime activities

Introduction to Lego

Presentation of schools and countries

Hiking and kayaking in the river in National park

Optimum workshop: Waste recycling robotics activities

Visit of Puerto De Santa Maria

Visit to Cadiz

5.6. Spain

Algeciras university visit and seminar

Tarifa beach visit

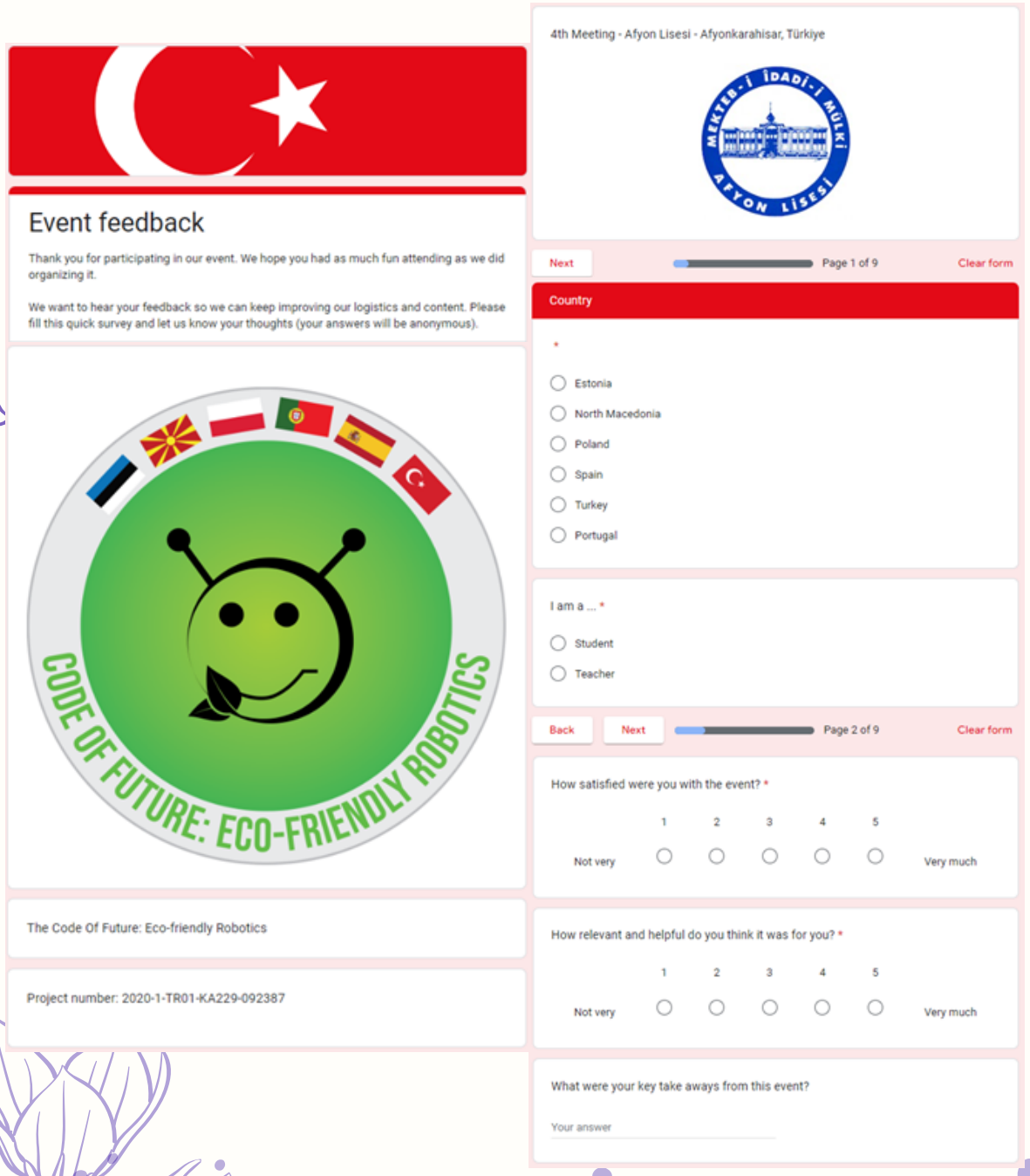
Fire rescue robot activities

Tree planting and animal feeding robot activities

Certification and signatures

5.7. LTTA Feedback

- In order to find out the participants opinion about the activities in every LTT we have created an online google form questionnaire which was filled by students and teachers after every mobility. The questionnaire(and also results) in addition (example mobility Türkiye):



Event feedback

Thank you for participating in our event. We hope you had as much fun attending as we did organizing it.

