



# BE A SHIELD AROUND THE WORLD!

Development of competences for  
environmental protection to fight  
against climate changes



2020-1-AT01-KA229-077939\_4

## A PRACTICAL GUIDE

OF ENVIRONMENTALLY FRIENDLY  
BEHAVIOR TO BE DESIGNED  
IN OUR SCHOOL



Cooperation for innovation and the exchange of good practices 2020-2023



<https://be-a-shield.com>

This guide presents the intellectual results of the Erasmus+ project “BE A SHIELD AROUND THE WORLD! Development of competencies for environmental protection to fight against climate changes” in the field of strategic partnership between schools. It was developed as a result of a three-year collaboration between six schools in Austria, Iceland, Italy, Romania, Denmark, Greece.



**Co-funded by  
the European Union**

The European Commission’s support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only auf the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



**PROJECT DESCRIPTION**



The project is called "BE A SHIELD AROUND THE WORLD! - Development of competences for environmental protection to fight against climate changes" because we, the six partner organizations, wish to teach our students and community a valuable lesson for life concerning the environmental protection. Our dear students will develop transverse competences related to becoming environment friendly and social behavior, as these are matters of European level concern.

The need analyses of our schools revealed as common these issues that, furthermore, provided the context and background for our collaboration. To be more precise, we want to educate our young participants to become strong defenders of the Nature while acquiring or developing new/existing competences related to social



behaviour, school performance and emotional intelligence. Consequently, we defined nine learning objectives for the most important people involved in the project – the students aged 10-15:

- recognize the difference between climate and weather;
- explain Earth's natural greenhouse effect and recognize that the Earth's climate is changing and understand that;
- human activities are contributing towards this change;
- identify natural and human created sources of greenhouse gases;
- understand that the Earth's systems keep its temperature balanced as long as those systems are also balanced;
- explain why climate change is a global occurrence, not a local one;
- get informed about renewable energy;
- get transverse competences related to environment friendly and social behavior;
- build intercultural competences;
- own and share genuine European values;

The number of participants in the project is at around 500, and if we refer strictly to students, they will, according to their, represent all categories, mentioning refugees, socially disadvantaged, less intellectually endowed, those with problems of behavior, normal kids and super intelligent ones. The openness of choosing the participants will be a strict law which won't allow segregation. Furthermore, we have 24 activities, not to count those done during LTTAs.

The methodology has been established, generally, and it refers to involving well balanced teams of students, comprising the aforementioned categories and focusing on competence development and team work ability development. Teachers supervise and help, if needed, and students can propose changes in doing activities as long as the objective is not affected. During mobilities, mixed teams perform tasks, including online work on Twinspace. As results, we have a large choice of products, starting with the knowledge accumulation and putting it into practice and going on with awareness campaigns, exhibitions, digital products, sites to display them and a project comprehensive guide to remain as material to be used in regular classes during and after the project implementation span.

We hope to have a significant impact on the three plans, so that our work produce changes in mentality,



on a longer term. We refer here to the developing capacities for protecting the nature and for becoming reliable citizens in the future united Europe. By then, we want our students to feel the project impact by having better results at studying and behaving properly in society. Parents will be glad to notice school progress in their children while organizations will be more open culturally and more efficient as provider of education. As an immediate, visible advantage, students will be more fluent in speaking English, surer of themselves, more stable as characters and more skilled in solving a multitude of task whether working with bare hands or doing ICT products. Likewise, teachers will know other educational systems, pedagogical approaches, cultural horizons and they will become better in their daily work with a larger choice of methods of teaching and materials.

The communities will be richer in international experience, setting new useful links for future collaboration and friendships. Finally, schools will become more friendly, more attractive and less harmful for the environment.