We want to hear your feedback so we can keep improving our logistics and content. Please fill this quick survey and let us know your thoughts (your answers will be anonymous).

The Code Of Future: Eco-friendly Robotics

Project number: 2020-1-TR01-KA229-092387

4th Meeting - Afyon Lisesi - Afyonkarahisar, Türkiye

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Country

*

Estonia
North Macedonia
Poland
Spain
Turkey
Portugal

I am a .... *

Student
Teacher

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How satisfied were you with the event? *

	1	2	3	4	5	
Not very						Very much

How relevant and helpful do you think it was for you? *

	1	2	3	4	5	
Not very						Very much

What were your key take aways from this event?

Your answer

5.7. LTTA Feedback

How satisfied were you with the logistics? *
1 = Very dissatisfied 5 = Very satisfied

	1	2	3	4	5	N/A
Accommodation						
Transportation						
Coffee break						
Lunch						
Dinners						
Venue						
Activities						
Closing ceremony						

General questions. *
1 – very dissatisfied 5 – very satisfied

	1	2	3	4	5	N/A
Cultural or scientific enrichment.						
Knowledge of a different educational system						
Development of general language skills						
Contact with new content, techniques, methods and Technologies						
Experience sharing						
Better understanding of Culture and lifestyles						

About the mobility *
1 – very dissatisfied 5 – very satisfied

	1	2	3	4	5	N/A
Accordance of the mobility programme.						
The length of the activities was appropriate to achieve the aims						
Guidance and support by the host entity						
Satisfied with the mobility logistics (transfer, accommodation...)						
Global evaluation of the mobility						

Additional feedback on logistics

Your answer

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Day 1 - 17-10-2022

Which session did you find most relevant? *

	Not relevant	Relevant	Very relevant	Did not attend
Presentation of the project and schools				
Cultural food				
Ice breakers- Learning about trees in the school yard				
School tour				
mBot- motion activities without sensors - pop the balloon				

How satisfied were you with the session content? *
Both presented and pre-read material

	1	2	3	4	5	
Poor						Excellent

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Day 2 - 19-04-2022

Which session did you find most relevant? *

	Not relevant	Relevant	Very relevant	Did not attend
mBot- ultrasonic sensor - Anti Theft Alarm				
mBot- ultrasonic sensor- Volume Calculation				
mBot- ultrasonic sensor- Avoiding Obstacles				
mBot- ultrasonic and line follower sensor- Maze Challange				
Workshop (Felt and marbling) in Taşhan				

How satisfied were you with the session content? *
Both presented and pre-read material

	1	2	3	4	5	
Poor						Excellent

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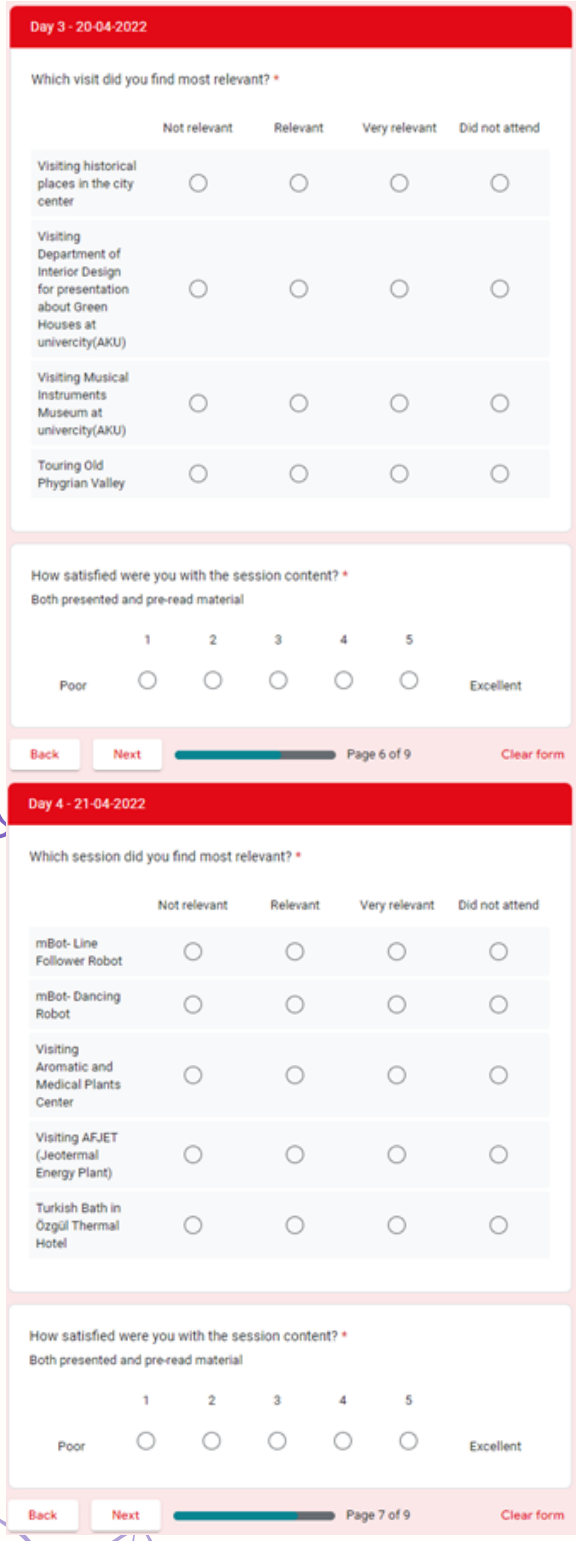
5.7. LTTA Feedback



Day 3 - 20-04-2022

Which visit did you find most relevant? *

	Not relevant	Relevant	Very relevant	Did not attend
Visiting historical places in the city center				
Visiting Department of Interior Design for presentation about Green Houses at univercity(AKU)				
Visiting Musical Instruments Museum at univercity(AKU)				
Touring Old Phygrian Valley				

How satisfied were you with the session content? *

Both presented and pre-read material

	1	2	3	4	5	
Poor						Excellent

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Day 4 - 21-04-2022

Which session did you find most relevant? *

	Not relevant	Relevant	Very relevant	Did not attend
mBot- Line Follower Robot				
mBot- Dancing Robot				
Visiting Aromatic and Medical Plants Center				
Visiting AFJET (Jeotermal Energy Plant)				
Turkish Bath in Özgül Thermal Hotel				

How satisfied were you with the session content? *

Both presented and pre-read material

	1	2	3	4	5	
Poor						Excellent

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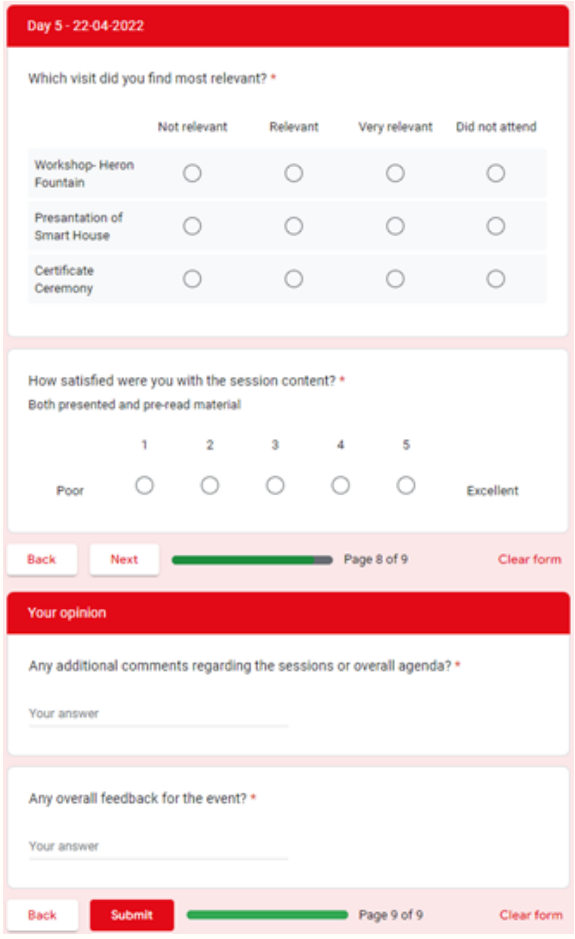