## PARTNER SCHOOLS



**Zweisprachige Mittelschule Großwarasdorf,**

**Austria**

**Scoala Gimnaziala Magura, Buzau,**

**Romania**

**Glerarskoli Akureyri,**

**Iceland**

**Istituto Comprensivo Torregrotta,**

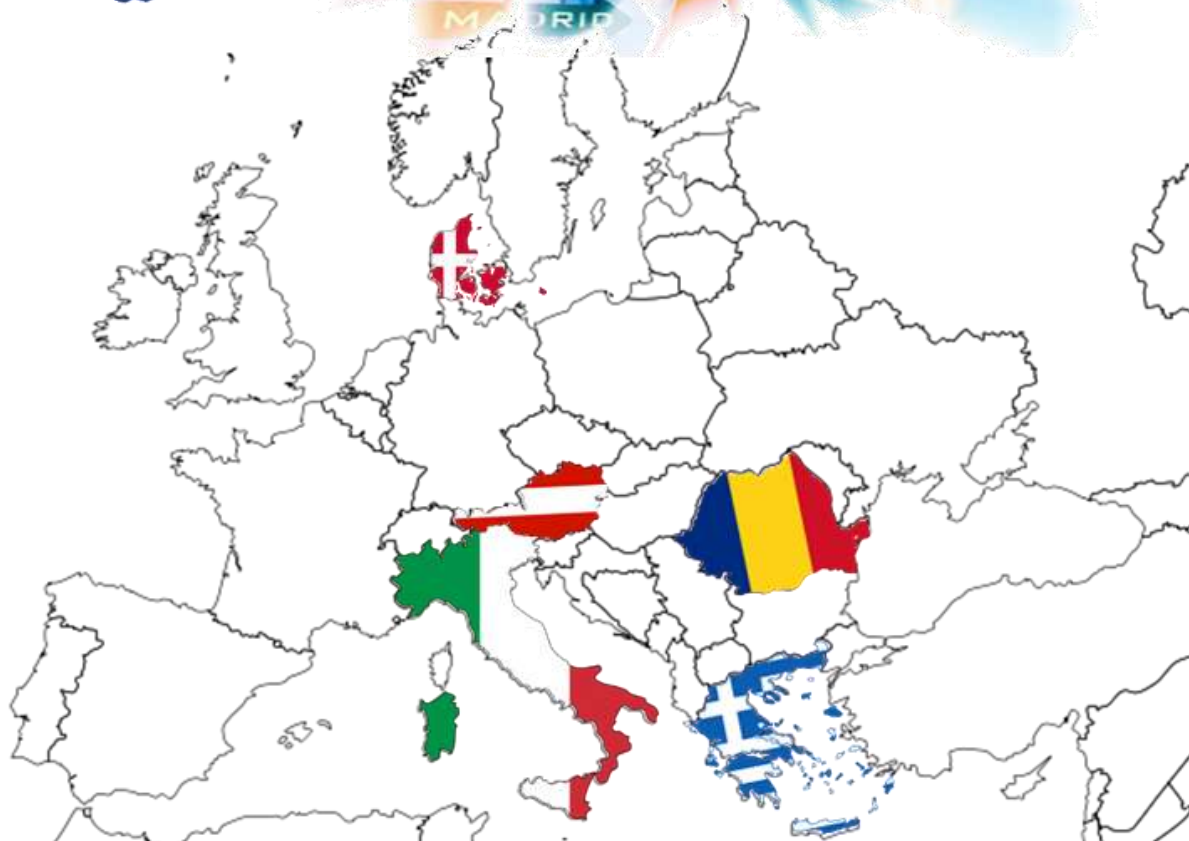
**Italy**

**Kratbjergskolen afd. Ravnholt, Allerød,**

**Denmark**

**4th Gymnasium Volos,**

**Greece**

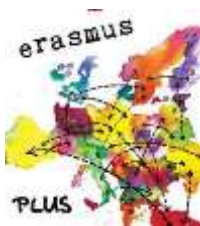




## ACTIVITIES

The project is structured on four stages, each stage having activities that, step by step, will lead to the achievement of the objectives. They will be conceived so as to permanently be closely related to the topics and the learning objectives.

1. Let's get to know ourselves and others in our common home - EARTH.
2. Let's build a Nature-friendly school while developing the school culture for sustainability - WATER.
3. Let's find out about renewable energy - AIR.
4. Let's tell others what we know - PEOPLE



## MOBILITIES

- **C1 Short-term exchanges of groups of pupils / Deal carefully with our nature! – Let's start together!**
  - Austria
- **C2 Short-term exchanges of groups of pupils / Let's shape attitudes towards taking action against climate change in schools!**
  - Romania
- **C3 Short-term exchanges of groups of pupils / Water is vital**
  - Denmark
- **C4 Short-term joint staff training events / A world without ice**
  - Iceland
- **C5 Short-term exchanges of groups of pupils / Green citizenship between territory and prevention**
  - Italy
- **C6 Short-term exchanges of groups of pupils / Sustainable and healthy lifestyle**
  - Greece



## EXAMPLES OF APPLICATION



**Waste sorting in Austria. How to reduce waste?**

**10**



**Water in danger. What can you do?**

**13**



**Walk to school!  
Look into the future**

**16**

**17**



**Making our school greener!**

**19**



**How to reuse iron? The creativity of recycling.**

**22**



**Second life of iron. Metal recycling how and why.  
Biodiversity - Let's protect our endangered species**

**28**

**31**

## Waste sorting in Austria. How to reduce waste?

**Choices of class organization:**  
 front and group, workshop

**Participants:** Students aged 10 – 14

**Discipline:** Biology, German

**Subject:** Too much waste. How to sort waste correctly?

**Argument:** Every year there is more and more waste as many products are wrapped in plastic and paper. Furthermore, human consumption has grown. Thus, there is a growing number of packaging that must be disposed of. Not only paper and plastic but also glass, metal, organic waste, green waste and dangerous, hazardous waste must be disposed of correctly. Correct separating of waste is highly important, as many waste products can be recycled and be the source for new products.



**Objectives:**

- Recognition and identification of environmental pollution
- Reduce waste
- Sort waste correctly
- Recognizing the consequences of their own behaviour on the environment
- Learning by doing to separate waste.

**Skills:** Students should be encouraged to avoid and reduce waste, and to separate waste correctly.

**Activity description:** Students identify different types of waste, allocate them to the correct dustbin. Furthermore, they deal with the topic of recycling.

### Experiment number 1:

Students of the 1<sup>st</sup> class allocate waste (pictures) to the correct dustbins.

- Different pictures
- Allocating waste to the correct bins. Link to the video: <https://youtu.be/Ab4uzWbeD9k>
- An expert of the regional waste management company, “Burgenländischer Müllverband“, informs students about the correct separating of waste.

**Conclusion:** Waste must be separated correctly, otherwise it cannot be recycled. Piles of rubbish are growing; the environment is polluted even more.



### Experiment 2:

How do I sort waste?

What are the colours of the different dustbins?

- Yellow bin
- Brown bin
- Black bin
- Green bin, etc....

Students must put different materials into the correct bins.

**Conclusion:** Glass waste is the source for new glass, wastepaper is used to make new paper, etc. Recycling, reduce and reuse are important parameters.

**The role of the teacher:** The teacher and the waste expert give important information about waste sorting, and she has the role of coordinating activities. She motivates the students during the lesson to sort waste and write the information into the biology book.

### Student role

- Write information into their exercise books and books.

- Put waste they brought from home into the correct bins
- Worksheet: allocate waste correctly (link to the video: <https://youtu.be/Ab4uzWbeD9k>)
- Collect examples for recycling, reducing und reusing



### Water in danger. What can you do?



**Choices of class organization:** front and group

**Participants:** Students aged 13-15

**Discipline:** Chemistry

**Subject:** Water in danger. What can you do?

**Argument:** People use more and more water from their limited reserves of fresh water, and much of what's left is polluted. Cities, farms, factories and power plants devour tons of household water and toxic waste into the river network every year. This has overwhelmed the natural power of rivers to destroy pollutants, and so water becomes a risk factor for our health.

#### Objectives:

- Recognition of environmental pollution;
- Establishing causal relationships between phenomena;
- Recognizing the consequences of their own behavior on the environment;
- Cultivating the observation spirit on the surrounding world;
- Valorizing divergent thinking and learning by discovery.