Day 5 - 22-04-2022

Which visit did you find most relevant? *

	Not relevant	Relevant	Very relevant	Did not attend
Workshop- Heron Fountain				
Presantation of Smart House				
Certificate Ceremony				

How satisfied were you with the session content? *

Both presented and pre-read material

	1	2	3	4	5	
Poor						Excellent

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Your opinion

Any additional comments regarding the sessions or overall agenda? *

Your answer

Any overall feedback for the event? *

Your answer

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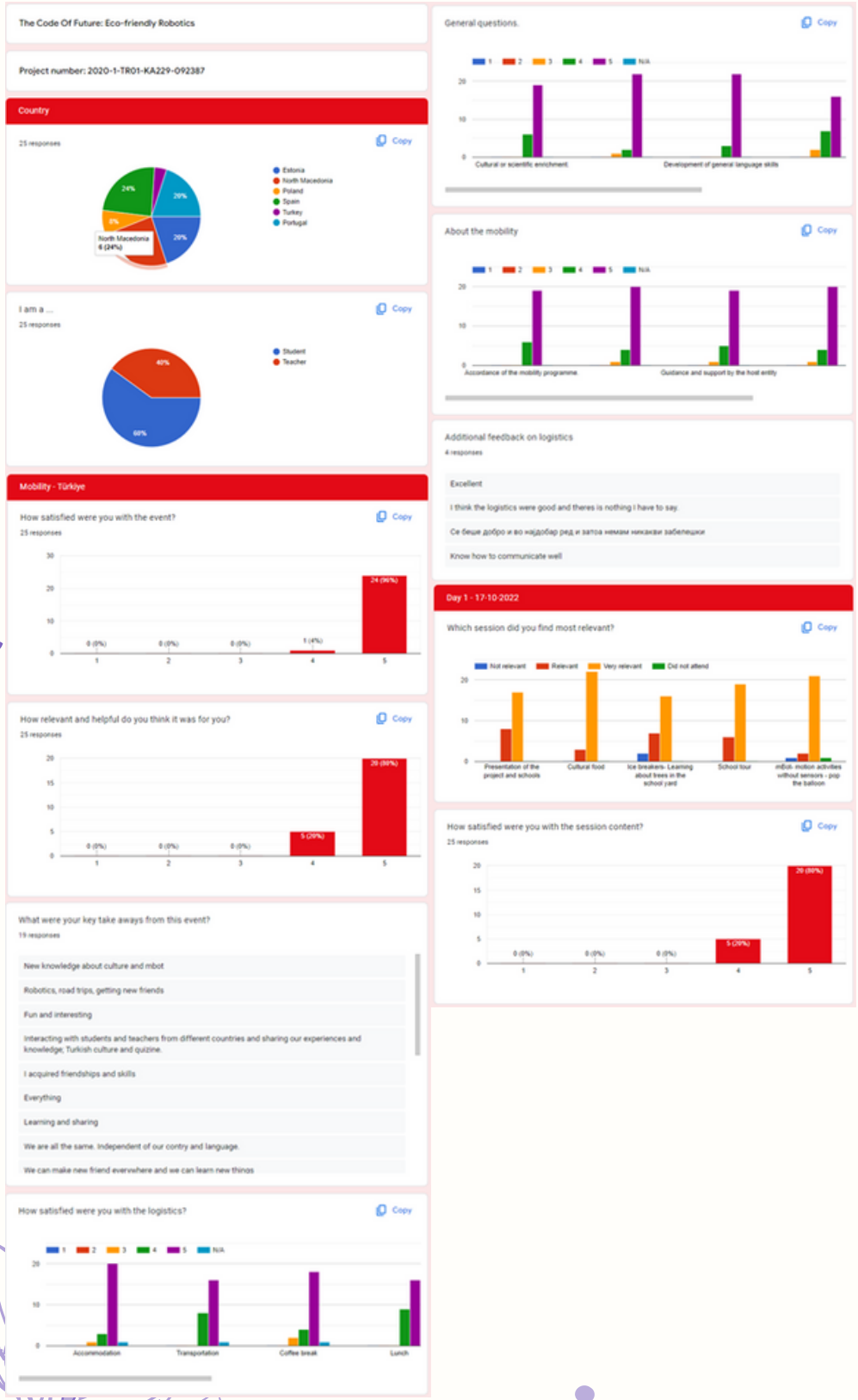
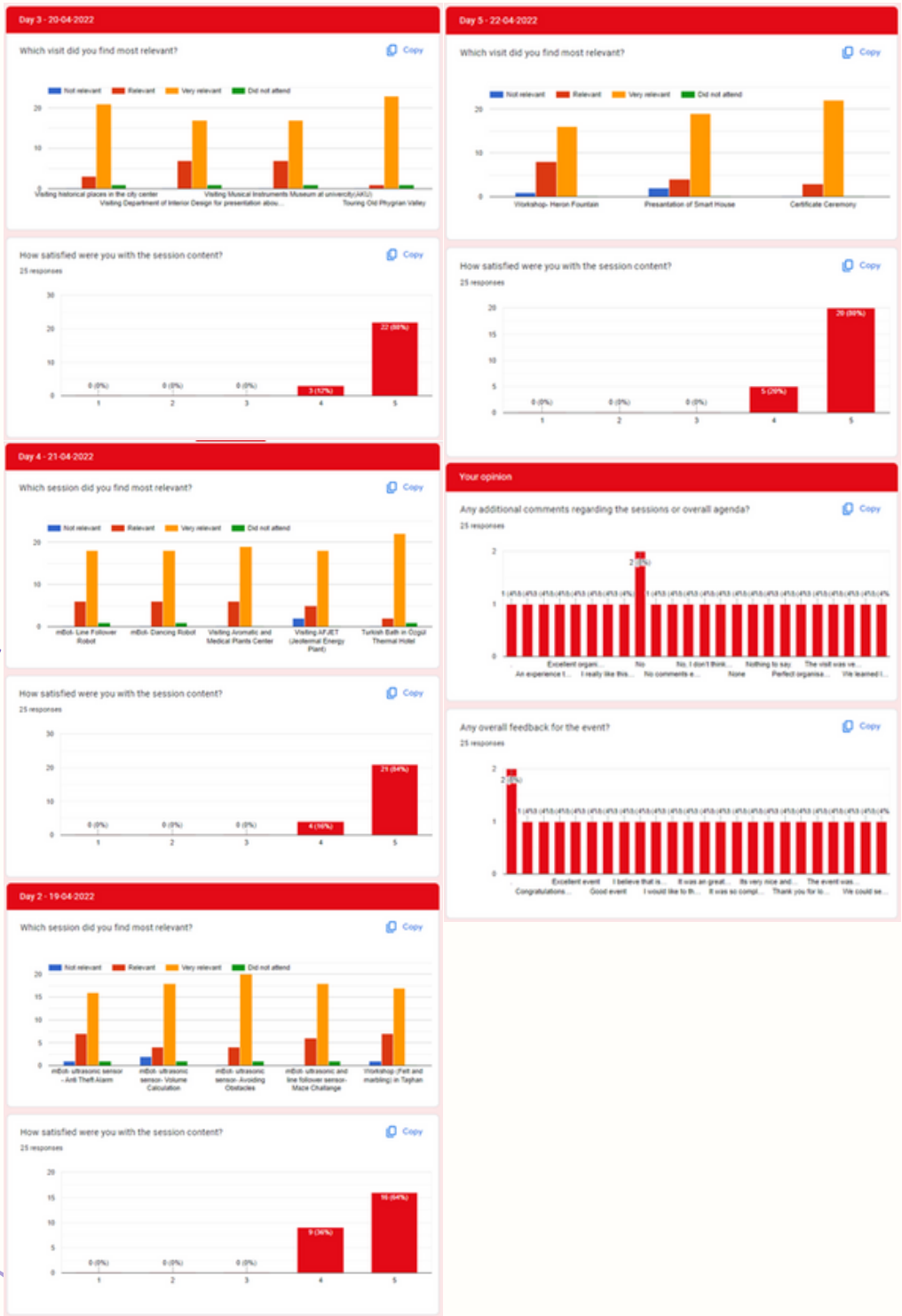
5.7. LTTA Feedback