**Skills:** Stimulating students' critical thinking and creativity.

**Activity description:** The activity "Water in danger. What can you do?" consists of performing simple experiments using a part of the debris from some human activities and observing their influence on the water.

### Experiment number 1: Water Pollution

#### Necessary materials:

- A plastic bottle
- A glass of oil or diesel
- A spoon with detergent

It can be seen that the oil forms a thin, yellowish layer over the water. The detergent combines with the oil and the water becomes lighter. Oil can no longer be seen in the water.

**Conclusions:** When a tanker is damaged, the oil forms a black spot above it and prevents the oxygen from entering the water. Household detergents come into rivers, and water is no longer clean. Chemical detergents can hide pollution by household or petroleum oils because they break them in water.

### Experiment no.2: How do we make fresh water again?

#### Necessary materials:

- ✓ Filter paper
- ✓ Sand
- ✓ A glass of water
- ✓ Earth



The filter paper and sand filter dirty water, stopping large particles. The water from the glass is not drinkable because very small particles are not retained by sand or paper. Also, possible chemicals are not filtered. Dirty water is sometimes filtered by the soil but does not become drinkable.



### Experiment no. 3: Everyday Danger

#### Necessary materials:

- 2 glasses
- Water
- Coffee, detergent, oil for frying
- Funnel
- Filter paper

It is noticed that over time, the water in the glass was modified, getting a dark color and an unpleasant smell. Sediments have formed at the bottom of the glass and the filtration of water is not enough to make it clean.

**The role of the teacher:** The teacher has the role of coordinating and supervising the activity. He/She motivates the students during the lesson and complements with information, making observations during the experiment.

#### Student role:

- Designing the experiment and how it works
- Observing, studying and verifying the experiment
- Drawing up some conclusions



**Walk to school!**



**Participants:** Students aged 6-16

**Discipline:** Environmental studies

**Subject:** How can we decrease emissions.

**Argument:**

Research suggests choosing to walk a short journey instead of travelling in a car can have significant advantages for the environment over a year. It has been calculated that completing five trips of 2km a week on foot instead of a car can decrease the number of emissions by 86kg a year.

**Objectives:**

- Recognition of environmental pollution
- Increasing students' sense of responsibility towards the environment
- Decreasing emissions

**Activity description:** The activity "Walk to school?" is a competition between every class in school. For two weeks students are asked to use an eco-friendly alternative to get to school for the period of two weeks. The teachers are responsible for registering their students' progress and handing in their classes result. The students get points for their class by walking, cycling, or taking the bus. The class that wins gets a trophy.

**Conclusions:** For the two weeks the activity took place, the students in general made an effort to travel by foot while learning the effect our cars have on the environment.



### Look into the future



**Participants:** Students aged 14-16

**Discipline:** Environmental studies

**Subject:** How we can help our planet to save the future.

**Argument:** There are many ways to save our planet including conserving water, reducing our use of oil and embracing green energy, reducing waste and single-use plastics and planting more trees. It is important for our future generation to realize what we can do to create a longer existence world and to become more conscience of their environment and the dangers they are facing.

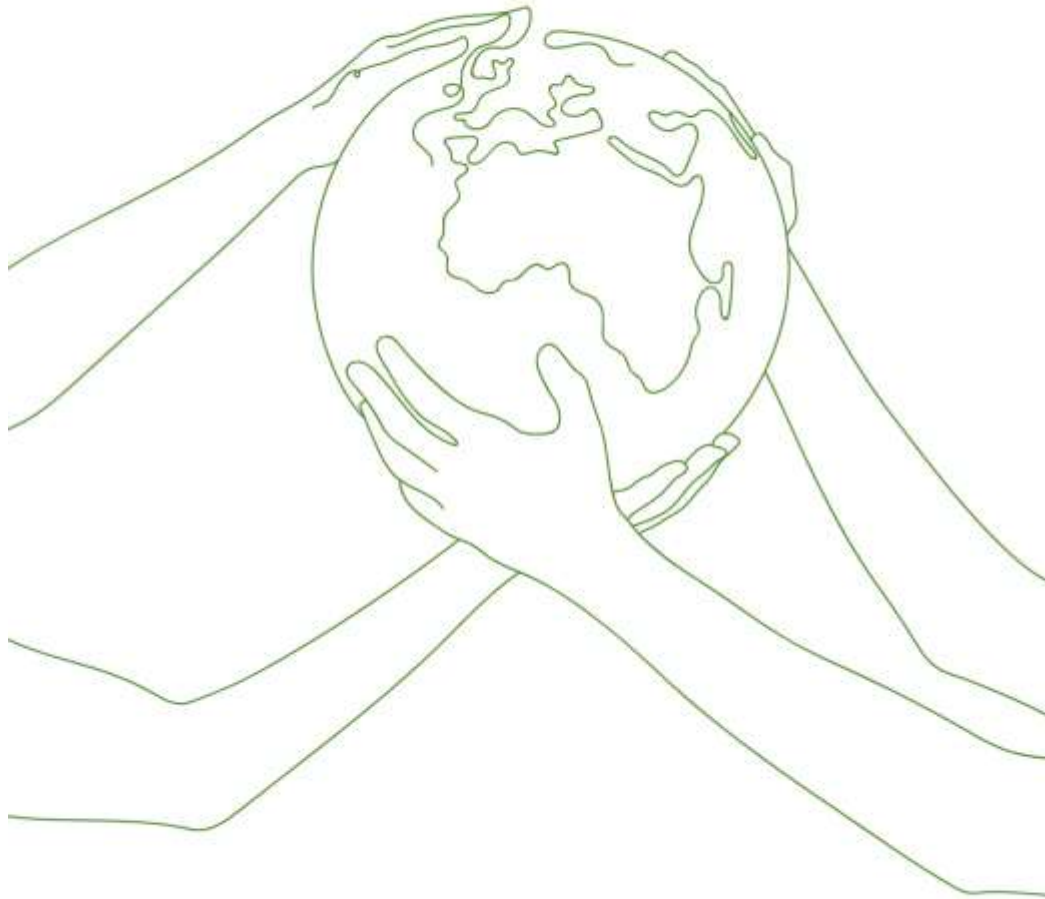
#### Objectives:

- Recognition of the damage our planet faces
- Increasing students' sense of responsibility towards the environment

**Activity description:** The activity should take at least two days. The students must gather information about the possible state of the humanity in the year 2200, prepare a script and finally record a news program that could take place 80 years from now. The students will use green screens to create a realistic world. The program should include general news as well as a realistic weather forecast.



**Conclusions:** The students enjoyed the activity and took their role very seriously. They created a realistic weather forecast which included a weather too hot to handle as well as an extreme cold. The general news also included alarming news of distinct species and mutants.



## Making our school greener!

### Choices of class organization:

front and group, workshop

**Participants:** Students aged 13 – 14



**Discipline:** Geology , Environmental studies, Biology

**Subject:** How to make our school greener.

**Argument:** Our school, the 4<sup>th</sup> Gymnasium of Volos, has a long history in environmental projects. We have had an eco team for the last 10 years and we have been involved in projects concerning the importance of water, preserving the biodiversity of our local area including mountain Pelio, creating a solar heater, cleaning nearby beaches and parks and making a school garden with organic vegetables. Making "greener" schools is a campaign that should expand not only to the school community but eventually foster change in the community at large. Young people experience a sense of achievement at being able to have a say in the environmental management policies of their schools. Schools ought to embark on a meaningful path towards improving the environment in both the school and the local community while at the same time having a life-long positive impact on the lives of young people, their families, school staff and local authorities

### Objectives

- Recognition and identification of environmental problems
- Create a school garden
- Sort waste in schools correctly
- Install recycling and compost bins
- Reduce paper waste at schools.

**Skills:** Students should be encouraged to get more active in the creation of a school garden and to separate waste correctly.