- Summary: results from event feedback – mobility Türkiye



5.7. LTTA Feedback



6. School clubs

- In each of the partner schools in the project there are school robotics clubs or sections. In some of the schools these clubs have been functioning for a long time and have significant achievements in the field of robotics. For example, schools from Estonia, Portugal and Poland are well equipped with robotic sets and have great opportunities to work with more students. They regularly participate in all domestic and international competitions and achieve excellent results.
- In other countries, slowly but surely, these clubs are equipping themselves and increasing their activities with their students. However, by participating in this project, all schools were able to exchange many experiences from their work in order to improve their functioning.
- The most important thing related to the school robotics clubs and this project is to somehow connect robotics and IC technology with ecology. So the teachers involved in this project, together with their students, created and sought solutions to problems related to pollution of air, water, soil, settlements, homes and schools.
- The teachers, through specially designed curricula and lesson plans, posed problems to the students who, using robotic sets and programming, were looking for eco-friendly solutions.Therefore, Eco-school clubs were created.

6.1. Türkiye, Afyon LISESI

6.2. Spain, IES CARLOS CANO

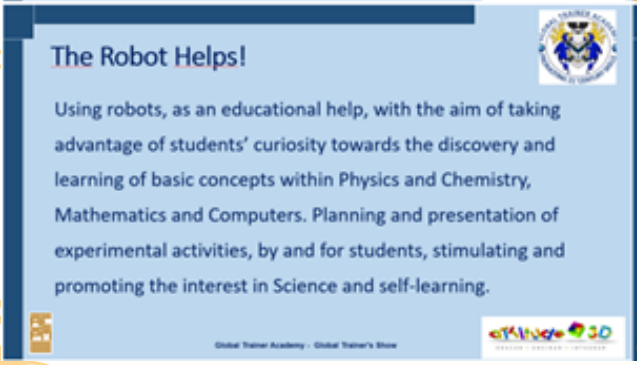
6.3. Poland, ZESPÓŁ SZKOLNO-PRZEDSZKOLNY NR 6 W RZESZOWIE

6.4. North Macedonia, SOU NIKOLA KAREV

6.5. Estonia, TALLINA KRISTINE GUMNAASIUM

- Robotics for beginners. Established in 2020, students from 1 and 2 grade (7-8 year old) participate and use Lego WeDo robot sets to gain first knowledge about robotics.
- Robotics for beginners upper level, Established 2020, Stundents from 3 grade (9-10year old) participate and use Lego Spike Prime Sets first knowledge about robotics, mechanics and programming.
- Robotics medium level, established 2020, students from 4th(10-11 year old) grade participate and use Lego EV3 and Lego Spike Prime sets to learn more specific ways of programming and engineering by solving tasks
- Robotics club Öökullid- higher level. Members of the club are enthusiasts from grades 5-10 (age 12-17) who use Lego Spike Prime (5 sets), Lego EV3 (5 sets), Matrix (1 set) and Tetrix (1 set) sets for solving real life problems with robots.

6.6. Portugal, AGRUPAMENTO DE ESCOLAS DA PORTELA E MOSCAVIDE



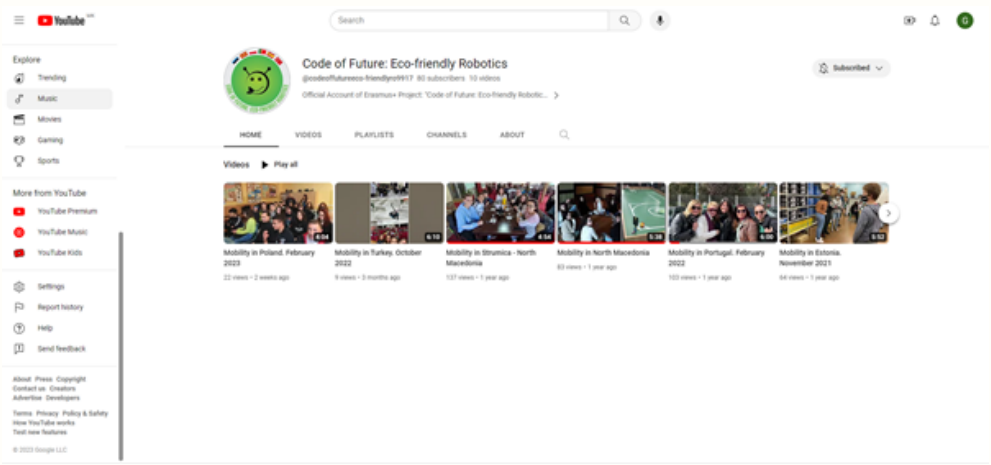
7. Dissemination

7.1. Project website

- One of the sources of information about our project is our website, which you can find at the following link:
- https://www.code-of-future-eco-friendly-robotics.net/
- There you can find a description of the project, information about all partner schools in this project, information about all six LTT mobilities, dissemination activities, as well as contact us for additional information.

7.2. Social media

- We are mainly active on YouTube and Facebook as part of disseminating the project activities on social media. You can check out our YouTube channel at the following link:
- https://www.youtube.com/@codeoffutureeco-friendlyro9917/featured
- And our Facebook page at:
- https://www.facebook.com/Codeofuturecofriendlyrobotics/



7.3. Workshops

- In order to introduce the activities of the project to as many people as possible, each of the partner schools had the task of conducting workshops with teachers, students, parents and administrative workers in their schools, preferably in other schools, as well as present the projects and its goals in their municipalities and countries.
- As much as we wanted more students to be involved in the project, the number of participants in the mobilities was limited. So, workshops after the mobilities were organized in the schools where our students had the chance to present their experiences to other students. In this way, with direct contact with all interested students, the activities in the project were presented andthe members of our school clubs grew.
- Teachers had the task to involve their colleagues, professional associates and parents through workshops and disseminating seminars. Students involved in school robotics clubs helped to present and implement these activities in the best possible way.
- According to the possibilities, some of the schools presented the project through television and radio shows.
- You can get acquainted with all these activities through our website:
- https://www.code-of-future-eco-friendly-robotics.net/
- or through our Facebook page:
- https://www.facebook.com/Codeofuturecofriendlyrobotics/

7.4. Lesson plans

- One of the goals of the project was to develop examples of lesson plans for using robots for environmental purposes. These lesson plans can and should be used in the activities of school robotics clubs, and if possible to implement some of them in the curricula and certain subjects that students study in their regular education.
- Twelve lesson plans were developed, two by teachers from every partner school. They include solving problems related to the themes of each of the mobilities: green roads, blue oceans, green schools, eco-friendly homes, blue sky and green nature.
- Lesson plans can be found at our website: https://www.code-of-future-eco-friendly-robotics.net/

7.5. Other activities and materials

- In addition to the above, as part of our dissemination activities, was the creation of:
- - Brochures and posters;
- - E-catalogue;
- - Short film and
- - E-book.
- You can find these materials on our website: https://www.code-of-future-eco-friendly-robotics.net/

8. Final words and conclusion

- On behalf of the teachers involved in this project, we tried our best to organize and implement all the planned activities in the project, keeping in mind that our students are the ones who should continue the mission of this project. We tried to involve as many students as possible who want to take a positive step towards a cleaner planet in general, while using ICT and robotics to improve the quality of air, water, nature and also provide a healthy environment to live, learn and achieve their dreams.
- In betweeen, we tried to inform and involve in this project our colleagues in schools, parents, administrative workers and even politicians, all in order to continue working in the field of eco-friendly robotics even after the completion of this project.
- On behalf of the students, we present you some of their impressions, written in their essays after the completed activities:

"I think the main objective of this Project is very good and I am happy to do something for our planet because our planet is dying slowly. I would like to suggest we should focus more on our habits because if we dont, we are going to destroy our planet."

Melih Küçükkurt from Türkiye, Estonian mobility

"This trip is for me invaluable knowledge, teamwork, making decisions that I could gain in practice, but also friendly relations and fantastic memories."