**Activity description:** Students recycle and compost different types of waste, plant flowers and organic vegetables in our school garden and manage the use of paper efficiently.

**Workshop 1:**

Students of the 2<sup>nd</sup> class of our junior high school allocate waste to the correct bins.



**Workshop 2 :**

With the help of our geology teacher, students create an organic garden with vegetables and flowers.



**Conclusion:** Waste must be separated correctly, otherwise it cannot be recycled. Piles of rubbish are growing; the environment is polluted even more.

**The role of the teacher:** The teacher gives important information about waste sorting, and she has the role of coordinating activities. She motivates the students during the lesson to sort waste and allocates different roles when creating the garden. She also passes on information about the different qualities of each vegetable.





### How to reuse iron? The creativity of recycling.

**Choices of class organization:** Cooperative learning, team building.

**Participants:** Students aged 12 - 13

**Discipline:** Technology, English

**Subject:** Reusing is as important as Recycling. What can we do?

#### Argument

Recycling is very important, but reusing is even better. Recycling uses energy, transport time, and fuel to get the items to where they need to go. If you can reuse an item yourself, that's more energy, time, and fuel saved, as well as fewer emissions produced. From your old metal cans, iron, plastic bags, bicycle tires, packing peanuts, and computer keyboards, there are many ways to find a second life for simple items around your home by reusing them.

Correct separating of waste is highly important, as many waste products can be reused and be the source for new and very original products.

#### Objectives:

- Define and understand why recycling is important
- Show different ways to reusing iron
- Show the benefits
- Know some helpful tips to help reusing within a community
- Learning by doing
- Problem solving
- Cooperation among students
- Digital skills

**Skills:** Students should be encouraged to emphasize the reusing of iron and the benefits for their creativity and awareness of environment.

**Activity description:** Students identify different types of metals, dealing the difference of reducing, recycling, reusing. Later, they will create crafts and a video as final product.

### Activity 1:

Students of the 2<sup>nd</sup> class create:

- Different slogan
- Several crafts
- Final video (see link:

[https://www.youtube.com/watch?v=YTA2PS550gw&list=PLmOHZREuUWOI4lgK6gBYYYzi\\_fX-NLe\\_r](https://www.youtube.com/watch?v=YTA2PS550gw&list=PLmOHZREuUWOI4lgK6gBYYYzi_fX-NLe_r))



ISTITUTO COMPRESIVO TORREGROTTA  
SCUOLA SECONDARIA I° GRADO  
"G. LO GULLO"  
MONFORTE SAN GIORGIO

Technology: classes: I<sup>A</sup> - II<sup>A</sup> D  
Teacher: Mr Francesco Mangano

### Recycling of Ferrous Materials Riciclo dei Materiali Ferrosi



Nulla deve essere sottovalutato, con la creatività si può riciclare qualsiasi cosa, anche i materiali ferrosi.



Nothing should be underestimated, that with creativity you can recycle anything, even ferrous materials.

### PERCHE' E' IMPORTANTE RICICLARE...

- RICICLARE SIGNIFICA TRASFORMARE I RIFIUTI IN MATERIALI CHE POSSONO ESSERE RIUTILIZZATI. E' IMPORTANTE RICICLARE PER:

- > Risparmiare energia
- > Produrre meno rifiuti
- > Evitare le sostanze nocive per l'ambiente.
- > E' un dovere di tutti noi per rendere più pulito il nostro ambiente.



### WHY RECYCLING IS IMPORTANT...

- RECYCLING MEANS TO TRANSFORM THE WASTES INTO MATERIALS WHICH CAN BE REUSED. RECYCLING IS IMPORTANT TO:

- > Save energy
- > Produce less wastes
- > Avoid dangerous substances for the environment.
- > Recycling is a duty for all of us to make cleaner our environment.