Remigiusz Cyran from Poland, Estonian mobility

"Before this mobility I was new to the subject, but after it, I can say that I've learned a lot about Eco-friendly robotics and it's advantages, and how it affects and will affect the society in near future. The main purpose of it is to make life easier, while also protecting and caring about the environment in which we live in."

Sara Gjorgjieva from North Macedonia, Estonian mobility

"From this project I made a lot of friends from abroad, some of whom I communicate with almost every day, the project made me think more about the environment and definitely helped me to get closer to my compatriots. It was an honour to be part of such a project and hopefully there will be more opportunities like this in the future."

Karl Lai from Estonia, Portugal mobility

"What I learned from people from different countries is how to communicate better in general. In fact, we are not that different from any other country and our goals are the same in one place. Making the Earth more livable."

Egemen,from Turkiye, Portugal mobility

"Luckily after the mobility I understood robots and the way they worked much more than before. With this knowledge I hope that I can help my classmates and give them some of the tips and tricks I remembered, that way we can all make a change in the future and implement robots so they can help humans in their everyday activities."

Ilija Katrandziev, from North Macedonia, Portugal mobility

"We coded robots with 6 different people from 6 countries. we combined our knowledge. It was great to go outside of my country and get to know other people's culture and interact with teamwork. We can start being a nature-friendly school by recycling our waste and promoting reuse.The duty of individuals is to use what they have learned in their whole life and to teach them to their environment. If everyone takes this responsibility, we can minimize our damage to nature"

Pınar Acar from Türkiye , Macedonian mobility

"I have learnt that even though we do not speak the same language, we can do everything we want to, together."

Lucas Márquez Rubio from Spain, Macedonian mobility

"In conclusion, this week was one of the best in my 14 years of living, because of traveling to a place I have never been to, learning about cultures, getting a good lesson for the future by talking almost only English for a week and getting a lot of new experiences. The most important things along this trip for me were the friends from all the different countries and the reintroduction into the world of robotics."

Jaagup Tõrs from Estonia, Macedonian mobility

"Finally, I can only say that if you have the opportunity to go on an erasmus you have to go because you will always remember it, your experience and for sure, people that you have met there."

Maria Suao, from Spain, Turkish mobility

"Every trip brings new memories that stay forever in our memories, and every memory is a part of our past. The journey brings different experiences from each following one. For me, the trip that brought me the most experiences out of all the others is the trip to the city of "Afyon" - Turkey, which was made possible by the Erasmus+ project."

Mila Vasileva, from North Macedonia, Turkish mobility

"Turkey was full of many surprises and new knowledge for everyone of us to gain in robotics and in everyday life. There were many new, challenging, and memorable experiences and many of us gained new friends, with whom we can share, remember, and cherish those experiences with as we get older".

Oliver Kask from Estonia, Turkish mobility

"In my opinion, the learning from this experience can be used not only in school, in classes, but also in a future job and in life, in some way if in professional life I follow an area of programming, engineering, computer science, etc."

Constança Freitas from Portugal, Polish mobility

"My friends who went abroad with this project before said that this feeling was very good and they did not want to leave there. I thought they were exaggerating, but when I went, I understood what they meant."

Muammer Utku COŞKUN from Türkiye, Polish mobility

"This Erasmus+ has helped me to become aware of the importance of implementing some ecological habits in my daily routine with the main aim of protecting our nature".

Antonio Ortega from Spain, Polish mobility

"We visited many places and learned about their culture. We had a busy schedule, but I never got tired because Robot projects and activities were very enjoyable."

Muazzez Tuana Halaç,from Türkiye, Spanish mobility

"The school trip to Spain proved to be a remarkable blend of education, cultural immersion, and outdoor adventure. From engaging in robotics workshops and exploring historical landmarks to hiking through national parks."

Anette Tuur from Estonia, Spanish mobility

"The Erasmus+ project in Los Barrios, Spain, has undoubtedly been a life-changing experience.This incredible project equipped me with valuable knowledge and practical skills and allowed me to form lifelong friendships, immerse myself in diverse cultures, explore vibrant Spanish cities and take part in thrilling activities."

Olga Dimitrieva,from North Macedonia, Spanish mobility