### Before ... and After

**ROLL HOLDER HANGER**



Francesco Mantrè II<sup>a</sup> D

**PEN HOLDER**



Bitto Giulia  
Priscoglio Giada I<sup>a</sup> D



**NECKLACE**



Bitto MariaElsa- Cannistrà Francesco II<sup>a</sup> D

**FLOWER MADE WITH COLOURED PAPER CLIPS**



Dario Ben Dhaou  
Gianguido Locantro  
Santi Samuele Mauro  
Giuseppe Sgrò I<sup>a</sup> D



Malemi Desirè II<sup>a</sup> D  
Cannistrà Francesco I<sup>a</sup> D

**BRACELET AND MOTORCYCLE**



**SNAIL AND COAT HOOK WITH BOLTS AND FORK**

Gusiana Francesco  
Marsilia Salvatore  
Leonardo Zullo II<sup>a</sup> D



**PLANT POT**

Mantrè Francesco II<sup>a</sup> D



**CANDLE HOLDER**

Catanese Giorgia I<sup>a</sup> D

**PEN HOLDER**



Cannistrà Fulvio I<sup>a</sup> D

# BE A SHIELD AROUND THE WORLD!

Cooperation for innovation and the exchange of good practices 2020-2022

## A PRACTICAL GUIDE OF ENVIRONMENTALLY FRIENDLY BEHAVIOR TO BE DESIGNED IN OUR SCHOOL



**SMALL FLOWER**

Piscoglio Giorgia 1<sup>a</sup> D



**BRACELET**



Cannistrà Luca 1<sup>a</sup> D

**MAGAZINE RACK**

Ragno Mattia 1<sup>a</sup> D



**CANDELABRUM**

Manfrè Francesco 1<sup>a</sup> D



**SMARTPHONE HOLDER**

Visali Mattia 1<sup>a</sup> D



**HANGING CUTLERY MADE WITH A PIECE OF A TRANSMITTING ANTENNA**

Ben Dhaou Dario – Locantro Gianguido  
Mauro Santì Samuele – Sgrò Giuseppe 1<sup>a</sup> D



**ROLL HOLDER**

Mascali Matteo 1<sup>a</sup> D



**BRACELET AND EARRINGS**

Duca Giuseppe 1<sup>a</sup> D



**SMARTPHONE HOLDER**

Giuliana Francesco – Marsala Salvatore – Zullo Leonardo 1<sup>a</sup> D



**CANDLE HOLDER**



**Conclusion:** The students work to understand and learn that reusing materials has great benefits from environmental and economic point of view. Reusing is a possible way to avoid trash. Reusing is a good way to save a great amount of energy and money as well.

**Activity 2:** After the waste products of a reconstruction site, students create

- A lamp
- A video (see link to the video: <https://www.youtube.com/watch?v=OZwLFIereyo&t=23s>)

# BE A SHIELD AROUND THE WORLD!

Cooperation for innovation and the exchange of good practices 2020-2022

## A PRACTICAL GUIDE OF ENVIRONMENTALLY FRIENDLY BEHAVIOR TO BE DESIGNED IN OUR SCHOOL





## Second life of iron. Metal recycling how and why.



**Participants:** 52 pupils in 2 groups, aged 11-13 participated in total.  
 1 lesson is 90 minutes

Summary of activities:

**First lesson:** In the first lesson we look at how used metal is collected and recycled in Denmark. We start with the pupils brainstorming to establish their current knowledge base.

Examples of current student knowledge can be:

- Soda and beer cans for recycling in the Danish deposit system.
- Going to the recycling station with trash metal.
- Throwing metal trash in the metal garbage at home.

After the brainstorm we look at collection and recycling of metal from used cars as an example of recycling on an industrial scale. This is done to establish a basis knowledge of how metal is melted and recast into new useful objects. At the end of the lesson, the pupils are shown a short video that gives examples of the energy saved through recycling compared to mining new metals.

**Second and third lesson:** Tin casting in crafts.

### Materials, tools and machines needed:

Smelting pot, decoupage saw, plywood, lead free tin, paper, pencils, metal files and emery cloth.

The purpose of these lessons is to give the pupils first-hand knowledge of metal casting. This in turn will make it easier for them to see the end purpose of sorting their garbage so we can recycle the metal.

Apart from the general rules in crafts classroom: no running, no playfighting, safety rules for machines and tools, etc. In addition, we had the following rules when casting metal:

- No pupils in the smelting and casting area without a teacher supervising.
- Only 1 pupil in the smelting and casting area at a time.

During the first lesson the pupils need to choose what object they want to cast. To limit the amount of tin and time used, they were given the max dimensions of 5 cm x 5 cm x 1 cm.

Examples of objects the pupils can cast:

Crosses, Thors hammer, stars, hearts, animal figures, swords, rings, etc.

It is important the pupils choose an object without too many intricate details as these will be hard to replicate with the simple casting method we will use in these lessons.

When the pupil has a good idea of their object, they have to draw a to scale model of it. This will enable the teacher to give feedback and constructive criticism, as well as check if the dimensions of the object is inside the given measures. Often pupils will have to redraw the object a couple of times before they can proceed to the next step.

When the pupil's model is acceptable it is time to make the mold.

The drawing is transferred to plywood, and then cut away using a decoupage saw, remind the the pupil that the mold is the important part of the material, so the focus here is to cut away the drawn part.

Example of a finished mold for a pupil who wanted to make an Overwatch symbol.





Once the mold is finished we block off the sides with additional plywood slet the tin in the smelting pot and pour it in.



The item still needs to be cleaned up, but at this point the pupils had already understood the basic principles of casting. The object is filed and sanded down using emery cloth.

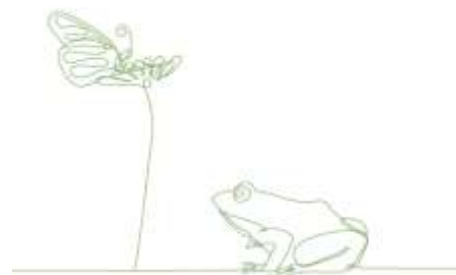
Examples of finished objects.



## BIODIVERSITY - LET'S PROTECT OUR ENDANGERED SPECIES

### Description of courses on endangered animals in Denmark

In 4.b. they worked for 3-4 weeks with a course on endangered animals in Denmark. They had previously worked with endangered animals from different parts of the world. It was a surprise for the students that we had endangered mammals in Denmark.



The course was based on a task description, where the students had to go to a website and read a subject text about the endangered animal they had been assigned. While reading with their partner, they had to complete a two-column note to better remember and understand what they had read.

Their task was now to write approximately ½ A4 page about their animal and at the same time explain why it was endangered. They had to start from their two-column note.

Afterwards, they had to draw a drawing of their animal, which also had to show the environment in which the animal lived.

Finally, their texts had to be translated into English. Here they got help from Google and their English teacher.

### Task description - endangered Danish animals:

1. Go to <https://www.dn.dk/vi-arbejder-for/truede-arter/>
2. You must all read the text about your endangered animal. Read the text aloud to each other.
3. As you read, you must complete a two-column note.
4. In google docs, you must write approximately ½ page with font size 12 about your animal. Take your two-column note as a starting point.
5. Make one or two drawings of your animals on white A4 paper. The drawing must also show what it looks like where your animals live.
6. Get your text approved by your teacher.
7. Now you must, with joint help, try to translate the text into English 😊
8. One person from each group submits an assignment in MU.

Enjoy!



## CONCLUSION

As a result of participating in this project, the involved schools felt the influence of the project in the long term, because the project participants gained experience not only about improving the learning process, but also about the culture, history of the visiting country. and everyday life.

All this information and experience will be taught to other students and colleagues. Each project has a long-lasting impact not only on the school, but also on the entire community.

It is planned to use the teaching methods learned in the long term after the end of the project. Participating organizations are also expected to collaborate after the end of the project to discuss the effects the project had on the daily life of each school, including for new projects.





## BE A SHIELD AROUND THE WORLD!

Development of competences for environmental protection to fight against climate changes



2020-1-AT01-KA229-077939\_4



“First thing in the morning you look after yourself,  
you brush your teeth and wash your face, don’t you?  
Well, the second thing you must do is to look after the planet.”

Antoine De Saint-Exupery

